



NOTICE OF MEETING

**Notice is hereby given of the Meeting of the
Infrastructure Committee
to be held in the Council Chamber, First Floor, Te
Hinaki Civic Building, 101 Esk Street, Invercargill on
Tuesday 11 July 2023 at 3.00 pm**

Cr I R Pottinger (Chair)
Mayor W S Clark
Cr A J Arnold
Cr R I D Bond
Cr P M Boyle
Cr T Campbell
Cr A H Crackett
Cr G M Dermody
Cr P W Kett
Cr D J Ludlow
Cr L F Soper
Rev E Cook – Māngai – Waihōpai
Mrs P Coote – Kaikaunihera Māori – Awarua

MICHAEL DAY
CHIEF EXECUTIVE

Infrastructure Committee - Public

11 July 2023 03:00 PM

Agenda Topic	Page
1. Apologies	
2. Declaration of Interest	
a. Members are reminded of the need to stand aside from decision-making when a conflict arises between their role as an elected representative and any private or other external interest they might have.	
b. Elected members are reminded to update their register of interests as soon as practicable, including amending the register at this meeting if necessary.	
3. Public Forum	
3.1 Mr Anton Bayliss - Public Transport	
4. Major Late Item	
4.1 Strategic Approach - Waste as a Resource	
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Public Excluded Session

Moved , seconded that the public be excluded from the following parts of the proceedings of this meeting; namely,

- a) *Confirmation of Minutes of the Public Excluded Session of the Infrastructure Committee held on 6 June 2023*
- b) *Contract C1167 Road Corridor Maintenance 2023 - 2028*

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:

General subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under Section 48(1) for the passing of this resolution
(a) Confirmation of Minutes of the Public Excluded Session of the Infrastructure Committee held on 6 June 2023	Section 7(2)(i) Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)	Section 48(1)(a) That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7
(b) Contract C1167 Road Corridor Maintenance 2023 - 2028	Section 7(2)(i) Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)	Section 48(1)(a) That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7

MINUTES OF INFRASTRUCTURE COMMITTEE, HELD IN THE COUNCIL CHAMBERS, FIRST FLOOR, TE HINAKI CIVIC BUILDING, 101 ESK STREET, INVERCARGILL ON TUESDAY 6 JUNE 2023 AT 3.00 PM

Present:	Cr I R Pottinger (Chair) Mayor W S Clark Cr A J Arnold Cr R I D Bond Cr T Campbell Cr A H Crackett Cr P W Kett Cr L F Soper Mrs P Coote – Kaikaunihera Māori – Awarua
In Attendance:	Cr B R Stewart Mr M Day – Chief Executive Mrs P Christie – Acting Group Manager – Finance and Assurance Mr J Shaw – Interim GM – Consents and Compliance Mr A Cameron – Chief Risk Officer Mr M Morris – Manager – Governance and Legal Ms L Knight – Manager – Strategic Communications Ms A Benjamin - Contracts and Commercial Manager Mr B Carpenter - Service Management Analyst Mr G Caron – Digital and Communications Advisor Mrs T Amarasingha – Governance Support Advisor

1. Apologies

Cr Boyle, Cr Dermody, and Rev Cook

Moved Mayor Clark, seconded Cr Soper and **RESOLVED** that the apologies be accepted.

2. Declaration of Interest

Nil.

3. Public Forum

Nil.

4. Minutes of the Meeting of Infrastructure Committee held on Tuesday 2 May 2023

Moved Cr Crackett, seconded Cr Soper and **RESOLVED** that the minutes of the Infrastructure Committee held on Tuesday 2 May 2023 be confirmed.

5. Major Late Items

5.1 Minutes of the Waste Advisory Group (WasteNet) meeting held on Monday 15 May 2023

A4630278

The reason that the item was not in the Agenda	The reason why the discussion of the item cannot be delayed
The item came to hand after the publication of the agenda	Matters can be progressed in a timely manner

5.2 Minutes of the Meeting of the Public Excluded Session of Waste Advisory Group (WasteNet) held on Monday 15 May 2023

A4630279

The reason that the item was not in the Agenda	The reason why the discussion of the item cannot be delayed
The item came to hand after the publication of the agenda	Matters can be progressed in a timely manner

Reasons for Public Exclusion:

Section 7 (2) (i)	Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)
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Moved Mayor Clark, seconded Cr Campbell and **RESOLVED** that the Major Late Items 'Minutes of the Waste Advisory Group (WasteNet) meeting held on Monday 15 May 2023' and 'Minutes of the Meeting of the Public Excluded session of Waste Advisory Group (WasteNet) held on Monday 15 May 2023' be accepted.

6. Tabled Items

6.1 Minutes of the Meeting of the Public Excluded Session of Waste Management Group (WMG) held on Monday 18 May 2023

6.2 Letter from Mayor Clark to Cr Keith Hovell Chair of Wastenet dated 11 May 2023

Moved Mayor Clark, seconded Cr Campbell and **RESOLVED** that the Tabled Items, 'Minutes of the Meeting of the Public Excluded Session of Waste Management Group (WMG) held on Monday 18 May 2023' and 'Letter from Mayor Clark to Cr Keith Hovell, Chair of WasteNet dated 11 May 2023' be accepted in public excluded session.

7. Solid Waste Update

A4566001

Ms Annie Benjamin was in attendance to speak to the report.

Noting that in 2016 the average was 650 kilograms per household in 2016, a query was raised about the current tracking against the target. Ms Benjamin said that it was around

430 kilograms for the last quarter, and that the waste landfill was currently tracking in line with target.

Moved Cr Bond, seconded Mrs Coote and **RESOLVED** that the Infrastructure Committee:

1. Receives the report "Solid Waste Update".
2. Notes the waste to landfill data and trends.
3. Notes the recycling data and trends.

8. Temporary Road Closures - Great South Street Activation Event

A4580039

Mr Andrew Cameron was in attendance to speak to the report and noted an ongoing issue around the joint duties of Council and event organisers. It was important that Council understood the associated risks, risk management, and who would be responsible for risk management in relation to an event. He said that he was working with the roading team to address those issues.

Note: Cr Arnold joined the meeting at 3.08 pm.

In response to a query about what the actual event was, Mr Cameron said that a group called Flame Entertainment would perform a fire dance and it could be three or four performances during the planned time for the event. Great South had plans in place to manage risks and crowd control, and that they expected approximately 1500 people to attend the event.

In response to a query about who had the ultimate responsibility for this event, Mr Cameron said that Great South was a separate entity and would be responsible for the event. There could be potential crowd control issues however, Great South had traffic and crowd control plans, and that ICL was also aware of the event.

Mayor Clark provided background information on street activation events organised by Great South and stated that the outcome of the survey, between the age group of 18 to 30 years old, mentioned that they needed more street events.

In response to a query about whether the committee was approving the event through the approval of the road closure, Mr Michael Day said that Council was acting as a regulator of the road closure and also approving the event as Council has a contract with Great South for activation events, and that this was the first event under this contract. He said that the Committee's concerns about the process in place to approve events were noted and those would be considered to develop a process to approve future activation events.

In response to a query about the impact on the occupants of the car parks in the area that would be affected by the event, Mr Cameron said that Great South had communicated with the affected car parks owners/users and was working on these traffic management issues. Mr Day clarified that the responsibility sat with the event coordinator to communicate with the affected parties regarding the traffic management plans.

Moved Cr Soper, seconded Cr Bond and **RESOLVED** that the Infrastructure Committee:

1. Receives the report titled "Temporary Road Closures – Great South Street Activation Event".
2. Resolves that the proposed event outlined in the report will not impede traffic unreasonably.
3. Approves the temporary road closures for Esk Street, from Dee Street to Kelvin Street, on Friday, 16 June 2023 from 5.30 pm to 10.30 pm, as permitted under the Local Government Act 1974 (Section 342 and Schedule 10).

Note: The meeting adjourned at 3.25 pm and reconvened at 3.31 pm.

9. Water Supply - The Search for Another Source

A4566705

Mr Michael Day spoke to the report, and noted apologies from the infrastructure team. He said that the key reasons for the funding request were that it allowed for additional planning and also to obtain consent from Environment Southland. He also noted that the wording 'emergency water supply' would be changed to 'additional water supply' because when it becomes connected to the water system, it would need to keep running and circulating.

In response to a query about routine supply, Mr Day provided clarification that it was required to be connected and running, but not at the full capacity as that of an additional water supply. It would not be a routine supply.

It was noted that the third bore would confirm the drinking water quality and Council could move forward for consent from Environment Southland.

In response to a query around what the third bore provided in terms of satisfying Council that they met the exploration objective, Mr Day said the question was related to the Environment Southland processes, and he said he would report back to the Committee around this query.

The importance of having a reliable water supply in terms of large industries coming to Invercargill was noted. It was noted that there were ongoing discussions with potential industries that were looking for reliable water supply and storage in Invercargill and Southland.

Moved Cr Soper, seconded Cr Kett and **RESOLVED** that the Infrastructure Committee:

1. Receives the report "Water Supply – The Search for Another Source"; and
2. **Recommend to Council** that Council approve the reforecasting of the Alternative Water Supply project to bring \$700,000 forward to 2023/24 for additional investigation works.

10. Proposed Road Name – 360 Bainfield Road and 83 Inverurie Drive

A4396602

Mrs Patricia Christie spoke to the report and said that the proposed names were in compliance with the policy and that only three names had been received.

Mr Michael Day was invited to speak to the report and he clarified that this request and subdivisions were received before the current policy which included the Te Reo name option was in place. He also said that proposed names received were consistent in nature to the subdivision names which already existed.

Moved Cr Pottinger, seconded Mayor Clark and **RESOLVED** that the Infrastructure Committee:

1. Receives the report titled "Proposed Road Name – 360 Bainfield Road and 83 Inverurie Drive".
2. Approve:
 - a. Huntly for the road running east from Inverurie Drive.
 - b. Johnston for the road running west from Inverurie Drive.
3. Note that Council will have the opportunity to consider the Road Naming Policy in coming months.

Note: Mrs Coote voted against the motion.

11. Activities Report

A4550406

Mr Michael Day was in attendance to speak to the report.

The Committee discussed the CCTV project and noted that the next step would be the start of the tendering process.

The Chair said that he had some specific questions about the heritage component of the Stormwater Upgrade on Dee Street.

A query was raised if there had been any changes to light bulbs for street lights, noting the darkness of the street lights. Mr Day said the query was noted and the matter would be brought back to the committee.

The Chair noted that Cr Stewart was not a member of the Committee to move or second a motion.

Moved Cr Bond, seconded Cr Kett and **RESOLVED** that the Infrastructure Committee:

1. Receives the report "Activities Report".
2. Notes the outcome of the review of the traffic management approach for Dee Street Stormwater Upgrade works that existing arrangements are to remain in place.
3. Notes the outcomes of the 15 May 2023 WasteNet Advisory Group meeting.

12. Minutes of the Waste Advisory Group (WasteNet) Meeting held on Monday 15 May 2023 A4630278

Mayor Clark provided an update about his request to the Waste Advisory Group and Waste Management Group regarding the matter of glass separation and two requests for funding for the plastic palletisation plant in Makarewa.

It was noted that cost and available alternatives for glass separation would be resolved as a part of the process for the Long-term Plan, and further noted the issues of not separating glass.

In relation to the funding requests, Mayor Clark said that the Government would fund 50% and councils need to fund the remaining 50%. There was economic development attached along with environmental development. The Government would not fully fund the development of the plant only for the reason of economic development.

Moved Cr Campbell, seconded Mrs Coote and **RESOLVED** that the minutes of the Waste Advisory Group (WasteNet) Meeting held on Monday 15 May 2023 be received.

13. Public Excluded Session

Moved Cr Campbell, seconded Cr Arnold and **RESOLVED** that the public be excluded from the following parts of the proceedings of this meeting, namely:

- a. Confirmation of Minutes of the Public Excluded Session of the Infrastructure Committee held on 2 May 2023
- b. Minutes of the Meeting of the Public Excluded session of Waste Advisory Group (WasteNet), held on Monday 15 May 2023

The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under Section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:

General subject of each matter to be considered	Reason for passing this resolution in relation to each matter	Ground(s) under Section 48(1) for the passing of this resolution
(a) Confirmation of Minutes of the Public Excluded Session of the Infrastructure Committee held on 2 May 2023	Section 7(2)(i) Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)	Section 48(1)(a) That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7
(b) Minutes of the Meeting of the	Section 7(2)(i)	Section 48(1)(a)

Public session of Waste Advisory Group (WasteNet), held on Monday 15 May 2023

Enable any local authority holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)

That the public conduct of this item would be likely to result in the disclosure of information for which good reason for withholding would exist under Section 7

There being no further business, the meeting finished at 4.50 pm.

PROPOSED RIGHT OF WAY NAME – 17 NIVEN ROAD

To:	Infrastructure Committee
Meeting Date:	Tuesday 11 July 2023
From:	Christine North – Property Database Officer
Approved:	Patricia Christie - Acting Group Manager - Finance and Assurance
Approved Date:	Tuesday 27 June 2023
Open Agenda:	Yes
Public Excluded Agenda:	No

Purpose and Summary

To name proposed Right of Way in relation to the subdivision of 17 Niven Road, Lot 1 DP 4004), RMA/2022/296, Seven Lot Subdivision - Otatara Zone.

Recommendations

That the Infrastructure Committee:

1. Receives the report titled "Proposed Right of Way Name – 17 Niven Road".

Recommend to Council:

2. The proposed Right of Way be named – Oakridge Way.

Implications and Risks

Strategic Consistency

Invercargill City Council is responsible for the allocation of road names and numbers within the City. This is an important function because it allows residents, visitors and emergency services to locate properties with the minimum of inconvenience. In issuing rural and urban road names and numbers, Council is guided by the Australian/New Zealand Standard (AS/NZS 4819:2011) Rural and Urban Addressing.

Council has a Road Naming Policy, which came into effect from 1 June 2022.

The intent of the Road Naming Policy is for all road naming applications to be submitted with three names that comply with the policy (with a preferred option) for Council to consider. The policy sets out the requirements that must be met for a name to be compliant. These include names that do not closely resemble other names in either spelling or pronunciation within the city and the name should have significant local content or meaning.

Financial Implications

Not applicable.

Legal Implications

Not applicable.

Climate Change Implications

Not applicable.

Risk

Not applicable.

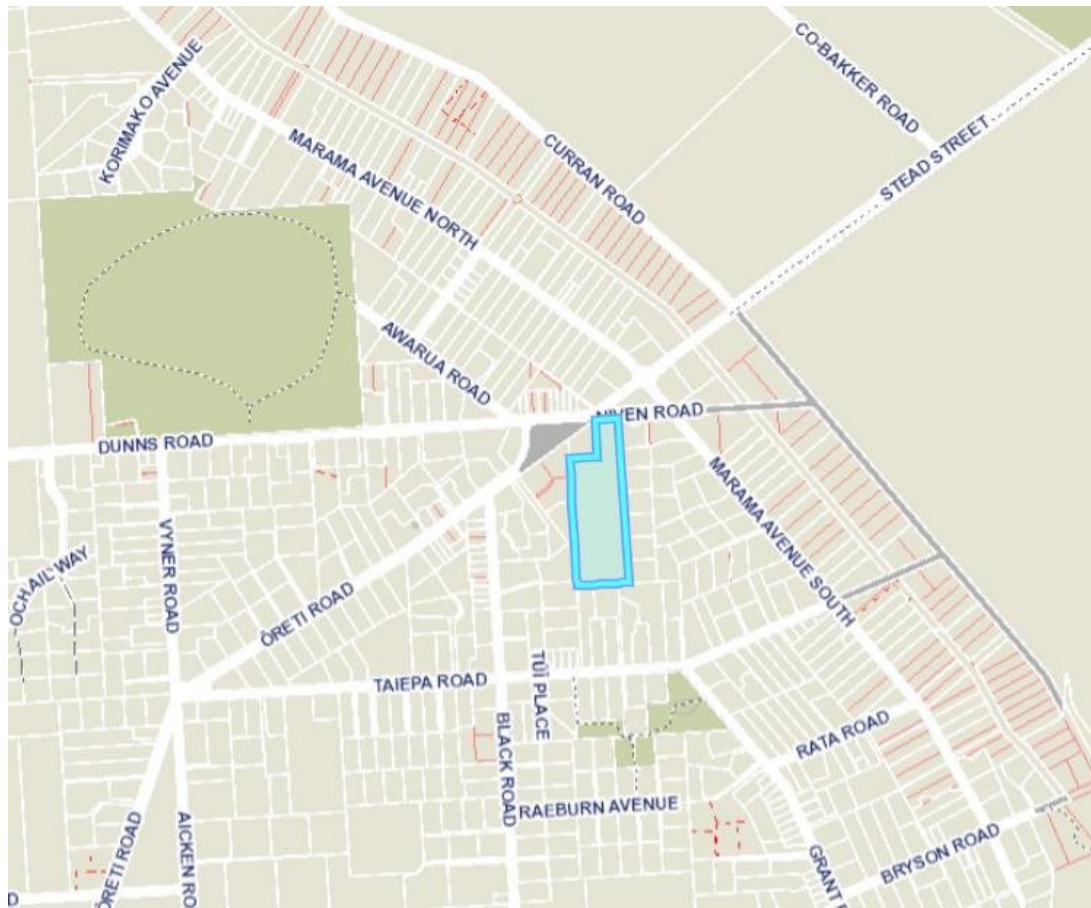
Background

Right of Way in relation to the subdivision of 17 Niven Road Lot 1 DP 4004), RMA/2022/296, Seven Lot Subdivision - Otatara Zone.

Applicant: Anneke Agatha Dorothee Campbell

Owner: Anneke Agatha Dorothee Campbell and Derek Colin Campbell

Location Plan:



Issues and Options

Analysis

The applicant submitted the following names in order of preference:

1. **Oakridge Way**

This is our preferred option as our property has been named Oakridge from when it was purchased in 2001. We bred Sports Ponies that had Oakridge before their name and Oakridge became our name after an Oak was planted on the ridge at the back of the property. This tree will hopefully be there for the next 100 years plus.

2. **Campbell Way**

When we purchased our land back in 2001 it had been on the market for 3 years as nobody was interested in buying the land. With hard work, drainage and improvements through cultivation we developed a property that then influenced many landowners in Otatara to look at their land and develop it suitable for subdivisions. (Campbell surname of Owner).

3. **Phoenix Way**

As the Phoenix bird rising from the ashes, Oakridge has developed from land that was in very poor condition to what it is today and it will continue to be enhanced.

Significance

Not applicable.

Options

Not applicable.

Community Views

Not applicable.

Next Steps

Once the name is approved, notification of new name for the proposed right of way will be sent to the following organisations:

- NZ Post
- PowerNet
- LINZ Addressing
- Environment Southland
- Chorus
- Kiwi Maps
- AA Travel

- Blue Star Taxis
- Wise Publications
- TerraLink

This will also be added to Council's database ready for the subdivision to be completed.

Attachments

None.

STOPPING OF ROAD – 11 CATHERINE STREET, INVERCARGILL

To: Infrastructure Committee

Meeting Date: Tuesday 11 July 2023

From: Russell Pearson – Manager Strategic Asset Planning
Heather Guise – Property Portfolio Manager

Approved: Erin Moogan - Group Manager - Infrastructure Services

Approved Date: Thursday 6 July 2023

Open Agenda: Yes

Public Excluded Agenda: No

Purpose and Summary

A request has been received to purchase the portion of unformed legal road at 11 Catherine Street, Invercargill shown in this report. This land is not required for roading activities.

This Committee's approval is sought to commence the formal process required under the Local Government Act to stop this unformed road.

Recommendations

That the Infrastructure Committee:

1. Receives the report "Stopping of Road – 11 Catherine Street, Invercargill".
2. Notes that the portion of unformed road shown in Appendix 1 is not required for roading activity.
3. Approves the commencement of the consultation to consider stopping that portion of unformed legal road measuring approximately 75.5m² pursuant to Section 342 of the Local Government Act 1974.

Background

Council has received a request to consider if the portion of unformed road adjacent to 11 Catherine Street, Invercargill can be stopped. The area concerned is shown on the attached aerial photograph - Appendix 1 (A4669005).

This request has come from the owner of the adjacent property who wishes to purchase the land in order to legalise the current encroachment should the road stopping be permitted.

The unformed road is not required at any time in the future for any roading activity.

Issues and Options

Analysis

The key part of the process is to consider the wider public interest in stopping the road, the impact this may have beyond any adjoining landowner's interests, and the non-permitted encroachment which has occurred.

Following consultation, this will be reported back to Council. If no objections are received and Council approves, then the formal process to stop the road and disposal would proceed.

It is usual that an applicant to purchase would meet the cost of this process and purchase the lot once it is stopped. In this instance however, once the road is stopped Council approval will be sought to dispose of the land.

Significance

This is a minor issue and it is not anticipated the road stopping process would trigger Council's Significance Policy.

Options

1. **Do Nothing** – Council would remain with a piece of unformed legal road which it is required to maintain and upon which encroachment from the adjoining land owner has taken place requiring to be rectified.
2. **Start Process To Stop Road** – This is the preferred option. Council would determine through public consultation to stop the road with a view to disposal of the land. This option will remove any ongoing maintenance costs and negate the encroachment issue.

Community Views

The road stopping process requires a public consultation process including seeking input from local Iwi and the New Zealand Walking Access Commission.

Implications and Risks

Strategic Consistency

The recommended option meets Council's strategic outcomes.

Financial Implications

All costs associated with stopping of the road and amalgamation to the applicant's current land at 11 Catherine Street, Invercargill will be met by the applicant.

Legal Implications

If Council is agreeable to this stopping, then the formal consultation process (as set out in the Tenth Schedule of the 1974 Local Government Act) can commence. Part of this process is also to seek input from the New Zealand Walking Access Commission who has interests in protecting access to recreational facilities.

Climate Change

If the unformed road was stopped, there are no immediate implications in regard to climate change as the current land use would remain.

Risk

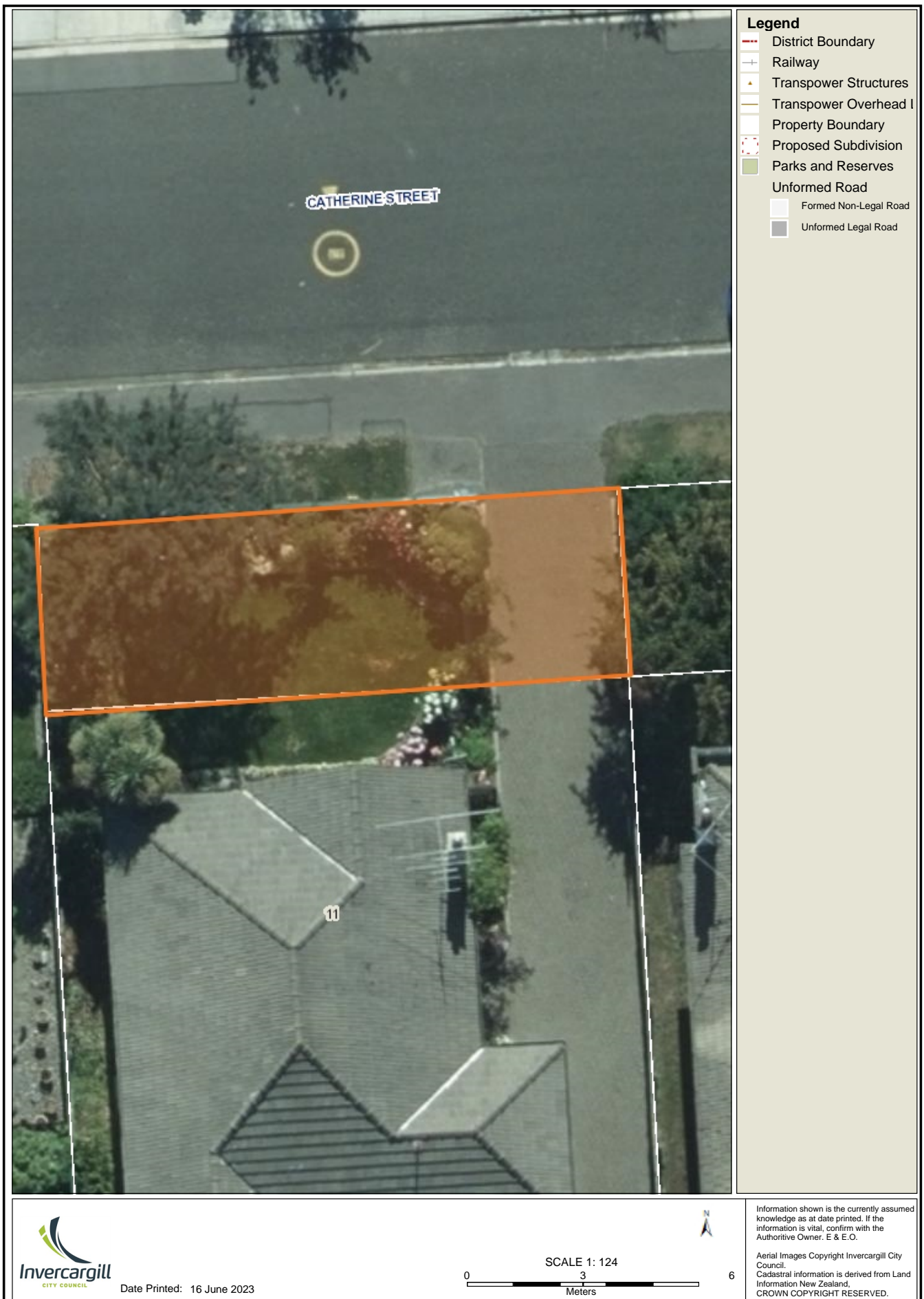
There are no new risks identified with the proposed road stopping process as the process can be halted and the land remains in its current status as unformed road.

Next Steps

If approved, staff would start the advertising and public notification process and upon that conclusion, report back to Council.

Attachments

1. Appendix 1 - Aerial photograph of the land (A4669005).



CITY CENTRE ACTIVATION PLAN

To: Infrastructure Committee

Meeting Date: Tuesday 11 July 2023

From: Steve Gibling – GM Leisure and Recreation

Approved: Michael Day - Chief Executive

Approved Date: Wednesday 5 July 2023

Open Agenda: Yes

Purpose and Summary

The purpose of this paper is to provide the Infrastructural Services Committee with a quick overview of the events planned as part of the City Centre Activation programme, in support of the subsequent papers that request road closures to the Don and Esk Street Areas.

Recommendations

That the Infrastructural Committee:

1. Receives the report "City Centre Activation Plan".

Background

ICC has a targeted rate for the delivery of City Centre activities to promote a positive, sustainable, engaging city centre shopping, business, and leisure environment.

ICC has contracted these duties to Great South with the aim to:

- Increase the number of people visiting the CBD to support the development of the vibrancy of the City Centre.
- Identify and create activity within the CBD aligned with Council's goal of 'Our City with Heart, He Ngakau Aroha'.
- Provide event management services, marketing, and promotion to enhance and grow knowledge of the City Centre offerings.
- Collaborate with CBD retailers/businesses on economic/regional development projects to achieve more together.

This Agreement has transferred from the Infrastructure team to the Leisure and Recreation group. This commenced on 1 July 2023 and ends on 30 June 2024. The Agreement will be reviewed annually by ICC and Great South to ensure the agreement and services meet the funding

parameters and objectives of this service as set out in the agreement and its supporting documents. For a full list of events, the site <https://southlandnz.com/events/events-southland/> contains all of the events planned within the region.

Programme of Events

The delivery period of events is from 1 July 2023 to 31 December 2023 and each of these events will require road closure.

Event: FIFA Women's World Cup Live Screening of Final

Timing: Sunday 20 August, Don Street

Hosted by Great South and Invercargill City Council in partnership with Invercargill Licensing Trust.

- **Purpose:** To create vibrance in the CBD that will bring the community together to support a significant world event that the community can come together and celebrate.
- **Event Vision:** Two screens will be set up for the game to be projected onto, and tables will be positioned on the road for groups of spectators to mingle and enjoy a drink and warm meal, with a DJ providing ambient music for the 30 minutes prior to the event starting.
- **Outcomes:** Expected attendance of 1,000 - 2,000 largely impacted by the teams competing and the weather.
- **Target audience:** young adults and families with older children that follow and play football.
- **Regulatory:** Road closure - on Don Street between Dee Street and Kelvin Street from Sunday 20 August 5.30 pm to Monday 21 August 2.30 am. Alcohol licence – there will be a licenced area for the event - Great South will be applying with their event partners.

Event: Night Food Market on Esk

Timing: Friday 8 September, Esk Street

Hosted by: Great South and Invercargill City Council (partner to be confirmed).

- **Purpose:** To encourage people into the CBD to create a vibrant inner city evening feel that encourages a new style of dining and a reason to linger in the CBD at the end of the business day.
- **Event Vision:** To position a variety of food beverage trucks/stall holders on the road, patrons will be able to relax on the available seating to enjoy their meal or choose to wander and mingle while enjoying ambient background music from a portable sound unit.
- **Outcomes:** Expected attendance of 2,000. Sense of community and enjoyment of being a part of a new experience.
- **Target Audience:** Families with young children, families of older children, youth meeting to socialise and young adults keen to enjoy a meal out at a more affordable price than other dining establishments in the CBD.
- **Regulatory:** Road closure on Esk Street between Dee Street and Kelvin Street Friday 8 September 5.30 pm – 9.00 pm.

Event: Night Food Market on Don

Timing: Friday 10 November, Don Street

Hosted by: Great South and Invercargill City Council (partner to be confirmed).

- **Purpose:** To encourage people into the CBD to create a vibrant inner city evening vibe that encourages a new style of dining and a reason to linger in the CBD at the end of the business day.
- **Event Vision:** To position a variety of food and beverage trucks on the road with tables and chairs set up on the street, patrons will enjoy their meal with ambient background music from a portable sound unit playing.
- **Outcomes:** Expected attendance of 2,000. Sense of community and enjoyment of being a part of a new experience.
- **Target Audience:** Families with young children, and families of older children, youth meeting together to socialise, and young adults keen to enjoy a meal out at a lower cost to dining establishments in the CBD.
- **Regulatory:** Road closure on Don Street between Dee Street and Kelvin Street Friday 10 November 5.30 pm – 9.00 pm.

Event: Street Dine Invercargill

Timing: Friday 1 December, Don Street

Hosted by: Great South and Invercargill City Council (partner to be confirmed).

- **Purpose:** To create vibrance in the CBD that will bring the community together to support a fundraising cause and experience a new way to dine in the city centre.
- **Event Vision:** A lunch event with the public purchasing tickets from participating restaurants to be treated to a white table 'long lunch' on the street. 5-6 restaurants will take part in the event and will serve directly from their Don Street establishments. There will be an MC providing entertainment and running an auction with proceeds going to a charity.
- **Outcomes:** Restaurants take pride in showcasing their menu and diners get to experience the first outdoor long lunch held in Invercargill. Outcomes will be linked to the Murihiku Southland food strategy, and we expect 300-400 tickets to be sold. Target audience: Corporates looking to hold a team or end-of-year function, groups of women 30-50 years in Invercargill for the day.
- **Regulatory:** Road closure on Don Street between Dee Street and Kelvin Street from 10.00 am – 5.00 pm.

TEMPORARY ROAD CLOSURES 2023

To:	Infrastructure Committee
Meeting Date:	Tuesday 11 July 2023
From:	Russell Pearson - Manager Strategic Asset Planning
Approved:	Erin Moogan - Group Manager - Infrastructure Services
Approved Date:	Thursday 6 July 2023
Open Agenda:	Yes
Public Excluded Agenda:	No

Purpose and Summary

Council has received a number of requests for temporary road closures for 2023 as listed in Appendix 1 (A4701914).

These events with well organised traffic management will not unreasonably impede traffic in these areas.

Council is being asked to consider utilising its powers under Local Government Act 1974 (Section 342 and Schedule 10) to temporarily close streets.

This Act allows Council to close a road for an event (after consultation with the NZ Police and Waka Kotahi) where it decides the closure will not unreasonably impede traffic.

Recommendations

That the Infrastructure Committee:

1. Receives the report titled "Temporary Road Closures 2023".
2. Resolve that the proposed events outlined in the Appendix 1 (A4701914) will not impede traffic unreasonably.
3. Approves the temporary road closures in Appendix 1 as permitted under the Local Government Act 1974 (Section 342 and Schedule 10) subject to receiving a safety plan for each event.

Background

Council has received requests from both the Tuturu Charitable Trust and the City Centre Coordinator at Great South for road closures during 2023.

The Local Government Act 1974 Section 342 allows Council to close a road for an event (after consultation with the NZ Police and Waka Kotahi New Zealand Transport Agency), which it decides will not unreasonably impede traffic. Consultation with the public under this legislation is not required but it is desirable wherever possible to have support of the adjacent businesses so they are aware of the impacts the temporary closure will have.

Council has previously discussed the overlapping duties of Council and event organisers. It is seen as appropriate that safety plans be requested for each event to minimise Council risks to this closure. Safety plans will be requested for each event.

Issues and Options

Analysis

The events will have minimal impact on traffic movement in the streets for the times requested.

Good traffic management will be provided and with the planned times of day, and the city grid roading network there are many options and alternative routes available.

A request has been made to the NZ Police and Waka Kotahi and they have no objection to these events.

Business access will be managed by the event organisers. The closing of the street is necessary to ensure appropriate safety of participants in this community event.

Significance

This request is not significant in terms of Council policy.

Options

The options which exist are to approve or decline the request. The streets planned to be closed are seen as appropriate to effect a safe area for the activities.

Community Views

This legislation does not require community views to be sought however as these are public events the Event Organisers will be asked to liaise with the business and accommodate their needs wherever possible to minimise disruption.

Implications and Risks

Strategic Consistency

This report is consistent with good governance of our roads.

Financial Implications

No direct financial implications.

Legal Implications

This report looks to ensure that the legal process of temporarily stopping a road for an event is followed.

Council is considering how it manages its obligations under health and safety legislation and sees a safety plan is appropriate to manage that risk.

Climate Change

This report does not have a direct Climate Change impact.

Risk

The key risk noted is to ensure that good traffic management is delivered by an experienced contractor. The Event Organiser must have a suitable person prepare an adequate safety plan for the event organiser which documents and meets the needs for the event they are organising (ie fit for purpose) and those inherent risks created.

Council staff are working through the health and safety risks that may arise as a result of overlapping PCBU duties.

Next Steps

If the closure is approved, the event organisers will be advised and a traffic management contractor engaged by the organiser. A safety plan will be received by Council. A public notice would be published in a local newspaper and information posted on the ICC website.

Attachments

Appendix 1 – List of Temporary Road Closures (A4701914)

APPENDIX 1**List of Temporary Road Closure Requests**

Event	Streets to Close	Start	Finish
15 July 2023			
Matariki Festival (Tuturu Charitable Trust)	<ul style="list-style-type: none">Gala Street and Gala Circle, from Deveron Street to Jed Street	3.00pm, Friday, 14 July 2023	9.00am Saturday, 15 July 2023
		3.00pm, Saturday, 15 July 2023	9.00am Sunday, 16 July 2023
20 August 2023			
FIFA World Cup Public Viewing Event (Great South)	<ul style="list-style-type: none">Don Street, from Dee Street to Kelvin Street.	5.30pm Sunday, 20 August 2023	2.30am Monday, 21 August 2023
8 September 2023			
Night Food Market Event (Great South)	<ul style="list-style-type: none">Don Street, from Dee Street to Kelvin Street.	5.15pm Friday, 8 September 2023	8.45pm Friday, 8 September 2023
10 November 2023			
Night Food Market Event (Great South)	<ul style="list-style-type: none">Don Street, from Dee Street to Kelvin Street.	5.15pm Friday 10 November 2023	8.45pm Friday 10 November 2023

CCTV UPDATE - JUNE 2023

To:	Infrastructure Committee
Meeting Date:	Tuesday 11 July 2023
From:	Russell Pearson Manager – Strategic Asset Planning
Approved:	Erin Moogan - Group Manager - Infrastructure Services
Approved Date:	Thursday 6 July 2023
Open Agenda:	Yes
Public Excluded Agenda:	No

Purpose and Summary

This report provides an update on the CCTV project. It provides the proposed dates for the system and the approach being considered. The team are aware of the urgency in getting a solution but it is important that the network design is robust and a fair process for procurement is established. Good products are needed to be selected which will deliver the desired outcomes.

Recommendations

That the Infrastructure Committee:

1. Receives the report "CCTV Update – June 2023".
2. The Committee notes that the project is looking to have a number of cameras for the City Centre be installed before Christmas 2023.

Background

This report looks to update and advise on the next steps on the project.

The consultant has scoped the works needed to deliver the project and a staged approach is considered as being the most effective way to get the system up and running at the earliest time.

The planned approach to procuring the solution is based around two streams of concurrent work:

1. Network design
2. Vendor selection and delivery, including hardware supply and installation.

The network design involves building the data network (fibre and wireless solutions) for the onsite cameras to connect to and move the information to the server storage device. Council has access to much of its own cabling which will be an advantage. This side of the work stream

has high demands on the information technology input and will also require the purchase of some specific switches, radio etc.

The vendor work stream will involve a request for information via a public tender where the intention is to use external expertise to select a limited number of vendors whom would then provide more information, pricing and a presentation/demonstration of their products and capabilities.

This would include VMS server and software which is used to manage the cameras. The vendor will also be asked to offer a range of local suppliers who they will work with to install, and then maintain the cameras once they are commissioned. These two elements will be coordinated. The platform established with the software and network will allow the ongoing expansion of the network. The structure will be established and proven which will allow adding cameras so long as the data can be delivered.

The ability to control access (for privacy purposes) is controlled by the software. It will be expected that the policy will have process for who can access and view the imagery.

The timing of the installation is planned as follows:

Activity	Indicative Dates
Network	
Network Design	1 August – 30 September
Network Components Purchase	1 September – 30 September
Network Implementation	1 October – 20 November
Vendor and Hardware	
RFI for Vendor and Suppliers	August - October
Presentations from Selected Suppliers	11 September
Selection and Contracting	18- 30 September
Supply of Components	October – mid November
Stage 1 – Implementation City Centre	November - December
Stage 1 - Commissioning	December
Stage 2 – Remaining CBD	Jan - Feb
Stage 3 – South City - Bluff	Feb - March

The staging and exact timeline will depend on the network ease of implementation as some areas will be much easier to complete. Some earlier implementation is possible however the supply chain for some elements (of which are yet to be selected) will determine the final delivery schedule.

The target is to have as many cameras installed and running by Christmas 2023.

Risks

The major risk identified is any limitation in the supply lines for products. There is wide interest but most product is sourced from overseas and is subject to shipping and delivery issues.

Locally the technical expertise and IT availability will be an ongoing challenge to be able to receive, setup and make the cameras go.

The technology whilst used elsewhere in New Zealand may need additional skill training for both Council and contractor staff.

Our Consultant is involved in a number of projects and this timeline will have pressure of delivery for all parties.

The Policy needed to support this will also need to be developed and delivered in this time.

Next Steps

Work continues with some speed with the consultant and Council Procurement Team to start the public offering of the elements needed. There are a number of other Councils also doing similar projects and this is putting some pressures on the wider industry and the supply lines. Local suppliers will need to be upskilled where new products are being selected and stronger relationships formed.

Attachments

None.

ACTIVITIES REPORT

To:	Infrastructure Committee
Meeting Date:	Tuesday 11 July 2023
From:	Infrastructure Services Managers
Approved:	Erin Moogan - Group Manager - Infrastructure Services
Approved Date:	Thursday 6 July 2023
Open Agenda:	Yes
Public Excluded Agenda:	No

Purpose and Summary

This report provides an update on a wide range of activities across Council.

Recommendations

That the Infrastructure Committee:

1. Receives the report "Activities Report".
2. Notes the timeline provided for Dee Street Stormwater Works.
3. Notes the data and trends across 3 Waters, Roading and Housing.

Public Transport

Council has a number of important changes for passengers to help keep affordable public transport in Invercargill.

The Government-led Community Connect programme is one of these changes and provides a 50% concession on public transport services for Community Services Cardholders when you have loaded the Community Connect Concession on their BeeCard.

The other significant changes are:

Child/ Youth (0-12 years old)	FREE
Youth Plus (13-24 years old)	\$1.10 per trip
Adult or unregistered Bee Card	\$2.20 per trip

Budget 2023 confirmed support for Public Transport Authorities in implementing a nation-wide rollout of new fare options to promote travel.

People are able to continue to pay cash for their bus rides at \$3 per trip (the fare for all users).

Stormwater Upgrade – Dee Street

Currently we have two teams working simultaneously, one team laying pipes between the bridge and the intersection of Dee and Duke Streets and the other working on constructing the outlet.

Timeline for works in this area:

Expected completion by mid June 2023	Laying of pipe between the bridge and the intersection of Dee and Duke Streets
Expected completion by late June 2023	Outlet works complete
Mid June to mid August 2023.	Duke Street closure and laying pipes further south between Duke Street and Lewis Street
Mid August to early September 2023	Lewis Street closure and laying pipes between Lewis Street and Herbert Street
Mid September to late September 2023	Construction along Herbert Street
October 2023	Construction of laterals along Herbert Street, abandonment/grout filling and other site works including disestablishment. This includes 1 month delay due to archaeological investigations.

See Appendix 1 (A4733405) for map.

We continue to work with Fulton Hogan and NZTA on traffic management in this area to ensure motorist safety and minimise as far as possible impacts on access to businesses.

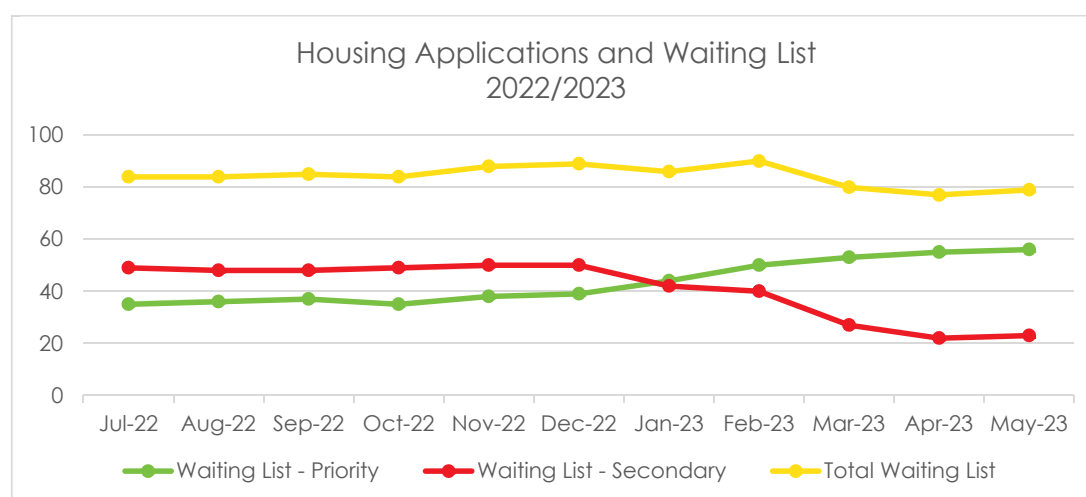
ICC has obtained discharge consent from Environment Southland (ES) for releasing water through the new outlet into the coastal marine environment. ICC needs to submit a report to ES confirming the discharge quality has not deteriorated once the new outlet is commissioned. ICC is currently complying with other conditions of the consent.

We are currently not on the same alignment as the historic drain encountered early in the project. The ground conditions continue to be challenging, trenches have been widened to create battered slopes to achieve stability.

Aged Care Housing Snapshot

2	Housing Applications Received
10	Housing Enquiries Received
2	Housing Tenancies Vacated
2	Housing New Tenancies
79	Current Housing Waiting List (Priority and Secondary Combined)

While the overall waiting list has dropped over the past few months due to applicants who had been on the secondary list no longer requiring accommodation, there has been a steady increase of applicants on the Priority Waiting List due to the low numbers of vacated tenancies.



	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23
Waiting List - Priority	35	36	37	35	38	39	44	50	53	55	56
Waiting List - Secondary	49	48	48	49	50	50	42	40	27	22	23
Total Waiting List	84	84	85	84	88	89	86	90	80	77	79
Applications Received	4	2	3	3	6	4	5	6	1	4	2
Enquiries Received	8	8	9	5	6	4	6	0	7	6	10
New Tenancies	1	2	1	2	3	3	1	0	1	0	2
Tenancies Vacated	1	4	2	2	1	0	1	1	2	0	2

Explanation to Trend

While the overall waiting list has dropped over the past few months due to applicants who had been on the secondary list no longer requiring accommodation, there has been a steady increase of applicants on the Priority Waiting List due to the low numbers of vacated tenancies.

Three Waters Maintenance Contract Snapshot

No major events to report this month.

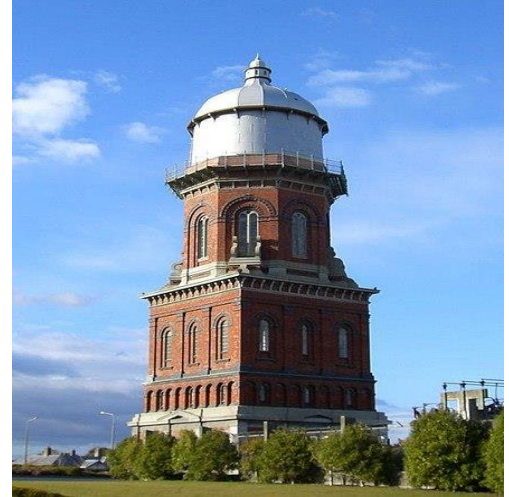
192 Work orders issued.

133 Routine work orders issued, 82 complete and 51 due for completion in the month of June.

13 Planned work orders issued, all completed in the month of May.

30 Urgent work orders issued, 26 complete and 4 due for completion in the month of June.

16 Emergency work orders issued, all completed in the month of May.



67 - Reticulation Water

- 3 - Connections New/Replacement
- 7 - Connection Repairs
- 21 - Valves
- 14 - Water Meter Reading
- 2 - Water Hydrant
- 5 - Watermain
- 4 - Watermain Flushing
- 11 - Water Toby Locates

77 - Foul Sewer

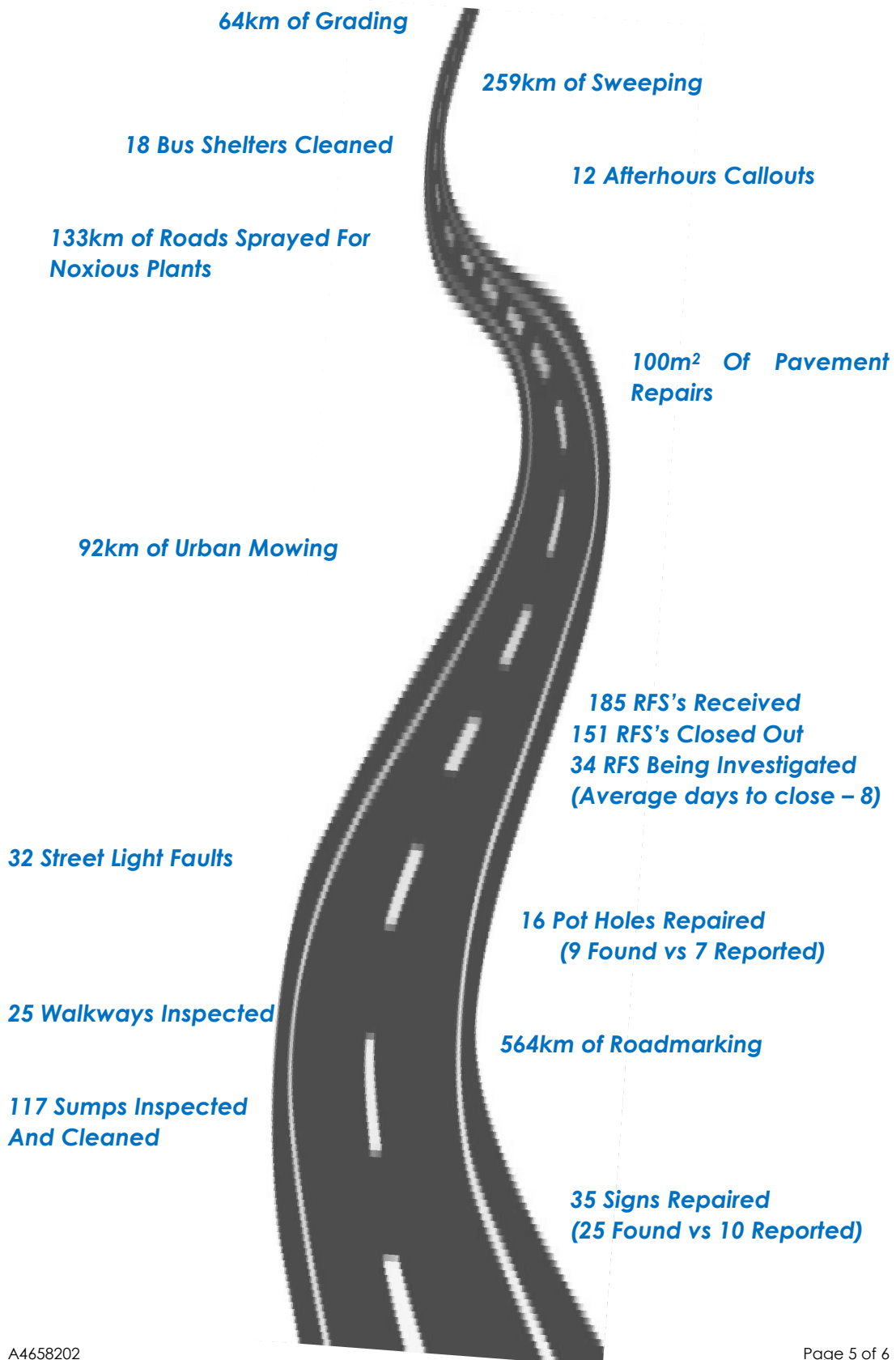
- 9 - Mains Blockages and Cleaning
- 1 - Mains Repair
- 1 - Spillage Clean Up
- 55 - CCTV Mains
- 1 - Trace Main
- 2 - Manhole Inspections/Repairs
- 1 - CCTV Connection
- 5 - Connection Blockages Repair/Replacement
- 7 - Connections Blockages
- 2 - Pump Main Valve Repair

48 - Stormwater

- 23 - CCTV Mains
- 3 - Manhole Maintenance
- 4 - Ditches/Channel
- 5 - Mains Blockages and Cleaning
- 4 - Mains Repair
- 2 - Connection Repair
- 1 - Connection CCTV
- 1 - Cleaning Eye New
- 3 - Inlet/Outlet Cleaning
- 2 - Spillage Clean Up



Road Corridor Maintenance Contract Snapshot



Attachments

Appendix 1 – Dee Street Stormwater Renewal July to October (A4733405).



Dee St Roadworks July to October 2023

A4733405



Mid June to mid
August 2023



Mid August to early
September 2023



Mid September to
late October 2023

STRATEGIC APPROACH – WASTE AS A RESOURCE

To: Infrastructure Committee

Meeting Date: Tuesday 11 July 2023

From: Annie Benjamin – Contracts and Commercial Manager

Approved: Erin Moogan - Group Manager - Infrastructure

Approved Date: Friday 7 July 2023

Open Agenda: Yes

Public Excluded Agenda: No

Purpose and Summary

This paper has been prepared to support a discussion for Council on whether Council should leverage the work of other authorities around New Zealand to guide next steps in the city's waste minimisation journey or whether a more comprehensive strategic review should be completed to inform next steps. The paper provides background information to inform that discussion.

Recommendations

That the Infrastructure Committee:

1. Receives the report 'Strategic Approach - Waste as a Resource'
2. Provides guidance to staff on whether a strategic review should be undertaken to inform next steps.

Background

In the last decade, waste management has moved from being a little known function of local authority's duties to now being recognised at the highest levels as an important part of moving New Zealand towards a sustainable future. Waste Minimisation is now a core function for local authorities. Southland territorial local authorities have a long history working together on waste issues. Southland's Waste minimisation strategy is driven by the Joint Waste Management and Minimisation Plan (WMMP) and is legislated via the Waste Minimisation Act (WMA) 2008, and forms part of the councils' Long Term Plans (LTP). The WMMP is actioned through the Waste Activity Plan (WAP). The WAP is, essentially, the list of activities and projects that are executed by staff. The current Waste Management and Minimisation Plan was amended, reviewed and adopted in 2020 following the completed waste assessment that is appended to this report (as per Appendix A).

Key Legislations

The Waste Minimisation Act 2008, The Local Government Acts 1974 and 2002, the Southland Waste Minimisation and Management plan and the Health Act 1956 give powers and responsibilities to Invercargill City Council to promote effective and efficient waste management and minimisation. The purpose of the Local Government Act is to “meet the current and future needs of communities for good quality local infrastructure, local public services and the performance of regulatory functions in a way that is cost-effective for households and businesses.” The Resource Management Act 1991 provides a framework to manage environmental, cultural, economic and social effects of resource use. Refer Appendix B for Relevant Legislations.

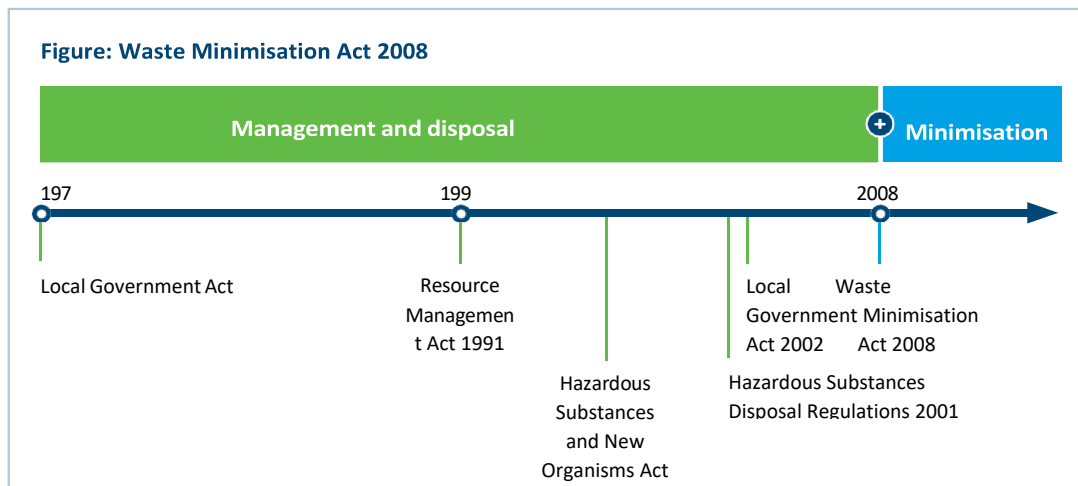


Figure 1: Waste Minimisation Act 2008

The Ministry for the Environment (MfE) are developing the new waste legislation to replace the current Waste Minimisation Act 2008 and the Litter Act 1979. The new legislation supports delivery of many significant initiatives including the waste strategy and waste actions of the Emissions reduction plan. With the changes, it is timely for the Invercargill City Council to adopt a strategic approach to waste that aligns with the new waste strategy to be more effective and efficient in our waste management and minimisation.

New Zealand Government's Strategic Direction of Waste

The New Zealand Government's newly released Te Rautaki Para Waste Strategy outlines a direction that puts the circular economy and product stewardship front and centre. It strives to integrate the circular economy into all aspects of society, including the production, use, and disposal at the end of life through to systems for resource recovery, planning, funding, investing, reporting, and behaviour change. The waste hierarchy has served as the underpinning tool throughout the strategy and legislation proposals, to explain the type of progress and action needed.

Waste Hierarchy

The waste hierarchy explains the different steps to reduce and manage waste. The most desirable steps are those at the top of the hierarchy, which avoid generating waste in the first place. They support the first circular economy principle. In the middle are techniques for keeping materials circulating in the economy, in line with the second circular economy principle. At the bottom are the techniques that are least desirable – destruction and disposal to landfill.



Figure 2: Waste Hierarchy (Source: Taking Responsibility for our Waste, 2023)

Strategic Approach - Waste as a Resource

Southland’s Regional Waste Strategy has an underlying vision that waste disposal represents “The effective and efficient stewardship of waste as a resource with a residual value to protect our health and environment”. Southland’s vision is to become a region that is a minimum waste producer, with businesses and individuals maximising opportunities to reduce, reuse, recycle and recover our resources. This will require radical changes in our behaviour over the next decade. It seeks to utilise the diverse skill set of local people involved in waste activities to identify, support and implement solutions that reduce waste, and convert waste to a resource.

Physical Infrastructure

In March 2021, the New Zealand Infrastructure Commission released a document summarising the Resource Recovery and Waste Sector State of Play. It noted that investment in resource recovery and waste solutions needs to be supported through good strategic planning, so the right approach is implemented in each community and region. Without certainty about the types and volumes of waste that is likely to be created in certain regions, the appropriate investment in resource recovery infrastructure may not occur. On the contrary, investment may occur in areas which might not be required if the quantity of waste is reduced.

New Zealand’s waste management infrastructure sits across the waste hierarchy comprising resource recovery (recycling and recovery) infrastructure and waste disposal (treat and dispose) infrastructure.



Figure 3: Waste Minimisation Hierarchy and Resource Recovery and Disposal Infrastructure (Source: Sector State of Play: Resource Recovery and Waste Discussion Document, March 2021)

Infrastructure Systems for Waste

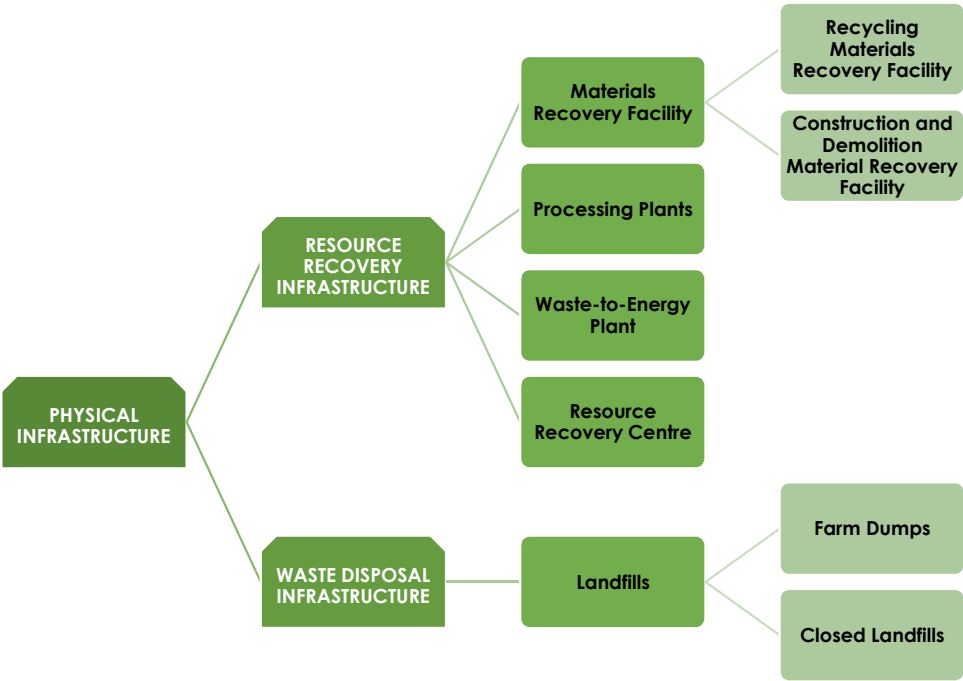


Figure 4: Physical Infrastructure Levels (Source: Sector State of Play: Resource Recovery and Waste Discussion Document, 2021)

Central Government Waste Actions

Central government (led by MfE) has introduced a number of actions aimed at accelerating New Zealand's transition towards a circular economy. Initiatives of relevance to Councils include:



Figure 5: Central Government Waste Actions (Source: MfE, 2022)

A Business Case Approach

The Better Business Case framework is advocated by the NZ Treasury for use by agencies to secure government funding and to ensure they are making the right decisions for infrastructure investments and services.

Waste matters and recycle processing has been a controversial issue for Invercargill in the past. It is important that elected members, the community and staff are clear and aligned on exactly what outcomes we want to achieve from our broader waste services and what services we want to purchase prior to the development of any new long term contract.

We also want to ensure our decision making process is sufficiently robust to put the region in the best possible position to secure central government investment in new infrastructure particularly that associated with resource recovery and onshore processing of recyclable materials. Such investment would improve waste minimisation outcomes for the region as well as have the potential to bring economic diversity and job creation to the region.

The Better Business Case framework provides a clear process for decision makers and the community to set the direction of the project or activity. This is important in the waste management sector where it is useful to separate desired benefits (or outcomes) from technical solutions to deliver those benefits. The community and those in a governance role (elected members) are well placed to help define benefits or outcomes. Technical specialists - council staff, advisers and suppliers are best placed to identify and evaluate technical options such as technology, commercial/contracting models and risks associated with various options.

Relationships, Roles and Responsibilities

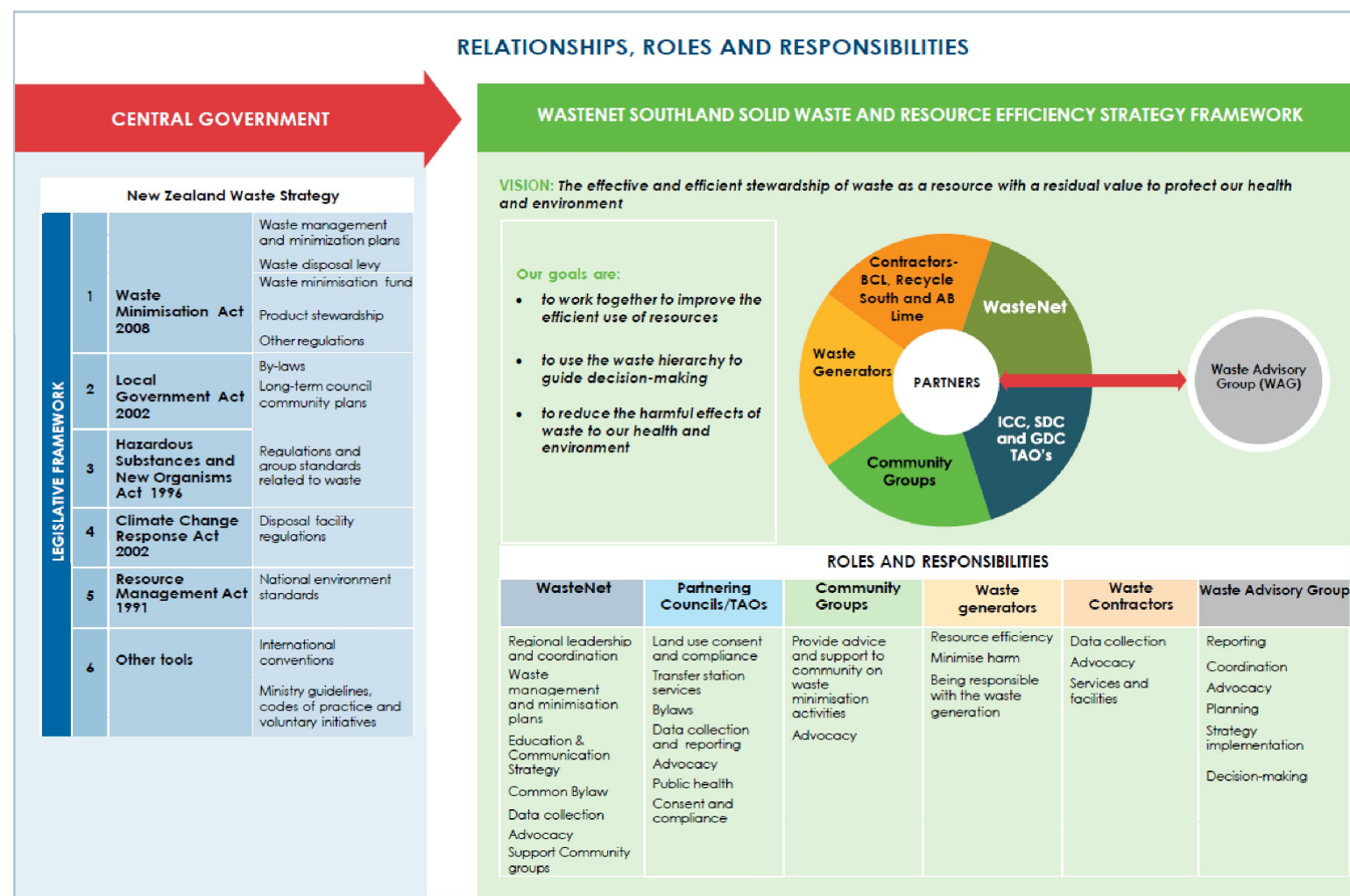


Figure 6: Relationships, Roles and Responsibilities

Key Focus Areas Based On The Resource Recovery Approach

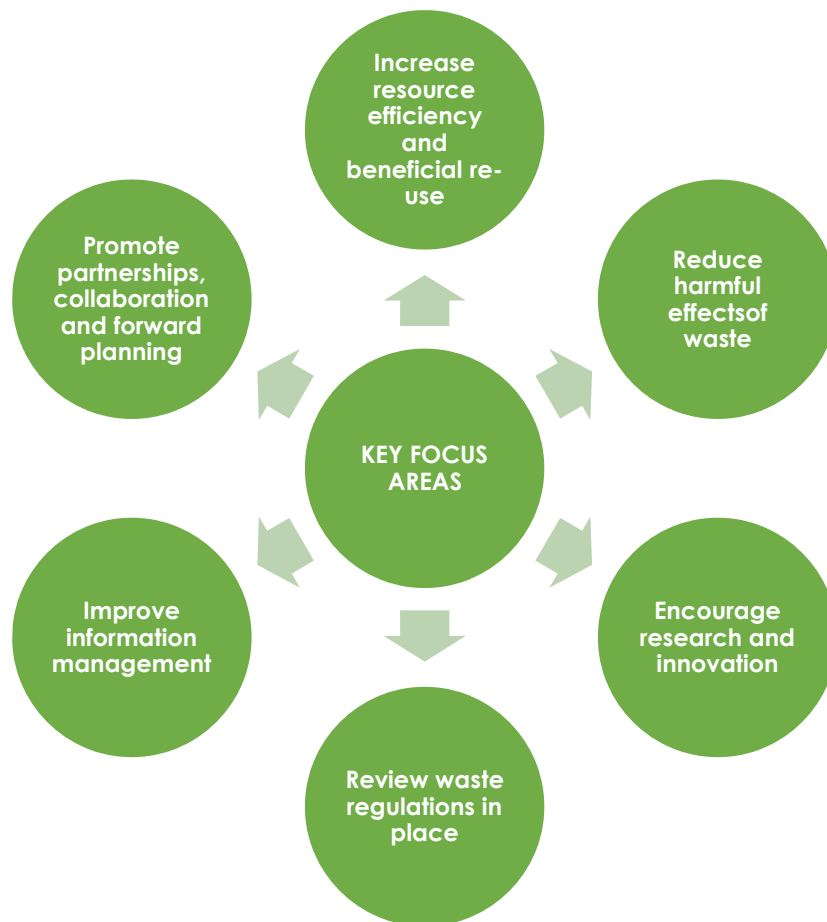


Figure 7: Key Focus Areas of the Resource Recovery Approach

Waste Activities

Education, Communication and Behaviour Change

The key strategy document behind the education, communication and behaviour change programmes is the "WasteNet Waste Minimisation Education and Communication Strategy (WWMECS)." This strategy provides a framework for delivering education initiatives and communication activities across Southland to induce behaviour changes, minimise waste and increase efficiency. The WWMECS delivery framework engages its identified target groups in a cohesive and constructive way, helping these groups to better understand the benefits of adopting a waste minimisation culture, recognise waste is a resource and take actions to improve the use of resources.

The three primary target groups, identified through the analysis of the landfill data, to facilitate behaviour change outcomes are:

- i. Residential
- ii. Schools
- iii. Businesses

The fourth target "industry associations", identified through secondary analysis, will work to influence regulation, government policy and public opinion on behalf of the collective needs and objectives of their members.

Delivery Framework Table

WasteNet Waste Minimisation Education and Communication Strategy				
Vision	By 2035, all residents and businesses in the Southland region to have a better understanding of waste minimisation and take voluntary actions towards minimising waste and progressively transitioning to a circular economy by 2050			
Aim	Promote waste minimisation and resource recovery through targeted and effective tools for education and communication that promote behavioural change.			
Objectives	1. Retain and recover as much as possible through reusing, repairing, refurbishing, remanufacturing, repurposing or recycling products and materials 2. Protection of human health 3. Protection of the environment 4. Improve business efficiency 5. Minimise the costs and impacts associated with Southland region's waste generation 6. Be an advocate for more sustainable waste management legislation, policy and practice			
Initiatives	School Waste Education	Business Programmes	Residential and Community Education and Development	Industry Associations
Targeted Objectives	Educating school children, teachers and parents to reduce, reuse, recycle and rethink. Educating teachers to incorporate waste management in their schools' daily operational activities	Educating local businesses to incorporate waste management and environmental sustainability into their everyday business practices (operational change and influencing customer behaviour)	Educating general public, raising awareness and monitoring waste production - Reduce, reuse, recycle and rethink	Influence regulation, government policy and public opinion on behalf of the collective needs and objectives of their members
Target Segments	Schools	Local Businesses	Residential	Industry and Trade Groups
Tools	1. Koha Kai 2. Para Kore 3. Waste Free Wanda (Anna Van Riel) 4. Zero waste Education 5. Enviro Schools 6. The Sustainability Trust (YSSN)	1. Business Self Audit Template 2. Information pack on waste reduction and packaging options 3. Stands in Trade Shows 4. Direct Engagement with local business groups through Chamber of Commerce 5. Reusable Coffee Cup Initiative - piloting with Batch Café 6. Battery Disposal Initiative	1. Residential Bin Audits 2. General Media, Advertising 3. Website/app 4. Love Food Hate Waste 5. Kate Meads (3-year contract) 6. Plastic Free July 7. Love Southland 8. Orange Pages - collateral 9. Trash Talk 10. Flytipping Flyers 11. GIS Mapping Software	Memberships

Table 1: WWMECS Delivery Framework

Kerbside Contamination

The placing of non-recyclable items ('contaminants') into household recycling bins is a persistent problem facing the local community and the nation as a whole. As kerbside recycling is collected in bulk by trucks, a single load can be contaminated by the acts of a few individuals.

Despite the fact that the vast majority of individuals are responsible, contaminated loads frequently contain items that are fully recyclable and all waste ends up in the landfill. Focus

should be on gaining a deeper knowledge of why contamination occurs in the first place and what behaviour change interventions can successfully assist the community in improving their recycling habits.

Our key activities will be:

- i. Understanding the barriers to proper recycling
- ii. The potential interventions for reducing contamination and promoting proper recycling at the household level.

Below framework from Behavioural Methods Australia shows the process for behavioural interventions to enhance connection with nature and inspire individuals' to act to protect their environment. This framework has been used as a step-by-step guide to help Australians improve their recycling practices.

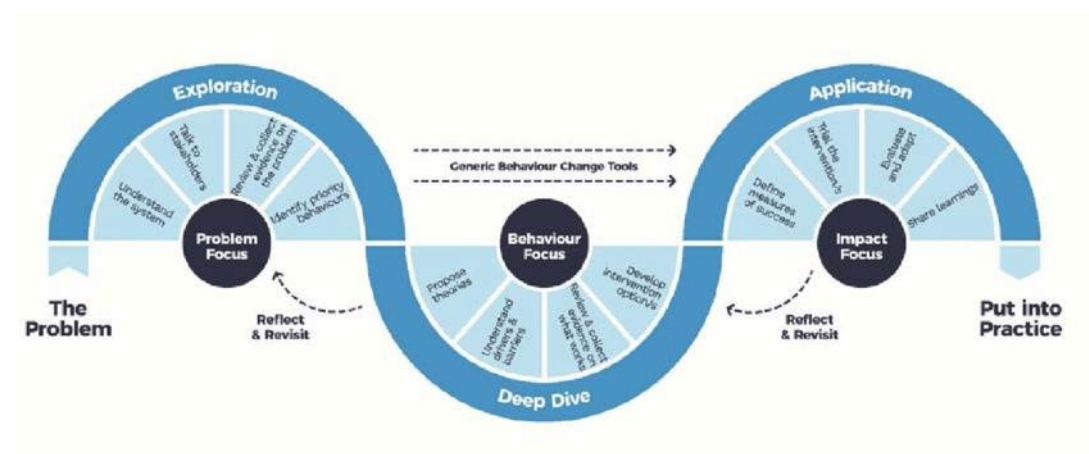


Figure 8: Behaviour Methods Australia Framework (Source: Meis-Harris, Julia & Saeri, Alexander & Mark, Mr & Mrs, Boulet & Borg, Kim & Faulkner, Nicholas & Jorgensen, Bradley. (2019). Victorians Value Nature: Survey Results.)

Kerbside Standardisation

Of the materials households place out in kerbside bins and bags, two-thirds are placed out as rubbish and sent to landfill. A transformed recycling will increase the quality and quantity of materials collected for recycling and reduce the amount of recycling sent to landfill and also reduce greenhouse gas emissions. Standardised recycling collections will ensure collection of glass bottles and jars; paper and cardboard; plastic bottles and containers from plastic types 1, 2, and 5; and aluminium and steel tins and cans. The regulations only relate to kerbside collections. If materials not included in the standard materials have value and strong markets, these materials could still be collected through a drop-off system. As per MfE, the hard-to-recycle plastics and single-use plastics will be phased out from mid-2025. Tranche 1 of the plastic bans came into force 1 October 2022. Tranche 2 and 3 plastic bans are expected to come into force in 2023 and 2025.

Battery Disposal Facilities

When depleted batteries are discarded into the bins, they end up in landfills where they decay and leak. As batteries corrode, their chemicals soak into soil and contaminate groundwater and surface water.

Exposing the environment to lead and strong corrosive acids found in batteries can cause burns and dangers to eyes and skin. Insufficient knowledge about the waste battery collection points and convenience were the most important factors affecting the inappropriate disposal behaviour (Islam, M.T., Huda, N., Baumber, A. et al, 2022).

To avoid landfills fires and environmental problems, we must eliminate household batteries from the waste stream. Southland currently lacks battery collection locations. Therefore, it is crucial that we set up a public collection point and spread awareness to encourage behaviour change throughout the Southland region.

Conclusion

The infrastructure system has a large role in embedding the circular economy into general practice through better design and procurement to reduce waste, and greater use of recycled materials as part of construction.

This paper “strategic approach – waste as a resource” highlights the role of WasteNet as a regional leader working towards growing the Southland region sustainably. Invercargill City Council is working collaboratively with our WasteNet partners and stakeholders, building relationships with other organisations that make savings, work smarter, share knowledge and gain efficiencies.

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Appendices

1. Appendix A – The Southland WasteNet SWAP 2018 (A2946309)
2. Appendix B – Relevant Legislations (A4736791)



Composition of Solid Waste in Southland Region - 2018

Prepared for WasteNet Southland:

Gore District Council,
Invercargill City Council
Southland District Council

April 2018

Document quality control

Version	Date	Written by	Distributed to
Final 1.0	March 2020	BM	DP - ICC
Draft 0.2	July 2018	BM	DP - ICC
Draft 0.1	May 2018	BM	-

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Executive Summary

In 2007 and 2011, WasteNet Southland commissioned Waste Not Consulting to undertake surveys of the composition of waste disposed of at the major disposal facilities in the region. In 2018, to provide updated composition information for the Councils' next waste assessment and waste management and minimisation plan, WasteNet again commissioned Waste Not Consulting to undertake surveys of waste composition in the region.

The project included visual surveys of the composition of waste being disposed of at Invercargill transfer station and Southland Regional Landfill. A simpler form of survey was undertaken by transfer station staff at Gore refuse transfer station and three facilities in Southland District. The data from the surveys was combined with weighbridge records and other information from the WasteNet Councils to calculate the composition and quantity of waste being disposed of to landfill from the region.

In the period 12 April 2017 to 11 April 2018, 48,351 tonnes of waste from Southland region were disposed of at Southland Regional Landfill (SRL). The composition of the waste in April-June 2018, when the surveys took place, is shown in the table below. The table shows the twelve primary categories of waste; the surveys used 25 classifications in total. These results have been extrapolated to an annual basis in the table, although it is recognised that this does not take seasonal variations in waste composition into account.

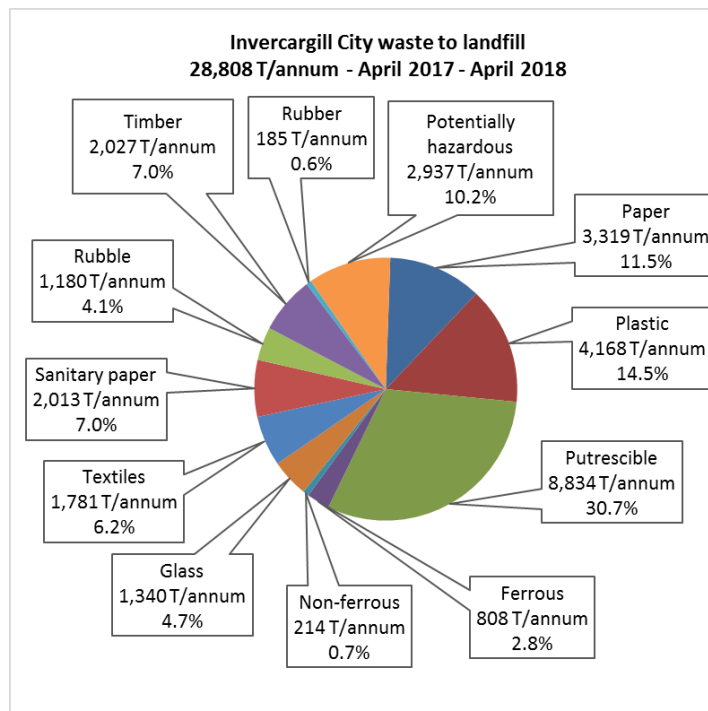
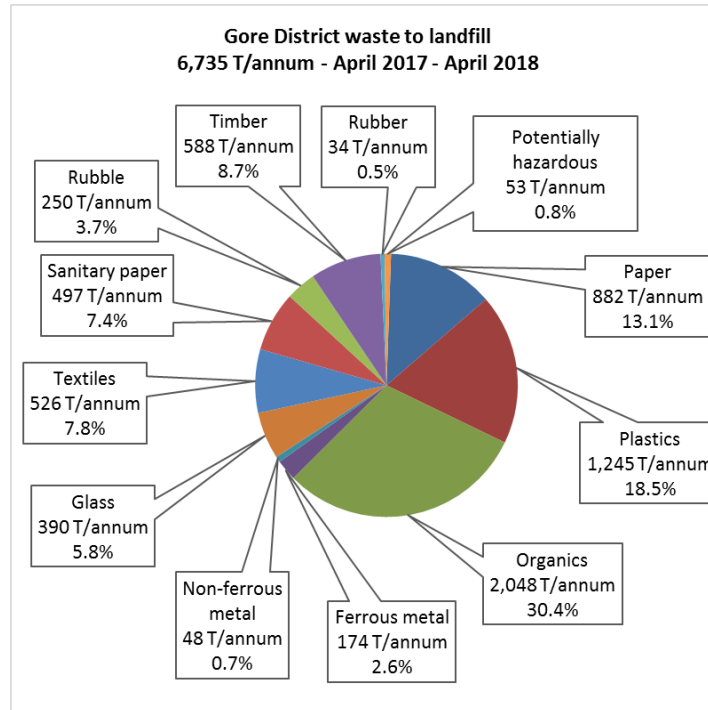
**Table ES1- Primary composition of waste to landfill from Southland region -
12 April 2017 - 11 April 2018**

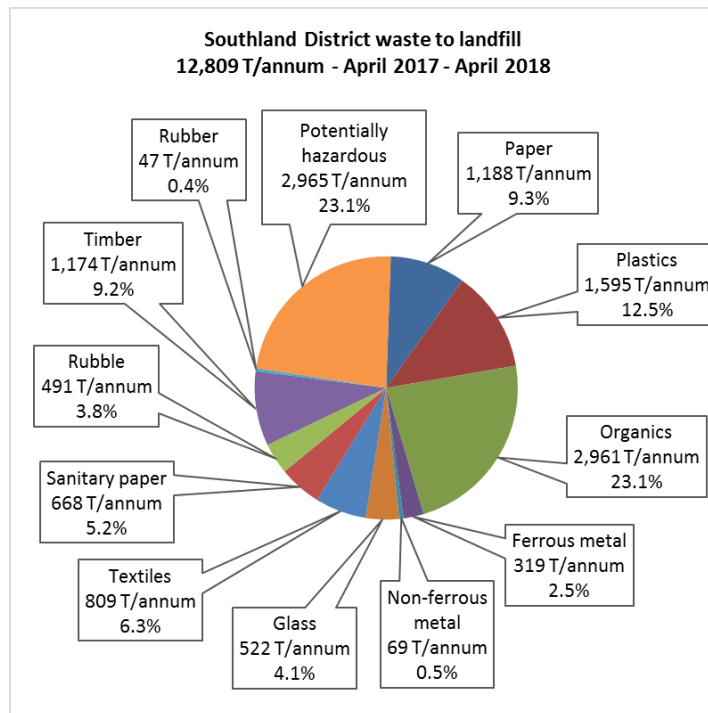
Southland region - Waste to landfill April 2017-April 2018	% of total	Tonnes per annum
Paper	11.0%	5,336 T/annum
Plastics	14.1%	6,819 T/annum
Organics	29.2%	14,110 T/annum
Ferrous metals	2.6%	1,237 T/annum
Non-ferrous metals	0.7%	336 T/annum
Glass	4.5%	2,187 T/annum
Textiles	5.9%	2,869 T/annum
Sanitary paper	6.7%	3,232 T/annum
Rubble	3.7%	1,776 T/annum
Timber	6.5%	3,143 T/annum
Rubber	0.6%	282 T/annum
Potentially hazardous	14.5%	7,025 T/annum
TOTAL	100.0%	48,351 T/annum

Organic materials, which included kitchen waste and greenwaste, was the largest component of the waste stream during the survey period, comprising 29.2% of the total. The survey took place in autumn, which is associated with a low rate of vegetative growth. It is likely the quantity of greenwaste would have been greater at other times of the year. It is also noted

that the surveys took place from April to June, which is, generally, a period of below-average waste generation. Generally, waste disposal is lowest in the winter months, rising towards an annual peak in early summer.

The waste streams from the three areas are shown separately in the following three graphs.





The major difference in the composition of the three waste streams is in the proportion of potentially hazardous materials. Twenty-three percent of waste from Southland District is potentially hazardous (62% of which is contaminated oyster farming material) while less than 1% of waste from Gore District is potentially hazardous.

It is noted that while the tonnages of potentially hazardous materials are reliable, having primarily been taken directly from weighbridge records at Southland Regional Landfill, the proportions of the other materials are based on relatively short surveys and are, as a result, less reliable.

1 Introduction

Territorial authorities in New Zealand have statutory responsibility for promoting effective and efficient waste management and waste reduction practices within their district. This responsibility is specified in section 42 of the Waste Minimisation Act 2008.

Section 42 of the Act also requires a territorial authority to adopt a waste management and minimisation plan (WMMP) that will promote effective and efficient waste management and minimisation within its district. Section 50 of the Act requires that WMMPs be reviewed at intervals of not more than six years and that each review must be preceded by a waste assessment, as prescribed in section 51.

To co-ordinate their efforts in fulfilling their responsibilities under the legislation, the three territorial authorities in the Southland region - Gore District Council, Invercargill City Council, and Southland District Council - formed WasteNet Southland. WasteNet provides for integrated waste management planning and the delivery of solid waste and recycling services in the region.

A review of the WasteNet Councils most recent WMMP, the joint *Southland Waste Management and Minimisation Plan 2012-2018*, is required in 2018.

To provide an evidential basis for their planning, the WasteNet Councils have regularly commissioned visual surveys of the composition of waste being disposed of to landfill from the region. In 2007 and 2011, these visual surveys were undertaken by Waste Not Consulting Ltd using methodologies based on the Ministry for the Environment's Solid Waste Analysis Protocol 2002 (SWAP). The data from these surveys has allowed the Councils to monitor changes in the waste stream over time, identify new waste minimisation initiatives, and assess the effectiveness of existing initiatives.

For the statutory review of the 2012 WMMP, in 2018 the Councils again commissioned Waste Not Consulting to determine the composition of waste being disposed of to landfill from the region. The 2018 research comprised visual surveys of waste by Waste Not Consulting at Invercargill Refuse Transfer Station (RTS) and at Southland Regional Landfill (SRL). A simplified form of the survey was undertaken by WasteNet's contractors at four of the region's other disposal facilities.

The waste surveys took place from April to June 2018. This corresponds to the dates of the 2007 and 2011 analyses, so, in seasonal terms, the results of the 2018 analyses are directly comparable with the results of the earlier research.

While section 51 of the Act requires a waste assessment to contain information about both waste and diverted materials, this research has focused solely on waste generated in Southland region that is disposed of to landfill. No information is provided on quantities or flows of recycled or recovered materials in the region.

1.1 Waste flows to landfill from Southland region

Until mid-2011, Southland region was a self-contained waste "catchment", with virtually all residual waste generated in the region being disposed of at the Southland Regional Landfill (SRL) and virtually no waste generated outside the region being transported into the region. In mid-2011, a proportion of consolidated commercial waste from outside of Southland region started to be transported to SRL. This practice continues in 2018, with all waste from

Mackenzie District and some waste from Queenstown-Lakes District being transported to SRL for disposal.

In the year April 2017 to April 2018, 48,351 tonnes of waste from Southland region were disposed of at SRL. Approximately 62% of this waste comes from eight transfer stations, all of which are operated by WasteNet Southland. For this report, no tonnage data has been made available relating to waste from outside of the region.

Gore District Council (GDC) operates two refuse transfer stations, with the major disposal facility being in Gore and a satellite facility in Maitai. Virtually all waste generated in Gore District is disposed of at one of these two facilities.

Invercargill City Council (ICC) also operates two refuse transfer stations, with the major facility being in Invercargill and a satellite facility in Bluff. Two-thirds of waste generated in Invercargill City is disposed of at the Invercargill refuse transfer station. Large loads of commercial waste and special wastes are disposed of directly to SRL.

Southland District Council (SDC) provides a network of seven refuse transfer stations, with the largest being in Te Anau. Residual waste from the transfer stations is disposed of at SRL, as are large loads of commercial waste, private kerbside waste collections, and special wastes. Some of SDC's kerbside waste collections are disposed of directly to landfill or at Invercargill refuse transfer station.

A flow diagram of waste flows to SRL from the Southland region for the period April 2017 to April 2018 is presented in section 4.1.

1.2 Structure of report

This report is structured as follows:

- Section 2 outlines the methodologies used for the surveys and analysis of the data
- In section 3, the results of the survey at Southland Regional Landfill are presented. The analysis incorporates survey data from the other facilities and the landfill, which are used to provide an estimate of the composition of the waste stream from Southland region being disposed of at the landfill.
- Section 4 includes a waste flow diagram that presents the annualised data from section 3 in a graphic format. Per capita waste generation rates for each district are presented as are comparisons with the 2007 and 2011 survey results.
- Sections 5, 6, and 7 provide the results of the surveys for Gore District, Invercargill City, and Southland District respectively. For each local authority area, a brief outline is given of available waste management services, both public and private, in the area. The results of the disposal facility surveys are presented separately for each area. First, the waste activity sources that comprise the overall waste stream are quantified followed by the composition of the "general" waste stream (which excludes kerbside refuse collections) and the "overall" waste stream (which includes kerbside refuse collections). The potential of the waste stream at each facility for diversion from landfill disposal is estimated. By collating information from several sources, an estimate is made of the amount and composition of waste disposed of to landfill from each local authority area.

1.3 Key Terms and Acronyms

Term	Definition
C&D waste	Construction and demolition waste
Cleanfill	Inert materials, such as soil, rocks, and concrete, that have no adverse environmental effects when disposed of to land
GDC	Gore District Council
General waste	All waste excluding kerbside refuse collections and special wastes
Gore District waste	Inclusive of Council controlled waste and private/commercial waste generated within Gore District
ICC	Invercargill City Council
ICI	Industrial / commercial / Institutional waste
Invercargill City waste	Inclusive of Council controlled waste and private/commercial waste generated within Invercargill City.
Kerbside waste	Waste collected regularly from properties, such as in bags or wheelie bins, including collections by both council and private collectors
Landscaping and earthworks waste	Waste from landscaping, garden maintenance, and site works from domestic, commercial, and local government sources
Overall waste	All waste, inclusive of kerbside refuse collections and special wastes
Residential waste	Waste generated by households, excluding kerbside refuse
RTS	Refuse Transfer Station
SDC	Southland District Council
Southland District waste	Inclusive of Council controlled waste and private/commercial waste generated within Southland District.
Special wastes	Waste such as biosolids, infrastructural cleanfill, or industrial wastes that either requires special handling or have eco-toxic properties
SRL	Southland Regional Landfill
WasteNet	WasteNet Southland, a joint committee of the three territorial authorities – Invercargill City Council, Southland District Council, Gore District Council.
WasteNet Councils	Invercargill City Council, Southland District Council, Gore District Council

1.4 Waste flow diagram

Figure 1.1 below shows the different waste flows in Southland region and references the relevant sections in the report. The same figure is shown in section 4 with annualised tonnages for the major waste streams.

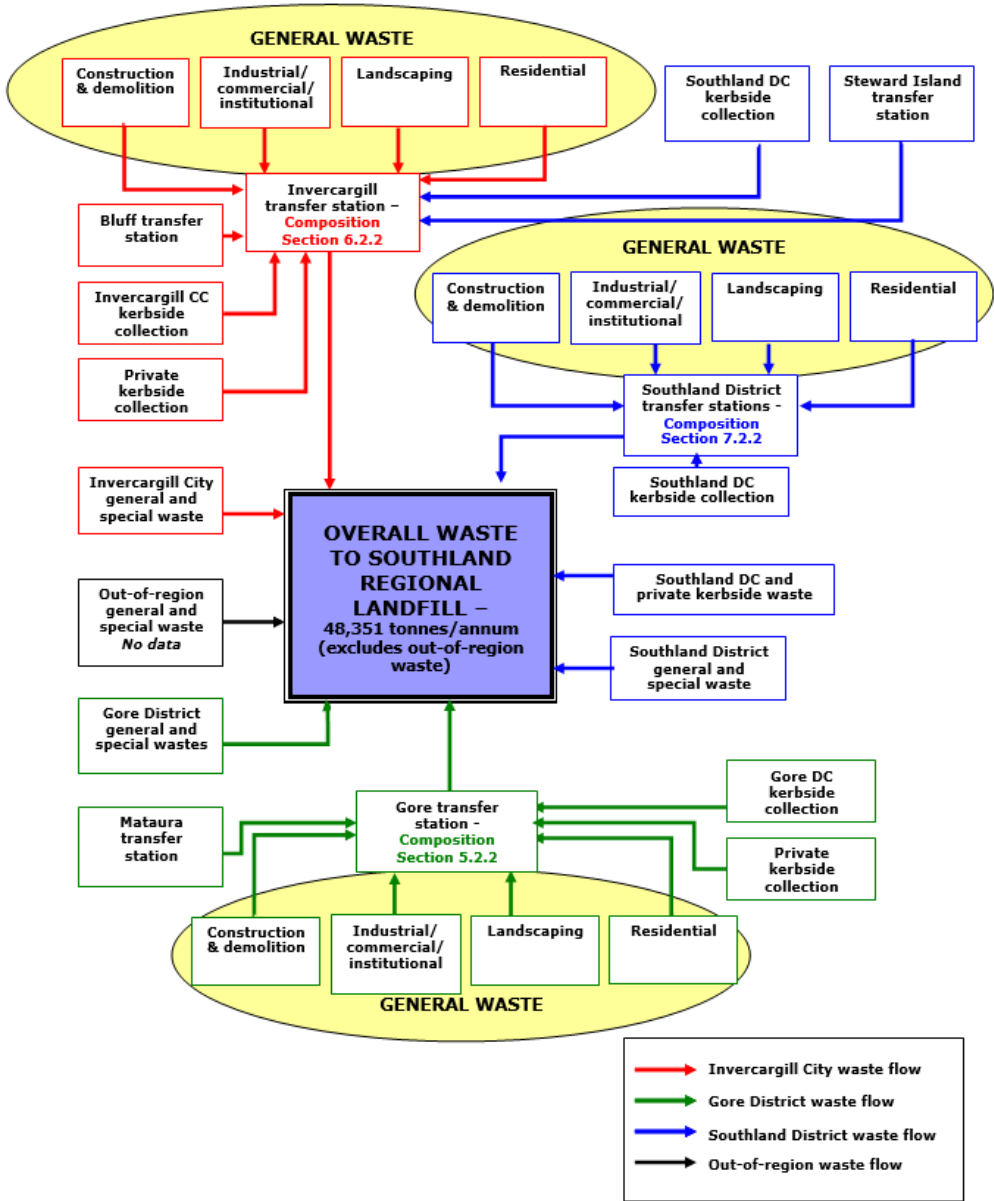


Figure 1.1 - Waste flows in Southland region

2 Methodology

The visual survey of residual waste at Invercargill RTS and Southland Regional Landfill took place from 5-11 April 2018. The survey included both weekdays and a weekend day to capture weekly variations in the waste stream.

Visual surveying provides information on vehicle loads of waste entering a disposal facility in terms of composition of the waste load and the activity source (for example, landscaping, residential, or construction and demolition).

The composition of waste is based on the 12 primary categories (e.g. paper, plastics, etc.) recommended by the SWAP. Further secondary classifications were chosen in consultation with Council. A description of the 25 classifications used is provided in Appendix 1.

The activity sources of waste are those recommended by the National Waste Data Framework.

2.1 Analysing waste streams

For the purpose of analysing waste streams, Waste Not differentiates between kerbside waste collections, special waste, and general waste. Different methods are used for determining the composition of each waste stream.

Kerbside waste collections, in this context, are taken to include collections of rubbish bags and wheelie bins from both residential and commercial/industrial properties. The composition of kerbside waste collections is most accurately determined by sort-and-weigh auditing, rather than by visual surveying techniques.

Special wastes generated in Southland region include contaminated soil and gravel, abattoir waste, and wastewater treatment plant screenings.

General waste is considered to be all wastes other than kerbside waste collections and special wastes. Visual surveying is used primarily for determining the composition of the general waste stream.

2.2 Visual assessment of waste composition

While each vehicle was being unloaded at Invercargill RTS and Southland Regional Landfill, the surveyor assessed the relative weight of each constituent present in the load on the basis of volume and density. Absolute weights of individual materials were not estimated; rather, the proportion of weight represented by each material was estimated. These data were recorded as a proportion, by weight, for each constituent present in the load.

As not all smaller vehicle loads are weighed at Invercargill RTS, estimates of the weight of each load were made as the vehicle was being unloaded.

For vehicle loads in which it was difficult to distinguish the individual constituents, a generic composition, based on previous surveys of that activity source of vehicle load, was used as a template for the composition then adjusted according to the materials that were visible.

Data was not recorded on vehicles disposing of any materials other than residual waste at either facility.

2.3 Activity sources

Waste Not has developed its own categories of activity source that are aimed at providing the information that is most useful to councils for monitoring waste streams and effectively targeting waste minimisation initiatives. These activity sources are now recommended by the National Waste Data Framework. The activity sources that were used for classifying waste loads at Invercargill RTS and Southland Regional Landfill were:

1. **Construction and demolition (C&D)** - waste materials from the construction or demolition of a building
2. **Industrial/commercial/institutional (ICI)** - waste from industrial, commercial, and institutional sources
3. **Kerbside waste collection** - waste collected from residential and commercial premises by private and council kerbside waste collections
4. **Landscaping and earthworks** - waste from landscaping activity, garden maintenance, and site works, both domestic and commercial
5. **Residential** - all waste originating from residential premises other than that covered by one of the other, more specific classifications (includes drop-offs of bagged domestic waste)
6. **Special wastes** - (usually applies only to waste disposed of directly to landfill) a subjective classification that includes any substantial waste stream (such as biosolids, infrastructural cleanfill, or industrial wastes), that either requires special handling or significantly affects the overall composition of the waste stream and is markedly different from waste streams at other disposal facilities.
7. **Transfer station** - waste entering a facility from another transfer station.

The activity source of each load was assessed and recorded by the surveyor at the same time as the composition was being assessed and recorded. If a load contained materials from more than one activity source, a judgement was made as to which activity source predominated in the load.

2.4 Identification of vehicle types

As loads carried by different vehicle types are not affected in similar ways by waste reduction initiatives, vehicles carrying waste were classified according to the system described in Appendix 2.

2.5 Staff surveys at Gore and Southland Districts' refuse transfer stations

To determine the composition of waste being disposed of at Gore transfer station and the six facilities in Southland District, WasteNet requested that the contractors operating the facilities complete a survey form that would collect data on every vehicle disposing of residual waste at the facility.

The data gathered included the type of waste, the vehicle type, and the relative size of the load for that vehicle type. The surveyor was not asked to collect composition data. The instructions given to the surveyor and the datasheet used are in Appendix 3.

The completed survey forms were returned to Waste Not Consulting and the results analysed. The results from Gore refuse transfer station included the weighbridge weight for each vehicle load. For Southland District refuse transfer stations, typical load weight averages were used to estimate the weight of each load for which data was collected.

For calculating the composition of waste, it was assumed that the compositions of each activity source was the same as at Invercargill RTS.

2.6 Note on data presentation

The data presented in all tables in this report has been rounded; therefore, the totals and subtotals may not add up exactly.

3 Southland Regional Landfill

3.1 Source of waste at Southland Regional Landfill

Waste being disposed of at Southland Regional Landfill (SRL) includes:

- kerbside waste collections from Southland District Council
- general and industrial/commercial/institutional (ICI) waste from Invercargill City and Southland District
- special wastes including, “difficult” and “discretionary” wastes from all three districts
- consolidated commercial waste from outside of Southland region
- residual waste from eight transfer stations.

A two-day survey of the SRL was carried out on Monday 9 April and Wednesday 11 April 2018. For the following analysis, SDC kerbside waste collections and transfer station wastes were identified directly from the source codes in the weighbridge records. The tonnages of ICI waste and special wastes were calculated from the product names in the weighbridge records. “Special” wastes are those wastes classified as “difficult” or “discretionary” by the SRL. These wastes are itemised in Appendix 11.

Table 3.1 below shows the sources of waste disposed of at SRL in terms of percentages, tonnes per week, and tonnes per annum. The table also shows annual tonnages from the 2011 SWAP survey.

Weighbridge data for out-of-region waste was not available. Out-of-region waste includes all waste from Mackenzie District and special wastes from Queenstown-Lakes District.

Table 3.1 - Sources of waste at SRL - 12 April 2017 - 11 April 2018

Southland Regional Landfill Sources of waste at April 2017 - April 2018	12 April 2017 - 11 April 2018			Tonnes per annum July 2010- June 2011
	% of total	Tonnes per week	Tonnes per annum	
Kerbside waste collections	6.0%	55 T/week	2,893 T/annum	2,772 T/annum
Industrial/commercial/ institutional waste	20.2%	187 T/week	9,772 T/annum	4,700 T/annum
Special waste	11.8%	109 T/week	5,687 T/annum	583 T/annum
<i>Invercargill RTS</i>	39.9%	370 T/week	19,280 T/annum	28,355 T/annum
<i>Wyndale RTS</i>	0.7%	7 T/week	342 T/annum	547 T/annum
<i>Winton RTS</i>	1.0%	9 T/week	482 T/annum	954 T/annum
<i>Riverton RTS</i>	0.8%	8 T/week	401 T/annum	155 T/annum
<i>Otautau RTS</i>	0.3%	2 T/week	128 T/annum	121 T/annum
<i>Te Anau RTS</i>	5.3%	49 T/week	2,547 T/annum	2,531 T/annum
<i>Lumsden RTS</i>	0.2%	2 T/week	114 T/annum	460 T/annum
<i>Gore RTS</i>	13.9%	129 T/week	6,705 T/annum	6,245 T/annum
Transfer stations - Subtotal	62.0%	575 T/week	29,999 T/annum	39,369 T/annum
TOTAL FROM SOUTHLAND REGION	100.0%	927 T/week	48,351 T/annum	47,424 T/annum
OUT OF REGION	No data available			

Overall, between 2011 and 2018 there was a 2% increase in the total tonnage of waste from Southland region disposed of at SRL. Other changes were:

- The tonnage of kerbside waste disposed of directly to SRL increased 4%
- ICI waste increased 108%, which is largely associated with commercial waste from Invercargill being transported directly to SRL rather than Invercargill RTS
- Special wastes increased 875%. A majority of the special wastes were related to environmental disasters affecting cattle and Steward island oyster farming.
- Overall, transfer station waste decreased 24%. Waste from Invercargill RTS decreased 32%.

The annual tonnage data from Table 3.1 is shown in Figure 3.1 below.

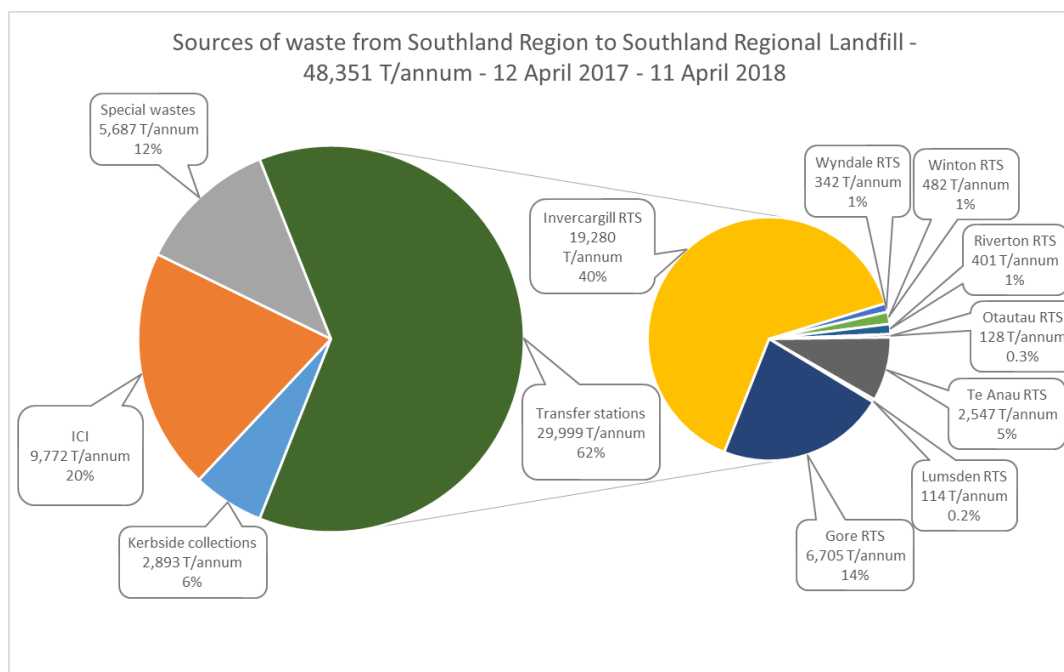


Figure 3.1 - Sources of waste from Southland region to Southland Regional Landfill - 12 April 2017 - 11 April 2018

3.2 Primary composition of overall waste stream from Southland region

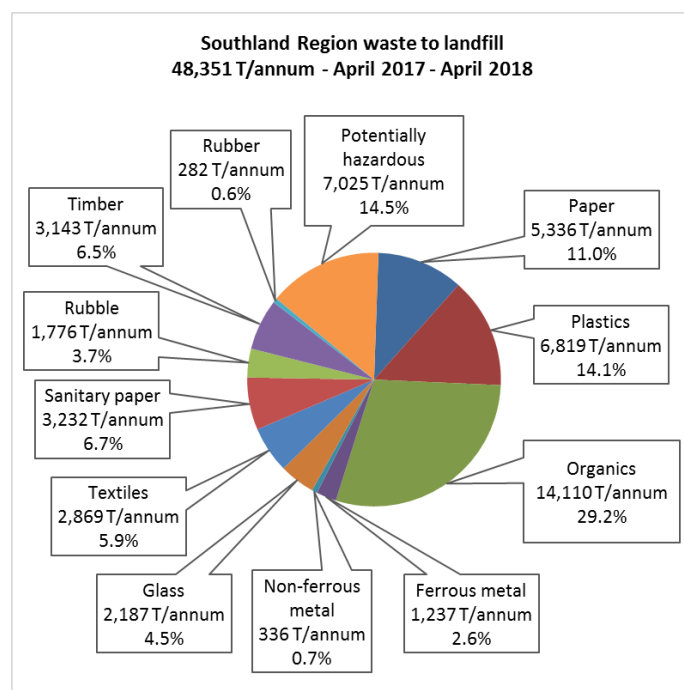
The primary composition of the overall waste stream being disposed of at SRL from Southland region is presented in Table 3.2 and Figure 3.2 on the following page. The secondary composition, which includes all 25 categories, is given in Appendix 10. For the analysis, the results of the surveys are considered to be representative of the composition of waste for April-June 2018, while an average weekly tonnage for April 2017-April 2018 has been used.

The composition has been calculated based on the weekly tonnages for the different waste sources presented in Table 3.1. The compositions of kerbside collections, SDC RTS, Invercargill RTS, and Gore RTS are presented in sections 5-7.

All special waste in Table 3.1 has been classified as Potentially hazardous. This is based on analysis of the weighbridge's discretionary waste permit numbers.

**Table 3.2 - Primary composition of waste to landfill from Southland region -
12 April 2017 - 11 April 2018**

Southland region - Waste to landfill April 2017-April 2018	% of total	Tonnes per week
Paper	11.0%	5,336 T/annum
Plastics	14.1%	6,819 T/annum
Organics	29.2%	14,110 T/annum
Ferrous metals	2.6%	1,237 T/annum
Non-ferrous metals	0.7%	336 T/annum
Glass	4.5%	2,187 T/annum
Textiles	5.9%	2,869 T/annum
Sanitary paper	6.7%	3,232 T/annum
Rubble	3.7%	1,776 T/annum
Timber	6.5%	3,143 T/annum
Rubber	0.6%	282 T/annum
Potentially hazardous	14.5%	7,025 T/annum
TOTAL	100.0%	48,351 T/annum



**Figure 3.2 - Primary composition of waste to landfill from Southland region -
12 April 2017 - 11 April 2018**

4 Discussion and Analysis

4.1 Waste flow diagram with annual tonnages

Figure 4.1 below shows the annual tonnages of the major waste flows into SRL for the period 12 April 2017 - 11 April 2018. The tonnages are based on the source codes used on the landfill weighbridge records. Out-of-region wastes were not included in the weighbridge records that were provided for analysis by AB Lime, the landfill operator.

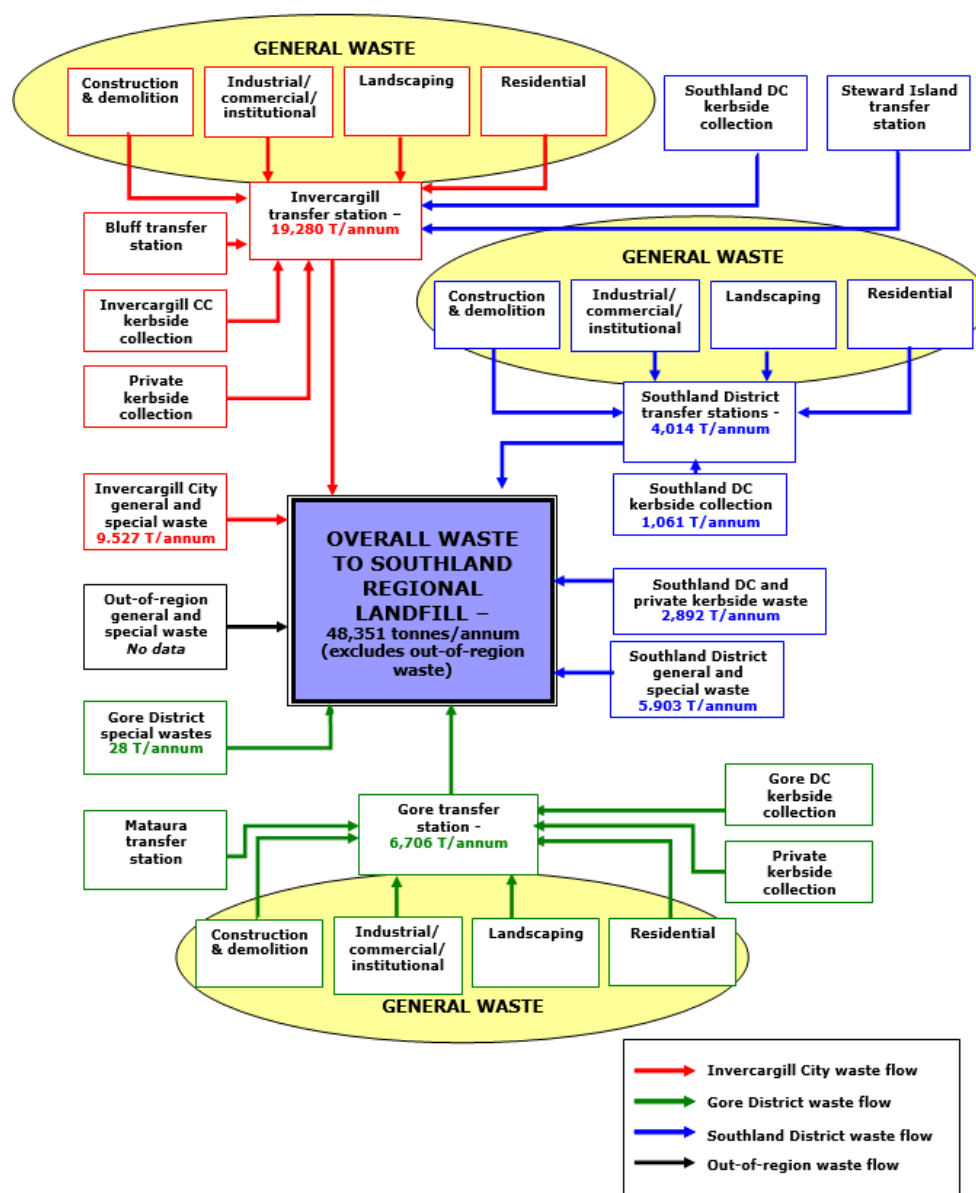


Figure 4.1 - Waste flows to Southland Regional Landfill from Southland region - 12 April 2017 - 11 April 2018

4.2 Per capita waste generation - 2007, 2011, and 2018

Statistics NZ projected resident populations for 2018 for each of the three areas are shown in Table 4.1. The medium growth scenarios have been used.

Table 4.1 - Projected populations - by district - 2018

District	Projected resident population
Gore District	12,500
Invercargill City	54,600
Southland District	31,300

Using these population projections, per capita waste generation for each district has been calculated in Table 4.2. The table includes the corresponding data from the 2007 and 2011 SWAP surveys. The 2007 per capita figure has been taken from the 2011 SWAP report.

Table 4.2 - Waste to landfill from Southland region - 2007, 2011, and 2018

Waste to landfill from Southland region - 2007, 2011, and 2018	Tonnes per annum			Tonnes/capita/annum		
	2007	2011	2018	2007	2011	2018
Gore District	6,622	6,245	6,735	0.534	0.516	0.539
Invercargill City	36,269	31,262	28,808	0.703	0.580	0.528
Southland District	13,722	9,917	12,809	0.470	0.343	0.409
TOTAL SOUTHLAND REGION	56,613	47,424	48,351	0.607	0.500	0.491

Landfilled waste from the region decreased from 56,613 tonnes in 2007 to 47,424 in 2011 and then increased marginally to 48,351 tonnes in 2018. Much of the decrease could be attributed to the global financial crisis, which started in 2008 and resulted in a decrease in waste to landfill on the order of 10-20% in most areas.

Between 2007 and 2018, waste to landfill from Gore District has increased marginally. Waste from the other two areas has decreased between 2007 and 2018.

4.3 Comparison of per capita waste disposal with other areas

Waste Not Consulting has undertaken studies of waste disposal in several local authority areas, generating per capita disposal rates for the overall waste stream to landfill. In Table 4.3 on the next page, disposal rates for the overall waste stream from a number of local authorities are compared. These figures do not include materials used for landfill cover.

Table 4.3 - Per capita waste to landfill - comparison with other areas

Overall waste to landfill including special wastes (excluding cover materials)	Kilograms per capita per annum
Gisborne District 2017	296
Waimakariri District 2012	311
Westland District 2011	331
Ashburton District 2015	366
Southland District 2018	409
Napier/Hastings 2016	495
Tauranga and WBOP District 2014/15	524
Christchurch City 2012	524
Invercargill City 2018	528
Gore District 2018	539
Palmerston North 2017 (seasonally-adjusted)	545
Kāpiti Coast District 2017	546
Wellington region 2016	608
Hamilton City 2013	668
Taupō District 2017	673
New Zealand (to June 2016) ¹	734
Rotorua District 2009	736
Auckland region 2012	803
Queenstown Lakes District 2016	1,103

The areas with the highest waste disposal per capita tend to be those that are most industrialised, have significant primary processing industries, or are major tourist destinations. The areas disposing of the least waste per capita tend to be predominantly rural areas or suburban areas close to major centres.

¹ Ministry for the Environment. 2017. *Review of the Effectiveness of the Waste Disposal Levy 2017*. Wellington: Ministry for the Environment.

5 Gore District

5.1 Gore District - Overview of waste systems

Virtually all waste generated within Gore District is disposed of through the Gore District Council-owned refuse transfer station (RTS) in Gore, from which residual waste is transported to Southland Regional Landfill (SRL). Refuse from the other GDC-owned RTS, in Maitua, is disposed of at the Gore facility. The quantity of residual waste from outside of Gore District that is disposed of at Gore RTS is likely to be minor.

GDC provides a rates-funded kerbside waste and recycling collection in Gore and Maitua. Both waste and recycling are collected fortnightly in 240-litre wheelie bins. This service is contracted to Bond Contracts (using subcontractor Paddy's Bins), which also provides a private wheelie bin service to rural areas not serviced by the GDC collection. The private service is available to virtually all properties in the District. Commercial and industrial waste collection services are provided by JD Souness Ltd. The waste from these collections is disposed of at Gore RTS.

5.2 Gore Refuse Transfer Station

Gore RTS is located on Toronto Street, Gore. The facility is open during the following hours:

- Monday to Friday, 10:30am to 5pm
- Winter: Saturday 10:30am to 4pm, Sunday 12noon to 4pm
- Summer: Saturday 10:30am to 5pm, Sunday 12noon to 5pm.

A survey of residual waste being disposed of at Gore RTS was undertaken by facility staff from 21 May - 3 June 2018. The survey results and weighbridge records for the corresponding period have been used to determine the activity sources of waste loads being disposed of at the facility. Council kerbside waste collection tonnages during the survey period were taken from the survey results. Private kerbside collection tonnages for the week were determined by cross-referencing the survey results with the weighbridge records for commercial collections.

During the period 12 April 2017 - 11 April 2018, an average of 129 tonnes per week of waste was disposed of at SRL from Gore RTS. Less than thirty tonnes of waste from Gore District not from the RTS was recorded at the landfill over the one-year period.

5.2.1 Gore RTS - Activity sources of waste

During the survey, the weighbridge operator at the Gore RTS recorded the activity source for 217 vehicles entering the facility. A breakdown by activity source of the general waste loads (i.e. excluding kerbside waste collections), in terms of percentage of total weight of general waste, is shown in Table 5.1.

The average weekly tonnage of waste that is used for the activity source analysis has been calculated from transfer station weighbridge records for the period 21 May - 3 June 2018. During this period, an average of 122 tonnes per week of waste was disposed of. This figure, which excludes separated cleanfill and greenwaste, is slightly lower than the long-term average of 129 tonnes per week disposed of at SRL.

Table 5.1 - Activity source of general waste - Gore RTS - 21 May - 3 June 2018
(excludes Council and private kerbside collections)

Gore RTS - Activity source of general waste - 21 May - 3 June 2018	% of weight	Tonnes/week
Construction and demolition (C&D)	8.9%	6 T/week
Industrial/ commercial/ institutional (ICI)	76.0%	49 T/week
Landscaping	0.3%	0 T/week
Residential	14.8%	10 T/week
TOTAL	100.0%	65 T/week

Over three-quarters (76.0%) of general waste at Gore RTS was generated by ICI activity. Residential activity accounted for 14.8% and C&D for 8.9%.

The general waste stream is combined with kerbside waste collections to show the activity sources of the overall waste stream in Table 5.2 below. Equivalent data from the 2011 SWAP survey is shown in the right-hand column.

Table 5.2 - Activity source of overall waste - Gore RTS - 21 May - 3 June 2018
(includes Council and private kerbside waste collections)

Gore RTS Activity source of overall waste - 21 May - 3 June 2018	% of total weight 2018	Tonnes/week 2018	Tonnes/week 2011
Construction and demolition (C&D)	4.7%	6 T/week	3 T/week
Industrial/commercial/institutional (ICI)	40.3%	49 T/week	43 T/week
Landscaping	0.2%	0 T/week	0 T/week
Residential	7.9%	10 T/week	16 T/week
Subtotal - General waste	53.1%	65 T/week	62 T/week
<i>Private kerbside collections</i>	<i>15.9%</i>	<i>19 T/week</i>	<i>38 T/week</i>
<i>Gore District Council kerbside collection</i>	<i>31.1%</i>	<i>38 T/week</i>	<i>8 T/week</i>
Subtotal - Kerbside waste collections	46.9%	57 T/week	46 T/week
Mataura transfer station	0%	0 T/week	2 T/week
TOTAL	100.0%	122 T/week	111 T/week

Kerbside waste collections and general waste comprised similar proportions of the overall waste stream at Gore RTS, with general waste comprising 53.1% of the total and kerbside waste collections approximately 46.9% of the total. The weekly tonnages of general waste in 2011 and 2018 were very similar.

The average weekly tonnage of kerbside waste has increased by approximately 24% between 2011 and 2018. While the Gore District Council collection increased significantly over this period, the private kerbside waste collection has decreased significantly. These changes are associated with the 2012 changes to kerbside waste services by GDC. In 2011, GDC offered a user-pays rubbish bag service. In 2012, GDC introduced a rates-funded wheelie bin collection service.

5.2.2 Gore RTS - Primary composition of general and overall waste streams

The survey results for composition of the general waste stream at the Gore RTS (which excludes kerbside waste collections) and the overall waste stream (which includes kerbside waste collections) are presented in Table 5.3. The secondary compositions, which include all 25 categories, are given in Appendix 5.

In the calculations, an assumed composition has been used for each of the four types of general waste and for the kerbside collections. The assumed compositions for the general waste activity sources were taken from the results of the visual survey at Invercargill RTS. These are shown in Appendix 6. This is based on the assumption that waste generation and diversion are similar in Gore and Invercargill.

The assumed composition of kerbside waste have been based on SWAP Procedure One sort-and-weigh audits of other wheelie bin collections. The assumed composition is given in Appendix 4.

Table 5.3 - Primary composition of Gore RTS waste - 21 May - 3 June 2018

Gore RTS Composition of waste - 21 May - 3 June 2018	General waste (excludes kerbside waste)		Overall waste (includes kerbside waste)	
	% of total	Tonnes per week	% of total	Tonnes per week
Paper	16.4%	11 T/week	13.1%	16 T/week
Plastics	26.7%	17 T/week	18.5%	23 T/week
Organics	6.7%	4 T/week	30.4%	37 T/week
Ferrous metals	3.3%	2 T/week	2.6%	3 T/week
Non-ferrous metals	0.8%	1 T/week	0.7%	1 T/week
Glass	7.3%	5 T/week	5.8%	7 T/week
Textiles	11.6%	8 T/week	7.8%	10 T/week
Sanitary paper	5.4%	3 T/week	7.4%	9 T/week
Rubble	5.1%	3 T/week	3.7%	5 T/week
Timber	15.3%	10 T/week	8.7%	11 T/week
Rubber	0.8%	0 T/week	0.5%	1 T/week
Potentially hazardous	0.5%	0 T/week	0.8%	1 T/week
TOTAL	100.0%	65 T/week	100.0%	122 T/week

On the assumption that the compositions of the individual activity sources are the same at Gore RTS as at Invercargill RTS, plastics was the largest single component in general waste at Gore RTS, comprising 26.7% of the total. Paper (16.4%) was the second largest component of general waste and timber the third largest, comprising 15.3%.

Organic materials were the largest component of the overall waste stream, comprising 30.4% of the total. Organics represented a larger portion of the overall waste stream due to the high proportion of food waste in kerbside waste.

The compositions of the general and overall waste streams presented in Table 5.3 are shown in Figure 5.1 and Figure 5.2 on the next page.

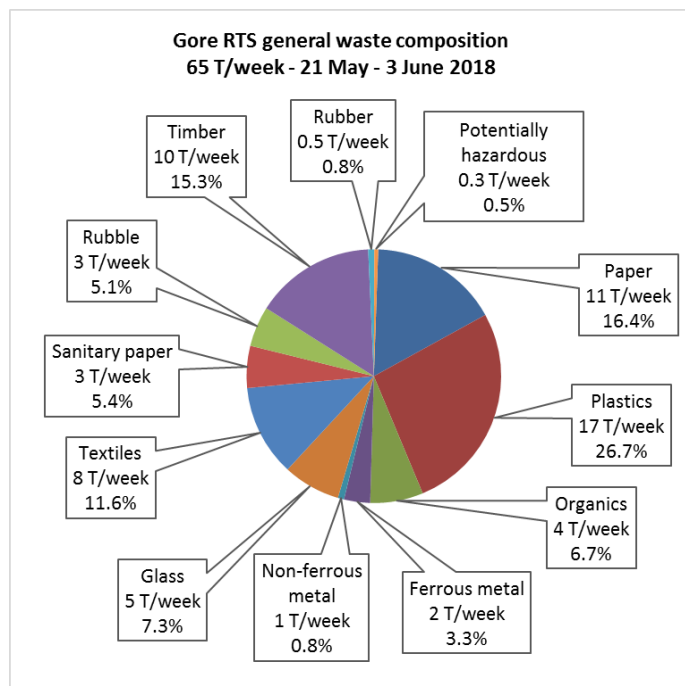


Figure 5.1 - Primary composition of Gore RTS general waste - 21 May - 3 June 2018
(excludes kerbside collections)

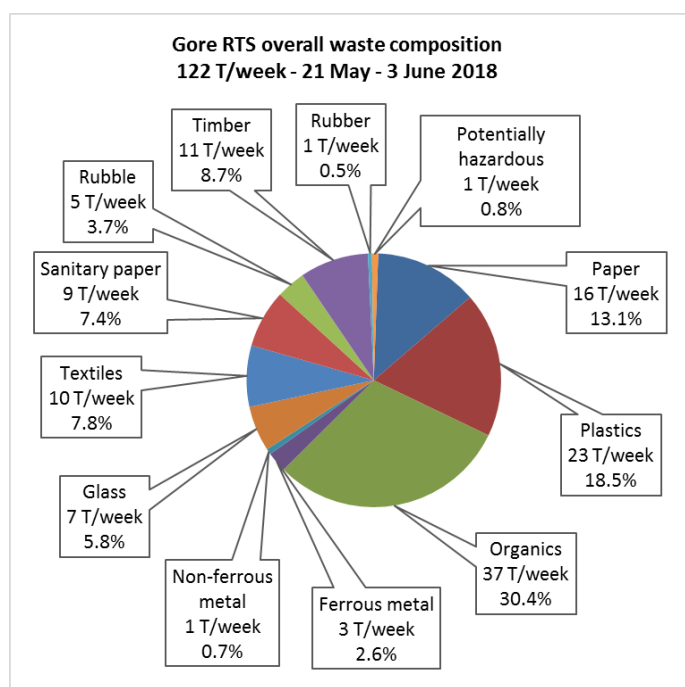


Figure 5.2 - Primary composition of Gore RTS overall waste - 21 May - 3 June 2018
(includes kerbside collections)

5.2.3 Gore RTS - Diversion potential - 21 May - 3 June 2018

Systems have been established at the Gore RTS for the separation and recovery of some recyclable and compostable materials. Table 5.4 below shows the proportion of the general waste entering Gore RTS during the survey period that could potentially be diverted from landfill disposal were further materials to be recovered. The listed materials include food waste, for which there is currently no suitable composting facility. The waste classifications used are the secondary classifications from Appendix 5.

**Table 5.4 - Diversion potential of Gore RTS general waste stream -
21 May - 3 June 2018 - excludes kerbside collections**

Gore RTS - Diversion potential of general waste - 21 May - 3 June 2018	% of total	Tonnes per week
Recyclable materials		
Paper - Recyclable	8.9%	6 T/week
Paper - Cardboard	4.6%	3 T/week
Plastics - Recyclable	1.8%	1 T/week
Ferrous metals	3.3%	2 T/week
Non-ferrous metals	0.8%	1 T/week
Glass - Recyclable	2.4%	2 T/week
Textiles - Clothing	3.4%	2 T/week
Rubble - Cleanfill	0.1%	0 T/week
Timber - Reusable	0.3%	0 T/week
Subtotal	25.7%	17 T/week
Compostable materials		
Organics - Kitchen waste	4.4%	3 T/week
Organics - Compostable greenwaste	1.3%	1 T/week
Rubble - New plasterboard	0.5%	0 T/week
Timber - Untreated/unpainted	2.6%	2 T/week
Subtotal	8.8%	6 T/week
TOTAL - Divertable	34.5%	22 T/week

Overall, 34.5% of the general waste stream entering Gore RTS could have been diverted from landfill disposal. The largest single divertable component was recyclable paper, which comprised 8.9% of the general waste stream. Cardboard was the second largest divertable component, making up 4.6% of the total.

About 8.8% of the general waste stream was compostable. Most of this was kitchen waste which was contained in ICI loads and domestic bags included in other waste loads. There was relatively little greenwaste. This is associated with the survey taking place in autumn, a time of low vegetative growth and reduced gardening activity by homeowners.

6 Invercargill City

6.1 Invercargill City - Overview of waste systems

Approximately 67% of residual waste from Invercargill City is disposed of through the Invercargill City Council-owned refuse transfer station (RTS), from which residual waste is transported to Southland Regional Landfill (SRL). Residual waste from Invercargill City that is disposed of at the Invercargill RTS includes council kerbside waste collections, private kerbside collections from surrounding areas, commercial and residential waste, and waste from the Bluff RTS. The other 33% of residual waste from Invercargill is transported directly to SRL by commercial authorised users. It is understood some waste is bulked prior to SRL.

Not all of the waste disposed of at Invercargill RTS originates in Invercargill City. The Southland District Council (SDC) kerbside wheelie bin collection from areas surrounding Invercargill is disposed of at Invercargill RTS, as is waste from the Stewart Island transfer station (also in Southland District). It is likely that some residential and residual commercial waste from the surrounding areas is also disposed of at the facility.

Invercargill City Council (ICC) provides a weekly kerbside waste collection to residential and commercial properties within designated areas in Bluff and Invercargill. Properties are provided with 140-litre wheelie bins for the kerbside collection. This service is contracted to Bond Contracts Ltd. Bond Contracts collects private commercial bins at the same time as the ICC collection. In areas not serviced by the ICC collection, Bond Contracts, AllWaste, Southern Transport, and Joe's Drums provide collection services.

ICC provides a fortnightly kerbside recycling collection service to residential and commercial properties within designated areas in Bluff and Invercargill. The service is based on 240-litre wheelie bins. The collection is contracted to Bond Contracts Ltd. The collected material is processed by Southland disAbility Enterprises at their Material Recovery Facility (MRF).

Industrial, commercial, and institutional collection services are provided by Joe's Refuse Drums, AllWaste, Bond Contracts, Clearaways Skips, and Kiwi Skips. Paper, cardboard, and other recycling services are provided by several private operators, including Southern Transport, AllWaste, Oji Fibre Solutions, and Document Destruction Services.

6.2 Invercargill Refuse Transfer Station

Invercargill refuse transfer station (RTS) is located at 303 Bond Street, Invercargill. The facility is open daily, with the opening hours being:

- April 1 to September 30: Monday-Saturday 8am-5:30pm, Sunday 9am-5:30pm
- October 1 to March 31: Monday-Saturday 8am-6pm, Sunday 9am-6pm

The facility is equipped with a double weighbridge, so all vehicles transporting waste are weighed both entering and leaving the facility. Prior to driving onto the weighbridge customers have the opportunity to dispose, at no cost, of quality second-hand items at the second-hand facility - The Garage Reuse Shop. This facility also accepts paper, cardboard, aluminium cans and scrap metal for recycling.

There are three separate drop-off areas in the RTS - an open paved area for greenwaste drop-off and separate areas for cleanfill and residual waste in the main transfer shed.

Greenwaste is stockpiled, shredded regularly, and composted in open windrows on an adjoining site. Cleanfill is stockpiled and transported to a cleanfill site for disposal. Residual waste is compacted and transferred to Southern Regional Landfill.

Staff at the transfer station recover small amounts of scrap metal (mainly non-ferrous) from waste on the tipping floor. The quantities involved are minor, and all other residual waste is disposed of to landfill.

A five-day survey of Invercargill RTS was undertaken on Thursday 5 April, Friday 6 April, Saturday 7 April, Sunday 8 April, and Tuesday 10 April 2018. The survey results were used to determine the composition of residual waste being disposed of at the facility and to determine the proportion of the different activity sources of waste in the general waste stream (which excludes kerbside collections).

The average weekly tonnage of waste that is used in this report has been calculated from transfer station weighbridge records for the period 1-28 April 2018. During this period, an average of 372 tonnes per week of waste from Invercargill RTS was disposed of at the landfill.

The relative proportions of general waste and kerbside collections (both council and private) were taken from Invercargill RTS weighbridge records for 1-28 April 2018. Council kerbside collections (from both ICC and SDC) during the week were identifiable directly from weighbridge records. Private kerbside collection tonnages for the week were determined by totalling loads carried by vehicles identified during the survey as carrying private kerbside collections.



6.2.1 Invercargill RTS - Activity sources of general and overall waste stream

Of the 372 tonnes per week of waste disposed of at Invercargill RTS, 139 tonnes (37%) were classified as “general” waste (i.e. excluding kerbside collections and transfer station waste). A total of 417 loads of general waste were surveyed. As every vehicle load of general waste was unloaded, the surveyor made an assessment of the primary activity source of waste in the load. A breakdown of those loads, in terms of percentage of loads surveyed, percentage of total weight of general waste, and weight per week is shown in Table 6.1 on the next page.

Table 6.1 - Activity source of general waste - Invercargill RTS - 1-28 April 2018
(excludes kerbside collections and transfer station waste)

Activity source of general waste - Invercargill RTS - 1-28 April 2018	% of loads	% of weight	Tonnes/ week
Construction and demolition (C&D)	16%	19%	26 T/week
Industrial/ commercial/institutional (ICI)	17%	51%	71 T/week
Landscaping	3%	1%	2 T/week
Residential	65%	29%	41 T/week
TOTAL	100%	100%	139 T/week

Construction and demolition (C&D) loads comprised 16% of all general waste loads and represented 19% of the weight of general waste. ICI loads comprised 17% of general waste loads and 51% of the weight.

Landscaping loads represented a small proportion of general waste, both by percentage of loads and by weight. This is associated with the survey taking place in autumn, a time of low vegetative growth and reduced gardening activity by homeowners and there being a lower disposal rate for separated greenwaste loads. A majority of loads (65%) were carrying residential waste, but these loads only comprised 29% of the total weight of general waste. Many residential loads were very small, often only a few rubbish bags.

These components of the general waste are combined with the kerbside waste collections and waste from Bluff transfer station to show the sources of the overall waste stream in Table 6.2. In the table, the results of the 2011 SWAP survey are also shown for comparison.

Table 6.2 - Source of overall waste stream - Invercargill RTS - 1-28 April 2018

Invercargill RTS - Activity source of overall waste - 1-28 April 2018	% of total weight 2018	Tonnes/week 2018	Tonnes/week 2011
Construction and demolition (C&D)	7%	26 T/week	50 T/week
Industrial/commercial/institutional (ICI)	19%	71 T/week	164 T/week
Landscaping	0.4%	2 T/week	6 T/week
Residential	11%	41 T/week	36 T/week
Subtotal - General waste	37%	139 T/week	256 T/week
Private kerbside collections	1%	4 T/week	10 T/week
Southland District Council kerbside collection	4%	16 T/week	16 T/week
Invercargill CC kerbside collection	57%	211 T/week	205 T/week
Subtotal - Kerbside collections	62%	230 T/week	231 T/week
Bluff transfer station	1%	3 T/week	6 T/week
TOTAL	100%	372 T/week	493 T/week

Kerbside collections were the largest single source of waste being disposed of at Invercargill RTS during the 2018 survey, comprising 230 T/week, or 62% of the total. In 2011, the comparable figure was 231 T/week.

ICI waste was the second largest source, comprising 71 T/week or 19% of the total. This is a substantial decrease from the 2011 survey, which recorded 164 T/week of ICI waste. The decrease in ICI waste in 2018 was primarily a result of front-loader trucks (which carry exclusively ICI waste) transporting waste directly to Southland Regional landfill rather than to the transfer station.

The quantity of C&D waste also decline substantially between 2018 and 2011, from 50 T/week to 26 T/week. This is associated with a reduction in the tonnage of waste transported in gantry trucks to Invercargill RTS. Anecdotal evidence suggests that some C&D waste is being aggregated at a privately-owned resource recovery facility prior to transport to SRL.

While the proportion of kerbside collections and Bluff transfer station waste given in the table are reliable (having been taken from the weighbridge records for a four-week period), the sources of general waste over the course of a full week may be slightly different than during the actual days of surveying.

6.2.2 Invercargill RTS - Primary composition of general and overall waste streams

The composition of the general waste stream (which excludes kerbside waste collections and Bluff transfer station waste) and the overall waste stream are presented in Table 6.3. The secondary compositions, which include all 25 categories, are given in Appendix 6.

In the calculations, an assumed composition has been used for the kerbside waste collections, based on SWAP Procedure One sort-and-weigh audits of other kerbside wheelie bin collections. The assumed composition is given in Appendix 4.

Table 6.3 - Primary composition of Invercargill RTS waste - 1-28 April 2018

Invercargill RTS General and overall waste 1-28 April 2018	General waste (excludes kerbside waste and Bluff transfer station)		Overall waste (includes kerbside waste and Bluff transfer station)	
	% of total	Tonnes per week	% of total	Tonnes per week
Paper	13.2%	18 T/week	10.8%	40 T/week
Plastics	19.9%	28 T/week	13.2%	49 T/week
Organics	7.7%	11 T/week	38.7%	144 T/week
Ferrous metals	4.7%	7 T/week	2.9%	11 T/week
Non-ferrous metals	0.7%	1 T/week	0.7%	2 T/week
Glass	5.8%	8 T/week	4.7%	18 T/week
Textiles	11.9%	17 T/week	6.6%	25 T/week
Sanitary paper	3.9%	5 T/week	7.5%	28 T/week
Rubble	8.5%	12 T/week	4.5%	17 T/week
Timber	22.6%	31 T/week	9.3%	34 T/week
Rubber	0.7%	1 T/week	0.4%	1 T/week
Potentially hazardous	0.4%	1 T/week	0.8%	3 T/week
TOTAL	100.0%	139 T/week	100.0%	372 T/week

Timber was the largest single component of the general waste stream, comprising 22.6% of the total. Almost half of the timber in the general waste was in construction and demolition loads. Plastics was the second largest component of general waste, comprising 19.9% of the total weight. Over 80% of plastics was in ICI loads. Paper and textiles comprised similar proportions of the total - 13.2% and 11.9% respectively.

Organics represented the largest proportion of the overall waste stream (38.7%) due to the high proportion of food waste in kerbside waste. While timber was 22.6% of the general waste, it comprised only 9.3% of the overall waste stream, due to the small proportion of timber in kerbside waste.

The compositions of the general and overall waste streams from Table 6.3 are shown in Figure 6.1 and Figure 6.2 on the following page.

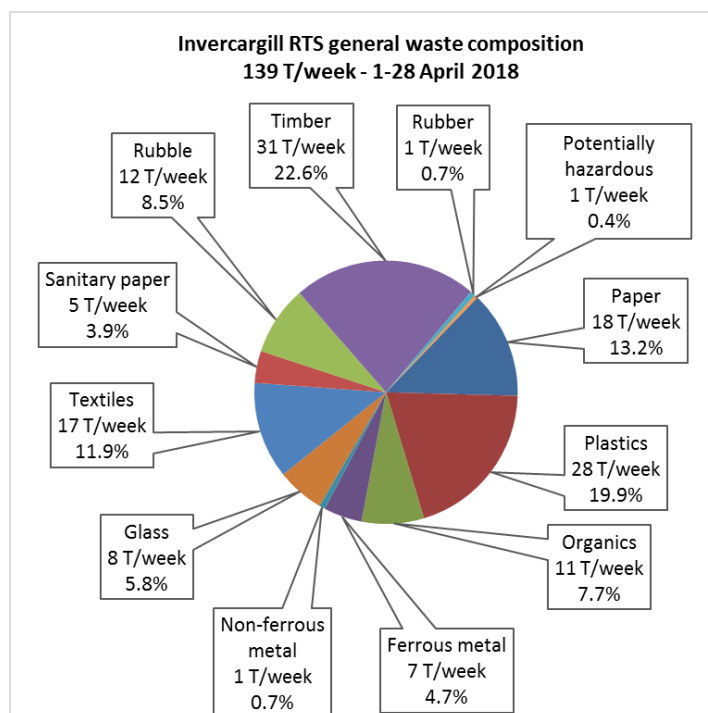


Figure 6.1 - Primary composition of Invercargill RTS general waste - 1-28 April 2018
(excludes kerbside waste and Bluff transfer station)

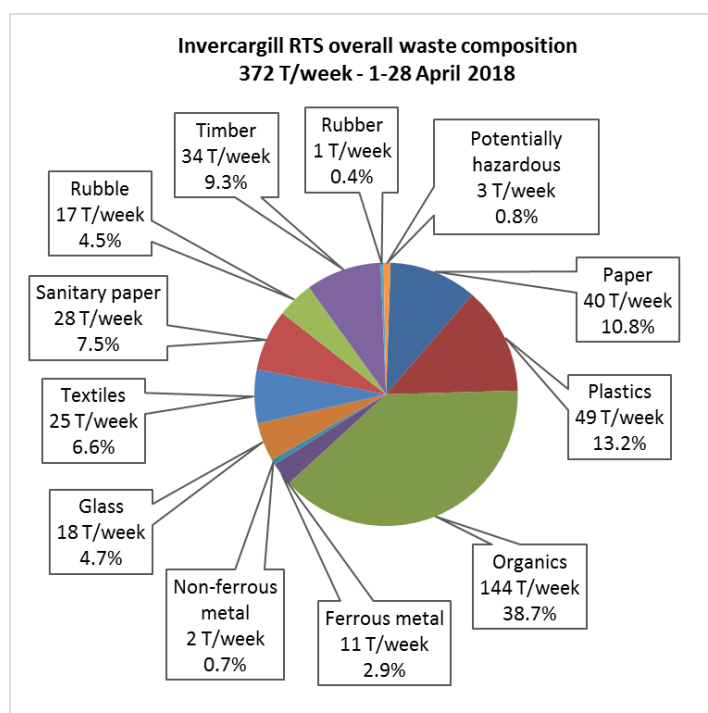


Figure 6.2 - Primary composition of Invercargill RTS overall waste - 1-28 April 2018
(includes kerbside waste and Bluff transfer station)

6.2.3 Invercargill RTS - Primary composition of general waste by activity source

The primary compositions of the four activity sources that make up the general waste stream are shown in Table 6.4 below. Secondary compositions are given in Appendix 6.

**Table 6.4 - Composition of Invercargill RTS general waste -
By activity source - 1-28 April 2018**

Invercargill RTS Composition by activity source 1-28 April 2018	C&D	ICI	Landscaping	Residential
Paper	2.8%	19.4%	0.0%	9.5%
Plastics	2.2%	33.3%	3.8%	8.5%
Organics	0.2%	6.2%	86.2%	11.7%
Ferrous metals	2.8%	1.9%	2.0%	10.9%
Non-ferrous metals	0.1%	0.8%	0.0%	1.0%
Glass	1.0%	8.7%	0.0%	4.1%
Textiles	2.1%	11.2%	0.0%	19.8%
Sanitary paper	0.0%	6.7%	0.0%	1.7%
Rubble	35.7%	2.1%	8.1%	2.5%
Timber	52.7%	8.2%	0.0%	29.4%
Rubber	0.2%	0.9%	0.0%	0.5%
Potentially hazardous	0.1%	0.6%	0.0%	0.2%
TOTAL	100.0%	100.0%	100.0%	100.0%
TONNES/WEEK	26 T/week	71 T/week	2 T/week	41 T/week

C&D waste was composed primarily of timber and rubble (which includes concrete and plasterboard). Together, these two materials 88.4% of all C&D waste.

The largest single component of ICI waste was plastics, which comprised 33.3% of the total ICI waste. Large generators of plastic waste included a hospital and the recycling processor. Paper was the second largest component of ICI waste, comprising 19.4%. Textiles was the third largest component of ICI waste, comprising 11.2%. This included waste from a textile recycling processor.

Landscaping waste is composed largely of greenwaste and soil, which is classified as rubble. Residential waste is the most varied waste stream, with timber being the largest primary classification comprising 29.4% of the total.

6.2.4 Invercargill RTS - Analysis by vehicle type

The table below shows the proportion of loads carried by the seven major types of vehicles and the proportion of waste each type of vehicle carried. The tonnages for compactors, gantry trucks, and hook trucks are based on four weeks of weighbridge tonnages. The weights carried by the other vehicle types are based on the survey results.

Table 6.5 - Vehicles transporting waste to Invercargill RTS - 1-28 April 2018

Invercargill RTS Vehicle types 1-28 April 2018	Proportion of waste loads	Proportion of total weight of waste	Tonnes/week
Cars	42%	4%	13 T/week
Compactors	7%	62%	231 T/week
Front loaders	0%	0%	0 T/week
Gantry trucks	1%	5%	18 T/week
Hook trucks	2%	9%	34 T/week
Other trucks	3%	4%	14 T/week
Trailers	46%	17%	62 T/week
TOTAL	100.0%	100.0%	372 T/week

Car-sized loads represented 42% of all loads but only 4% of the total weight. Many car-sized loads comprised a small number of rubbish bags. No front-loader trucks disposed of waste during the survey period. In 2011, front-loader trucks disposed of nearly 100 T/week of waste. Gantry truck loads totalled 18 T/week during the 2018 survey. In 2011, gantry trucks disposed of 43 T/week of waste.

The primary compositions of the five main vehicle types transporting general waste are shown in Table 6.6. Secondary compositions are given in Appendix 6

Table 6.6 - Composition of Invercargill RTS waste - by vehicle type - 1-28 April 2018

Invercargill RTS Composition by vehicle type - 1-28 April 2018	Cars	Gantry trucks	Hook trucks	Other trucks	Trailers
Paper	15.5%	10.6%	36.6%	4.7%	6.0%
Plastics	13.1%	33.8%	24.9%	52.1%	7.0%
Organics	20.8%	24.7%	1.5%	3.4%	5.7%
Ferrous metals	8.1%	2.4%	1.5%	0.3%	6.9%
Non-ferrous metals	1.2%	0.9%	1.0%	0.2%	0.6%
Glass	3.0%	2.9%	19.1%	1.1%	2.8%
Textiles	13.0%	8.9%	1.6%	22.9%	13.7%
Sanitary paper	4.5%	10.8%	2.9%	13.0%	0.3%
Rubble	4.2%	1.1%	0.9%	0.5%	16.3%
Timber	15.5%	0.9%	9.1%	1.2%	40.1%
Rubber	0.6%	1.4%	0.6%	0.5%	0.5%
Potentially hazardous	0.4%	1.6%	0.3%	0.0%	0.2%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

6.2.5 Invercargill RTS - Diversion potential - 1-28 April 2018

A range of materials are commonly separated and recovered at disposal facilities. Systems are available in Invercargill for the separation and recovery of many of these recyclable and compostable materials. Table 6.7 below shows the proportion of the general waste entering Invercargill RTS during the survey period that could potentially be diverted from landfill disposal. The waste classifications used are the secondary classifications from Appendix 6.

The general waste stream does not include kerbside waste collections or Bluff transfer station waste. The listed materials include food waste, mainly from ICI activity, for which there is currently no suitable composting facility.

Table 6.7 - Diversion potential of Invercargill RTS general waste stream - excludes kerbside collections - 1-28 April 2018

Invercargill RTS - Diversion potential of general waste - 1-28 April 2018	% of total	Tonnes per week
Recyclable materials		
Paper - Recyclable	6.7%	9 T/week
Paper - Cardboard	4.5%	6 T/week
Plastics - Recyclable	1.3%	2 T/week
Ferrous metals	4.7%	7 T/week
Non-ferrous metals	0.7%	1 T/week
Glass - Recyclable	1.9%	3 T/week
Textiles - Clothing	2.8%	4 T/week
Rubble - Cleanfill	0.3%	0 T/week
Timber - Reusable	0.5%	1 T/week
Subtotal	23.4%	33 T/week
Compostable materials		
Organics - Kitchen waste	4.2%	6 T/week
Organics - Compostable greenwaste	2.3%	3 T/week
Rubble - New plasterboard	0.9%	1 T/week
Timber - Untreated/unpainted	3.6%	5 T/week
Subtotal	11.0%	15 T/week
TOTAL - Divertable	34.4%	48 T/week

Overall, approximately 34.4% of the general waste stream entering Invercargill RTS could have been diverted from landfill disposal. The largest recyclable components were recyclable paper, cardboard, and ferrous metals.

Paper from the Material Recovery Facility processing the WasteNet Councils' kerbside recycling represented a significant proportion of the recyclable paper.

6.2.6 Invercargill RTS - Organic component of overall waste - 1-28 April 2018

ICC recognises the diversion and recovery of organic wastes - particularly food waste and greenwaste - as representing an important potential for reducing waste to landfill. Residential collections of food waste, with or without greenwaste, have been considered, as have collections of food waste from commercial premises. In Table 6.8 below, the quantities of organic waste in the different waste streams is presented in terms of tonnes per week.

Table 6.8 - Organic waste in Invercargill RTS waste -1-28 April 2018

Invercargill RTS - Organic waste - 1-28 April 2018	Kitchen/food	Compostable greenwaste
Construction and demolition	0.0 T/week	0.0 T/week
Industrial/commercial/institutional	3.2 T/week	0.4 T/week
Landscaping	0.0 T/week	1.0 T/week
Residential	2.6 T/week	1.7 T/week
Subtotal - General	5.8 T/week	3.1 T/week
Kerbside waste collections	81 T/week	39 T/week
TOTAL	87.0 T/week	41.8 T/week

The major source of kitchen/food waste in the general waste stream was in ICI waste, primarily food waste from restaurants, supermarkets, institutions, and food processors. Approximately 3 tonnes per week of food waste were disposed of in ICI waste at Invercargill RTS.

This is significantly lower than the 12 tonnes per week of food waste in ICI waste in 2011. This reduction is largely due to the reduction in ICI waste from front-loader trucks.

Kerbside collections during the period 1-18 April 2018 averaged 230 tonnes per week. Previous sort and weigh surveys show that about 35% of kerbside waste is food waste. The kerbside waste collections in Invercargill, including both private and council collections, contain approximately 81 tonnes per week of food waste.

6.3 Invercargill City - Overall waste flows - 12 April 2017 - 11 April 2018

The waste from Invercargill City disposed of at Southland Regional Landfill (SRL) has been calculated as being:

- Waste from Invercargill RTS disposed of at SRL **plus**
- Special wastes from Invercargill City disposed of at SRL **plus**
- ICI wastes from Invercargill City disposed of directly to SRL **less**
- Kerbside waste collections from SDC disposed of at Invercargill RTS.

For the one-year period 12 April 2017 - 11 April 2018, the overall waste stream from Invercargill City to landfill is calculated as in Table 6.9 below. Minor waste streams from outside Invercargill City that are disposed of at Invercargill RTS, such as waste from Stewart Island, are included as waste from Invercargill City.

For comparison, the results of the same analysis from the 2011 SWAP survey are also shown in Table 6.9.

Table 6.9 - Overall waste to landfill from Invercargill City - 12 April 2017 - 11 April 2018

Waste to landfill from Invercargill City - 2017/18	2017/18	2011
Waste from Invercargill RTS to SRL	370 T/week	493 T/week
Special wastes from Invercargill City to SRL	plus 50 T/week	plus 10 T/week
ICI wastes from Invercargill City direct to SRL	plus 133 T/week	plus 34 T/week
Kerbside collections from Southland District to Invercargill RTS	less 16 T/week	less 16 T/week
Total	537 T/week	521 T/week

An estimated average of 537 tonnes per week of waste from Invercargill City was disposed of at SRL during the one-year period analysed. This compares to an estimate average of 521 tonnes per week in 2011. However, as special wastes have increased 40 tonnes per week since 2011, the quantity of other types of waste has decreased by an average of 23 tonnes per week.

While overall tonnages of waste have remained relatively constant between 2011 and 2017/18, the pathways of waste from Invercargill City to landfill have changed substantially. The tonnage of waste from Invercargill RTS to SRL has decreased by 123 T/week between 2011 and 2017/18. During the same period, wastes transported directly from Invercargill City to landfill, by-passing Invercargill RTS, have increased by 99 T/week.

The majority of the increase in waste from Invercargill City transported directly to SRL is associated with approximately 66 T/week of front-loader waste that, in 2011, was disposed of at Invercargill RTS. A large proportion of the remainder, anecdotally, is related to the aggregation of waste, particularly gantry truck waste, at a resource recovery facility in Invercargill prior to transport to SRL.

The primary composition of waste from Invercargill City to SRL is shown in Table 6.10 and Figure 6.3 below. For calculating the composition, it has been assumed that all special wastes are potentially hazardous. Secondary composition is given in Appendix 7.

Table 6.10 - Primary composition - overall waste streams to landfill from Invercargill City - 12 April 2017 - 11 April 2018

Primary classification	% of total	Tonnes per week
Paper	11.5%	62 T/week
Plastics	14.5%	78 T/week
Organics	30.7%	165 T/week
Ferrous metals	2.8%	15 T/week
Non-ferrous metals	0.7%	4 T/week
Glass	4.7%	25 T/week
Textiles	6.2%	33 T/week
Sanitary paper	7.0%	38 T/week
Rubble	4.1%	22 T/week
Timber	7.0%	38 T/week
Rubber	0.6%	3 T/week
Potentially hazardous	10.2%	55 T/week
Total	100.0%	537 T/week

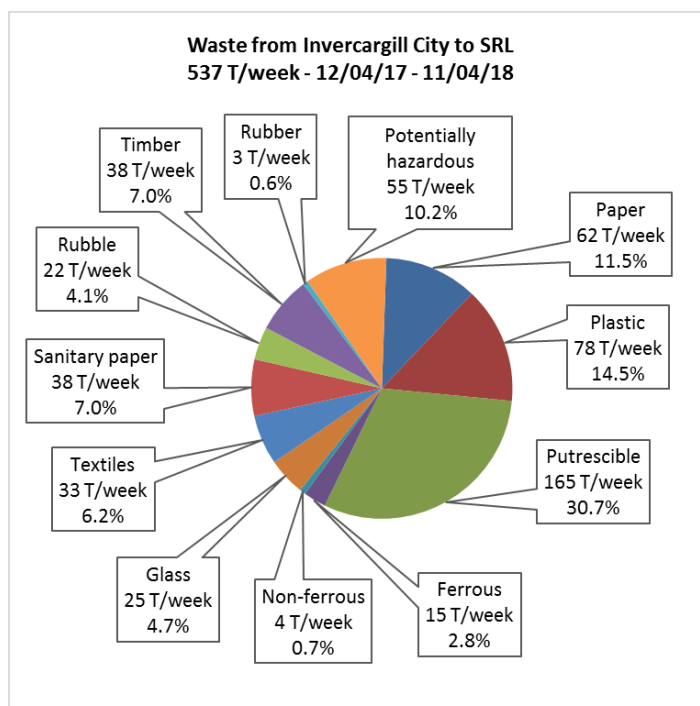


Figure 6.3 - Primary composition of waste from Invercargill City to Southland Regional Landfill - 12 April 2017 - 11 April 2018

7 Southland District

7.1 Southland District - Overview of waste services

Residual waste disposal in Southland District is relatively decentralised, with residual waste being disposed of to eight facilities, including one in Invercargill.

SDC operates seven refuse transfer stations (RTS), with the largest being in Te Anau. Residual waste from all seven is disposed of at Southland Regional Landfill (SRL). Commercial waste collections from Southland District are generally taken to the nearest transfer station (including Invercargill RTS), with large loads being taken directly to SRL by commercial authorised users. The quantity of residual waste from outside of Southland District that is disposed of at RTS in Southland District is likely to be minor.

Overall, about 29% of Southland District waste goes through the SDC RTSs, another 65% is disposed of directly to SRL, and 6% is disposed of at Invercargill RTS (see Table 7.6).

SDC provides a fortnightly kerbside waste collection to residential and commercial properties within designated areas, primarily townships, in the Southland District. The service is based on fortnightly collections of 240-litre wheelie bins. Contracts for the service are held by Bond Contracts Ltd.

SDC also provides a kerbside recycling service, based on fortnightly collections of 240-litre wheelie bins in alternate weeks to the waste collection. There are also recycling drop-off points at all of the transfer stations and at eleven other locations. Commercial recycling collections of paper and cardboard are provided by several organisations.

Stewart Island, due to its isolation, receives a different service than the mainland communities. There are no active landfills on the island; therefore, all waste is shipped back to the mainland for disposal at the Invercargill RTS. Island residents are provided with a three-stream weekly kerbside collection service – a 60 litre recycle crate, 20 litre lidded bucket for organics, and a plastic bag for residual waste. The collected materials are sorted and processed at the Resource Recovery Centre. Organics are fed into the worm farm, residual rubbish is containerised for shipping to mainland, and recyclables are baled for shipping to mainland.

7.2 Southland District Refuse Transfer Stations

Data on waste flows into Southland District RTS was collated from several sources as none of the facilities are equipped with weighbridges. The overall tonnage from each facility into SRL was taken from Southland Regional Landfill weighbridge records, with April 2017-April 2018 being used as the analysis period.

The tonnages of SDC kerbside waste collections were taken from records provided by the collection contractor for the period July 2017-May 2018. These records contained information on the quantity of kerbside waste disposed of at five Southland District RTS.

The estimated waste flows into the Southland District RTS are shown in Table 7.1.

**Table 7.1 - Waste flows into Southland District transfer stations
12 April 2017 - 11 April 2018**

	General waste	Southland District Council kerbside waste	Total	% of total
Wyndale RTS	4.2 T/week	2.3 T/week	6.6 T/week	9%
Winton RTS	8.9 T/week	0.4 T/week	9.2 T/week	12%
Riverton RTS	5.1 T/week	2.6 T/week	7.7 T/week	10%
Otautau RTS	2.4 T/week	0.0 T/week	2.4 T/week	3%
Te Anau RTS	34.7 T/week	14.2 T/week	48.8 T/week	63%
Lumsden RTS	1.3 T/week	0.8 T/week	2.2 T/week	3%
TOTAL	56.6 T/week	20.3 T/week	77.0 T/week	100%
% of total	73.6%	26.4%	100.0%	

SRL weighbridge records showed 77 tonnes per week of waste from the six Southland District transfer stations were disposed of from 12 April 2017 - 11 April 2018. Nearly two-thirds of this weight (63%) was from Te Anau RTS. Further analysis showed that about three-quarters of waste (73.6%) being disposed of at the RTS was general waste, with the other quarter being Southland District Council kerbside waste collections.

7.2.1 Southland District RTS - Activity sources of general and overall waste stream

Surveys of waste activity sources were undertaken by staff at three of the six Southland District RTS for varying lengths of time in April, May, and June 2018. The results of these surveys were aggregated to represent all general waste flows into Southland District RTS. An estimated breakdown of the general waste loads during the survey period is shown in Table 7.2 below.

**Table 7.2 - Activity sources of general waste loads - SDC RTS -
April - June 2018 (excludes kerbside waste collections)**

Southland District RTS Activity source of general waste loads April - June 2018	Tonnes/week	% of weight
Construction and demolition (C&D)	17 T/week	30%
Industrial/commercial/ institutional (ICI)	10 T/week	17%
Landscaping	1 T/week	1%
Residential	29 T/week	52%
Total	57 T/week	100%

Residential loads, which included residents delivering domestic rubbish bags, comprised 52% of the total weight of the general waste surveyed. C&D waste accounted for 30% of the total weight. ICI loads comprised 17% of the total weight and landscaping loads 1%.

These components of the general waste stream are combined with SDC kerbside waste collections to show the sources of the overall waste stream in Table 7.3 on the next page. Equivalent data from the 2011 SWAP survey is shown in the right-hand column.

Table 7.3 - Activity sources of overall waste loads - SDC RTS - April - June 2018

Southland District RTS Activity source of overall waste - April - June 2018	% of total weight 2018	Tonnes/week 2018	Tonnes/week 2011
Construction and demolition (C&D)	22%	16.8 T/week	11.2 T/week
Industrial/commercial/institutional (ICI)	13%	9.7 T/week	5.4 T/week
Landscaping	1%	0.8 T/week	0.0 T/week
Residential	38%	29.4 T/week	13.3 T/week
Subtotal - General waste	74%	56.6 T/week	29.9 T/week
<i>Private kerbside collections</i>	0%	0.0 T/week	8.6 T/week
<i>Southland District Council kerbside collection</i>	26%	20.3 T/week	19.6 T/week
Subtotal - Kerbside waste collections	26%	20.3 T/week	28.2 T/week
TOTAL	100%	77.0 T/week	58.1 T/week

General waste comprised 74% of waste into SDC RTS during the survey period. Kerbside waste collections, comprised 26%. While general waste increased nearly 90% between 2011 and 2018, the tonnage of kerbside waste decreased. This decrease was primarily due to private kerbside waste collections no longer being disposed of at Winton RTS. The average tonnage of SDC kerbside waste collections increased slightly between 2011 and 2018.

7.2.2 Southland District RTS - Primary composition of general and overall waste streams

The survey results for composition of the general waste stream (which excludes kerbside waste collections) and the overall waste stream (which includes kerbside waste collections) are presented in Table 7.4 on the next page. The secondary compositions, which include all 25 categories, are given in Appendix 8.

In the calculations, an assumed composition has been used for each of the four activity sources of general waste and for the kerbside collections. The assumed compositions for the general waste activity sources were taken from the results of the visual survey at Invercargill RTS. These are shown in Appendix 6. This is based on the assumption that waste generation and diversion are similar in Southland District and Invercargill.

The assumed composition of kerbside waste have been based on SWAP Procedure One sort-and-weigh audits of other wheelie bin collections. The assumed composition is given in Appendix 4.

Table 7.4 - Primary composition of Southland District RTS waste - April - June 2018

Southland District RTS General and overall waste April - June 2018	General waste (excludes kerbside waste collections)		Overall waste (includes kerbside waste collections)	
	% of total	Tonnes per week	% of total	Tonnes per week
Paper	9.1%	5 T/week	9.2%	7 T/week
Plastics	10.8%	6 T/week	10.4%	8 T/week
Organics	8.4%	5 T/week	21.3%	16 T/week
Ferrous metals	6.9%	4 T/week	5.5%	4 T/week
Non-ferrous metals	0.7%	0 T/week	0.7%	1 T/week
Glass	3.9%	2 T/week	4.0%	3 T/week
Textiles	12.8%	7 T/week	10.3%	8 T/week
Sanitary paper	2.0%	1 T/week	4.1%	3 T/week
Rubble	12.3%	7 T/week	9.6%	7 T/week
Timber	32.2%	18 T/week	24.1%	19 T/week
Rubber	0.5%	0 T/week	0.4%	0 T/week
Potentially hazardous	0.3%	0 T/week	0.5%	0 T/week
TOTAL	100.0%	57 T/week	100.0%	77 T/week

Timber was the largest single component in the general waste stream, comprising 32.2% of the total. Most of this timber is from C&D waste. Timber was also the largest component in the overall waste stream, comprising 24.1%.

Organics was the second largest component of the overall waste stream, comprising 21.3% of the total. Organics represented a larger portion of the overall waste stream than the general waste due to the high proportion of food waste in kerbside waste collections.

The other materials were present in similar proportions in both the general waste and overall waste, as the proportions of those other materials in the general waste stream are similar to those in kerbside waste collections.

The compositions of the general and overall waste streams presented in Table 7.4 are shown in Figure 7.1 and Figure 7.2 on the next page. The secondary compositions, which include all 25 categories, are given in Appendix 8.

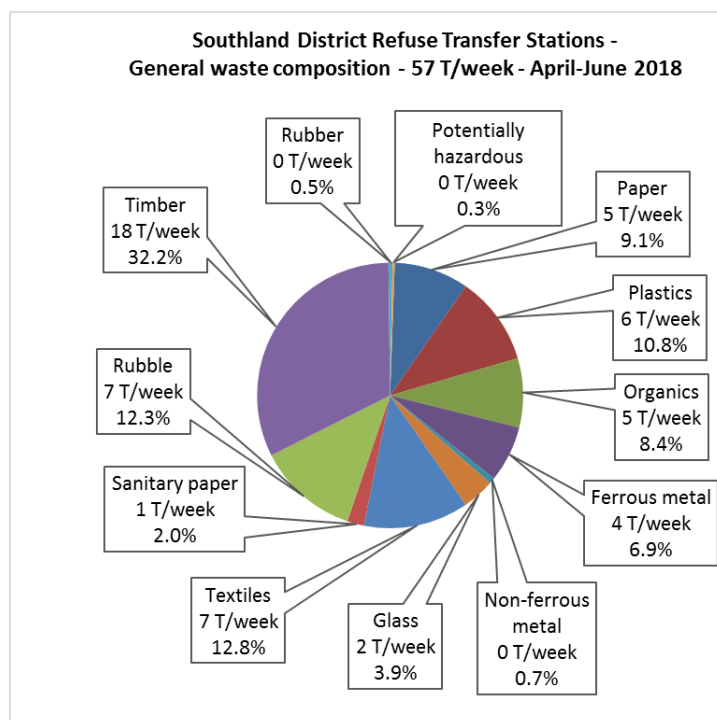


Figure 7.1 - Primary composition of Southland District RTS general waste - April - June 2018 - (excludes kerbside collections)

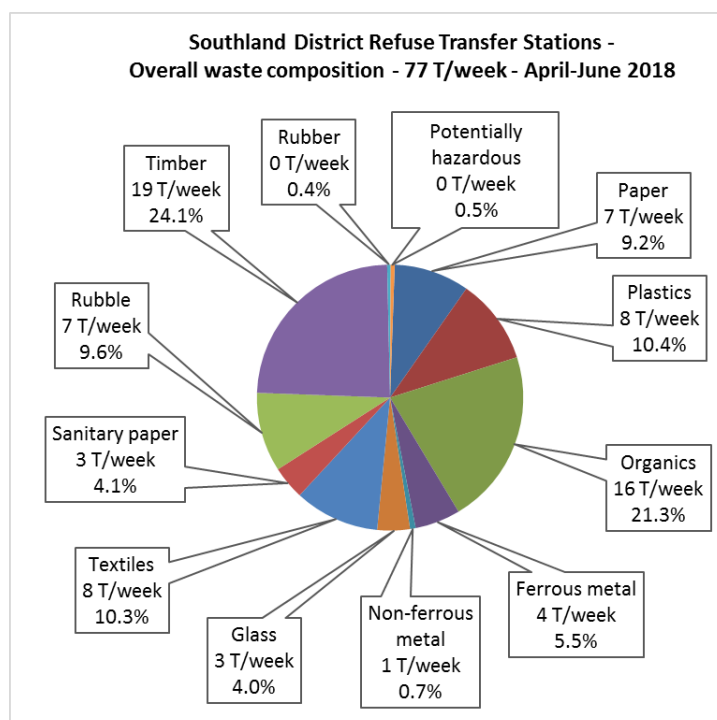


Figure 7.2 - Primary composition of Southland District RTS overall waste - April - June 2018 - (includes kerbside collections)

7.2.3 Southland District RTS - Diversion potential - 12 April 2017 - 11 April 2018

A range of materials are commonly separated and recovered at disposal facilities. Systems have been established at the Southland District RTS for the separation and recovery of some recyclable and compostable materials. Table 7.5 below shows the proportion of the overall waste entering the six transfer stations during the survey period that could potentially be diverted from landfill disposal. The listed materials include food waste, mainly from ICI activity and domestic rubbish bags, for which there is currently no suitable composting facility.

The waste classifications used are the secondary classifications for the overall waste stream from Appendix 8.

Table 7.5 - Diversion potential of Southland District waste to RTS - April - June 2018

Southland District - Diversion potential of waste to landfill - 1-28 April 2018	% of total	Tonnes per week
Recyclable materials		
Paper - Recyclable	4.7%	4 T/week
Paper - Cardboard	3.5%	3 T/week
Plastics - Recyclable	1.1%	1 T/week
Ferrous metals	5.5%	4 T/week
Non-ferrous metals	0.7%	1 T/week
Glass - Recyclable	1.8%	1 T/week
Textiles - Clothing	2.1%	2 T/week
Rubble - Cleanfill	0.4%	0 T/week
Timber - Reusable	0.5%	0 T/week
Subtotal	20.3%	16 T/week
Compostable materials		
Organics - Kitchen waste	12.4%	10 T/week
Organics - Compostable greenwaste	6.8%	5 T/week
Rubble - New plasterboard	1.0%	1 T/week
Timber - Untreated/unpainted	3.4%	3 T/week
Subtotal	23.6%	18 T/week
TOTAL - Divertable	44.0%	34 T/week

Overall, approximately 44.0% of waste disposed of at Southland District RTS could have been diverted from landfill disposal. The largest recyclable components were recyclable paper, cardboard, and ferrous metals. Kitchen waste, comprising 12.4% of all waste, was the largest compostable material.

7.3 Overall waste flows from Southland District - 12 April 2017 - 11 April 2018

The overall waste stream disposed of to SRL from Southland District is composed of:

- Waste from Southland District RTS disposed of at SRL
- Special wastes from Southland District disposed of at SRL
- ICI wastes from Southland District disposed of directly to SRL
- Private and Council kerbside waste from Southland District disposed of at SRL
- Kerbside waste collections from Southland District disposed of at Invercargill RTS.

For the period April 2017-April 2018, the overall waste stream from Southland District to SRL is calculated as in Table 7.6 below. Minor waste streams from Southland District that are disposed of at Invercargill RTS, such as waste from Stewart Island, are excluded from this analysis. The results from the 2011 SWAP audit are also presented for comparison.

Table 7.6 - Waste to landfill from Southland District - 12 April 2017 - 11 April 2018

Southland District - Waste to landfill - 2017/18	% of total 2017/18	T/week 2017/18	T/week 2011
General to RTS	22%	57 T/week	58 T/week
SDC kerbside waste to RTS	8%	20 T/week	
SDC kerbside waste direct to SRL	17%	45 T/week	32 T/week
SDC kerbside waste to Invercargill RTS	6%	16 T/week	16 T/week
Private kerbside waste direct to SRL	4%	11 T/week	0 T/week
General waste direct to SRL	21%	54 T/week	26 T/week
Special waste direct to SRL	23%	59 T/week	0 T/week
TOTAL	100%	261 T/week	132 T/week

An estimated 261 tonnes per week of waste from Southland District were disposed of at SRL during the period analysed. This compares to 132 tonnes per week in 2011, a 98% increase.

Of the 129 tonnes per week increase, nearly half is associated with an increase in special wastes, from 0 tonnes per week in 2011 to an average of 59 tonnes per week in 2017/18. A high proportion of the special wastes in 2017/18 were classified by the weighbridge as 'Contaminated Oysters/Crates' resulting from the clean-up of *Bonamia Ostreae*-infected Stewart Island oyster farms.

A further 20 tonnes per week increase originated from the Te Anau RTS. This increase would be associated with the rapid growth of the town.

The primary composition of waste to landfill from Southland District is shown in Table 7.7 and Figure 7.3 on the next page. The secondary composition, which includes all 25 categories, is given in Appendix 9.

**Table 7.7 - Primary composition - waste to landfill
from Southland District - April - June 2018**

Southland District - Waste to landfill - 2017/18	% of total	Tonnes per week
Paper	9.3%	24 T/week
Plastics	12.5%	33 T/week
Organics	23.1%	60 T/week
Ferrous metals	2.5%	7 T/week
Non-ferrous metals	0.5%	1 T/week
Glass	4.1%	11 T/week
Textiles	6.3%	16 T/week
Sanitary paper	5.2%	14 T/week
Rubble	3.8%	10 T/week
Timber	9.2%	24 T/week
Rubber	0.4%	1 T/week
Potentially hazardous	23.1%	60 T/week
TOTAL	100.0%	261 T/week

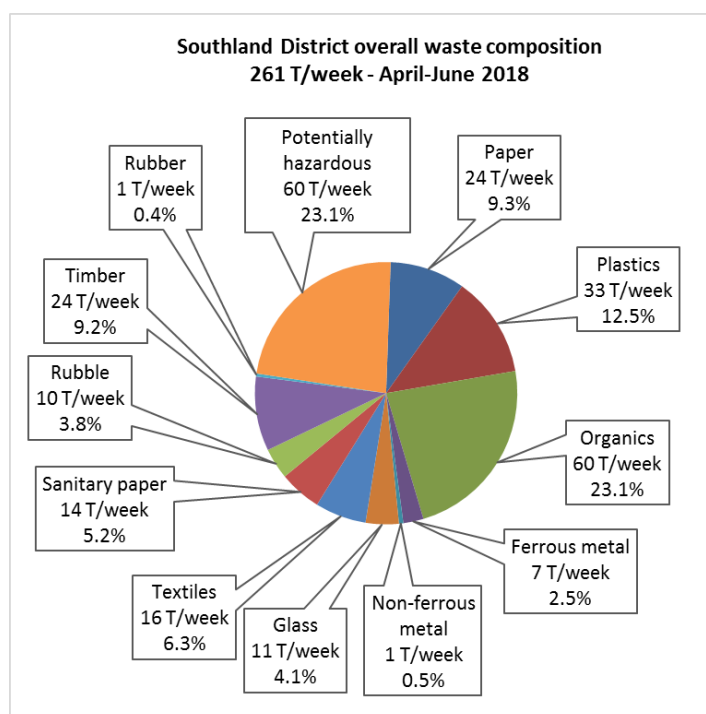


Figure 7.3 - Primary composition of Southland District waste to landfill - April - June 2018

Appendix 1 - Classifications of Waste

Primary category	Secondary category	Description
Paper	Recyclable	Newspapers, magazines, office paper, etc.
	Cardboard	Kraft cartons
	Multimaterial/other	Multimaterials, building paper, contaminated paper
Plastics	Recyclable	Containers with recycling logo 1-2
	Multimaterial/other	Other types of plastic and primarily plastic multimaterials
Organic	Kitchen waste	Food and food preparation waste
	Compostable greenwaste	Foliage, lawn clippings, tree branches up to 100 mm
	Noncompostable greenwaste	Flax, bamboo, palm trees and cabbage trees, branches
	Multimaterial/other	Organic matter such as meat processing waste
Ferrous metals	Primarily ferrous	Items made primarily of steel
	Multimaterial/other	Ferrous items containing a sizable proportion of other materials
Nonferrous metals	Primarily Nonferrous	Items made primarily of nonferrous metal
Glass	Recyclable	Bottles and jars
	Multimaterial/other	Other items made primarily of glass, includes pane, TVs, and computer monitors
Textiles	Clothing/textile	Items made primarily of cloth or textiles
	Multimaterial/other	Items containing some textile and other materials, such as carpets, shoes, backpacks, suitcases
Sanitary paper	None	Sanitary materials such as nappies, paper towels, feminine hygiene products
Rubble	Cleanfill	All materials suitable for cleanfill disposal
	New plasterboard	Off-cuts of new plasterboard
	Other	Other materials such as debris, fibreglass, ceramics, plasterboard
Timber	Reusable	Lengths of timber and pieces of sheet suitable for reuse
	Unpainted & untreated	Unpainted and untreated lengths of timber
	Multimaterial/other	Sawdust, construction and demolition debris, CCA treated wood, particle board, MDF, plywood
Rubber	None	All items made primarily of rubber such as tyres, latex foam mattresses
Potentially hazardous	None	Material with potentially toxic or ecotoxic properties or having properties requiring special disposal techniques.

Appendix 2 - Types of Waste Disposal Vehicles

FRONT-LOADER TRUCKS

“Front-loaders” are top-loading compactors that use forks mounted to the front of the vehicle to lift bins over the cab and tip the contents of the bin into the compactor unit at the rear. Front-loaders work primarily in urban areas, regularly servicing medium to large-scale industrial, commercial, and institutional customers. Front-loaders can also be used by large farming operations for removing waste. In general, a business using front-loader bins would be serviced at least weekly, but can be serviced several times a day for a business like a large supermarket. Front-loaders vary in size, and may carry loads from 4 to 10 tonnes. A single load may contain waste from ten to fifty customers.



The potential for the recovery of materials from waste transported by front-loaders is limited. The waste load is compacted by the truck, and the loads tend to be large and heterogeneous. This restricts significantly the potential for manually separating recoverable materials when the load is discharged on a tipping floor. There are usually not significant quantities of easily-separable materials other than cardboard packaging in front-loader refuse.

GANTRY TRUCK

“Gantry trucks” are used to transport gantry bins (skip bins) from customers’ premises to a disposal facility. Gantry truck services are used by industrial, commercial, institutional, and residential customers. Some large-scale commercial waste generators use gantry bins as their regular disposal system. Residential customers and business customers both use gantry bins for one-off large-scale refuse removal. Some commercial customers, such as hotels and supermarkets, use portable, stationary refuse compactors that are transported for disposal by gantry trucks. Gantry bins are often used for special wastes, such as sludges, asbestos, and animal by-products



Typical gantry truck loads weigh from 0.5-3 tonnes. As most refuse transported in gantry bins is not compacted, there is often opportunity for manually recovering materials from gantry bins when discharged onto a tipping floor. Gantry bins often contain significant quantities of recoverable materials, such as timber and packaging and reusable items can be recovered intact from residential loads.

HOOK TRUCK

Hook trucks (or “huka” trucks) transport bins that can be loaded and unloaded from the rear of the truck for transport and that can be emptied quickly like a tip truck. Hook bins are used by large-scale waste generators, either for regular waste disposal or one-off refuse removal. Hook trucks are often used for transporting 25 or 30-cubic metre bins from transfer stations to landfills or large stationary compactors. Hook bins are also used for large-scale transport of recovered materials, such as cardboard and metal. Hook bins are rarely used for residential waste disposal.



The potential for material recovery from hook bins is similar to that for gantry bins.

KERBSIDE COLLECTION VEHICLES

Side-loading and rear-loading compactors are commonly used for the kerbside collection of residential and small business refuse. They can be designed to service bagged refuse collections, wheelie bin refuse collections, or both. Side-loading compactors can be used for bag collections or fitted with hydraulic arms for emptying wheelie bins without the driver leaving the vehicle. Rear-loading compactors can also be used for bag collections or fitted with hydraulic arms for emptying bins. Non-compacting trucks are also used for kerbside collections, but are less common, as the economics of transporting uncompacted waste are less favourable.



As kerbside collection vehicles collect small quantities of refuse from a large number of customers and the refuse is heavily compacted, there is little opportunity for manually recovering materials from the refuse.

OTHER TRUCKS

Other truck types commonly used for the transport of waste include tip trucks, box trucks, and flat decks. Tip trucks are most commonly used for the transport of waste from landscaping, earthworks, and construction and demolition activity. Box trucks are rarely used as dedicated waste transport vehicles, but are often used for waste transport by businesses that also use them for goods pick-up and delivery. Flat decks are used for the transport of bulky waste items, or by general carriers for the disposal of stackable items, such as pallets.

Appendix 3 - Instructions for Gore RTS Survey

Waste Not Consulting has been contracted by Gore, Invercargill, and Southland Councils to carry out surveys that estimate the composition of waste going to landfill from the region. The information from the surveys will assist the councils in preparing their new Waste Management and Minimisation Plan.

To collect this information, a Waste Not surveyor will be spending seven days at the Southland Regional Landfill and Invercargill transfer station, assessing the composition of waste loads at those facilities. To make the information on transfer station waste going to the landfill more accurate, this separate, simplified survey is being organised for the transfer stations in Southland and Gore districts.

Rather than having a Waste Not surveyor spending time at the Gore transfer station, the contractor's staff will gather data using the survey described in this letter. Having these staff gather the data will reduce the cost to the councils and allow for a longer survey to be carried out.

It is planned that the survey at the Gore transfer station will take place over a two-week period. As the staff have other duties to attend to, it is not expected that the survey will include data on every vehicle load of waste. However, as completing the survey form for a vehicle takes only a few seconds, the survey should include data on most vehicle loads during the two-week period.

It is only the waste going to landfill that should be included in the survey, even though there are other materials being dropped off at the transfer station. No data is needed on materials being dropped off separately, such as greenwaste, recyclables, or scrap metal. **The survey is only looking at the waste that goes to landfill.**

For every load of waste going to landfill, we need two types of information

- 1) **The load type** (described on the next page)
- 2) **The size of the load.** If weighbridge weights are available for a vehicle load, this is the most accurate information. If a small vehicle load is not weighed, we'll need data on the type of vehicle carrying the load and the relative size of the load. Based on that data, we will make an estimate of the weight of the load.

If the survey information can be entered into the weighbridge computer, then only the load type needs to be recorded for each vehicle record. If the survey information can not be entered into the weighbridge computer, datasheets like that on page 4 will need to be completed.

If the datasheets are being used, as each vehicle load of rubbish is being unloaded, the surveyor will need to record the time, the load type, the type of vehicle carrying that load, and an assessment of the relative size of that load (i.e. small, medium or large).

Please start the survey as soon as possible after receiving these instructions. If the datasheets are being used, you can either print off the blank datasheets as needed directly from the electronic version in this letter, or print one copy and photocopy more as needed. When the survey is completed, we will organise to have the survey datasheets faxed or scanned and sent to us for analysis.

If you have any questions about this survey, please do not hesitate to phone me at 021 1369630.

Thanks for your assistance.

Bruce Middleton
Waste Not Consulting

LOAD TYPES

The load type gives us information on the materials that are likely to be in a load, such as paper, timber, and plastic. These surveys are based on six different load types. Most of the time, identifying a load type is pretty straightforward. Looking at a load of rubbish, the surveyor will be assessing the main activity that resulted in the rubbish being generated. Sometimes a load will contain more than one type of rubbish, and then the surveyor will just need to make an educated guess. The load types are listed below. The initials in brackets are the letters that will be entered into the datasheet for that load type.

1. **Construction and demolition (C&D).** Any load of rubbish that has been primarily generated by construction or demolition of a structure. Most of this sort of load will be brought in by builders or by householders. This does not include earthworks from site preparation, such as if the load only contains soil or rocks and rubble. In general, if there appears to be waste from the demolition of fixed elements of a building, like kitchen benches, shower boxes, and gib board, consider the load to be C&D waste. Carpets and curtains, though, are not fixed elements, and would be from renovation work, not construction and demolition, so the load would be, most probably, "residential" waste.
2. **Domestic bags (DB).** A lot of vehicles will just throw off a few bags of domestic rubbish. If that is most of what they are dumping, call it a domestic bag load.
3. **Industrial/commercial (IC).** Waste from commercial and business activity. Includes farms, retail businesses, schools and hospitals, and businesses like panel beaters, mechanical engineering workshops, and offices. Trades people, such as carpet installers, plumbers, and electricians often empty their vehicles on weekends. If the waste is related to their trade, call it IC. Waste brought in by council workers, like litter and illegal dumping, is also classed as IC (unless it is clearly one of the other types, like landscaping).
4. **Landscaping and earthworks (L).** These loads will be mainly garden waste and soil resulting from landscaping activity or earthworks, on either a small scale or large. Some loads might include some fencing timber and concrete.
5. **Residential (R).** Your average car or trailer full of household junk. Residential loads tend to be mixed, with a bit of garden waste and some C&D rubbish mixed in with the usual furniture, toys, and cardboard boxes. Mixed loads like this can be called "residential".
6. **Council kerbside refuse (CKR)** – Refuse from the Council's kerbside collection

VEHICLE TYPES AND LOAD SIZE

If we know the type of vehicle and the relative load size, this will allow us to give that load an approximate weight. There is no good way of listing all of the different types of vehicles that are used to haul rubbish, but the following should be enough to act as a guide.

1. **Car** – sedans and small station wagons
2. **Station wagons and SUVs (SUV)**
3. **Utes and vans (U&V)**
4. **Small trailers (ST)** – single axle trailers
5. **Large trailers (LT)** – double axle trailers and large single axle trailers
6. **Trucks (TR)** – flat deck trucks, box trucks, small tip trucks

For the load size, enter if the load is **small, medium, or large** for that size of vehicle.

FILLING OUT THE DATASHEETS

The datasheet that the surveyor will be using is on the next page. After putting the date on the datasheet, for every load simply enter the appropriate abbreviation for the load type, the vehicle type, and the load size. Any comments might be useful, such as "mostly concrete", "all garden waste", or "all soil", or "carpet". If, for example, you write that a load is 'mostly concrete', we will assign a greater weight to that load than if it was 'mostly insulation batts'.

Thanks for your assistance. If there are any questions, contact Bruce Middleton at 021 1369630.

GORE TRANSFER STATION SURVEY – 2018

TRANSFER STATION SITE:					
DATE					
LOAD TYPES CD = Construction and demolition DB = Domestic bags only IC = Industrial/commercial L = Landscaping and earthworks R = Residential CKR = Council kerbside refuse					
VEHICLE TYPES CAR SUV – station wagons and SUVs U&V – utes and vans ST – small trailer LT – large trailer TR – trucks, flat decks, tip trucks, box truck					
LOAD SIZE SM – small MED – medium L - large					
Time	Load type	Vehicle type	Load size	Load weight (if known)	Comment

Appendix 4 - Assumed Composition of Kerbside Waste

Assumed composition of kerbside waste		% of total weight
Paper	Recyclable	7.6%
	Cardboard	0.8%
	Non-recyclable	0.9%
	Subtotal	9.3%
Plastics	Recyclable	2.5%
	Non-recyclable	6.6%
	Subtotal	9.2%
Organics	Kitchen/food waste	35.3%
	Compostable greenwaste	16.8%
	Non-compostable greenwaste	1.9%
	Other organic	3.2%
	Subtotal	57.2%
Ferrous metals	Primarily ferrous	0.8%
	Multimaterial/other	0.9%
	Subtotal	1.7%
Non-ferrous metals		0.6%
Glass	Recyclable	3.5%
	Non-recyclable	0.6%
	Subtotal	4.1%
Textiles	Clothing/textile	2.1%
	Multimaterial/other	1.4%
	Subtotal	3.5%
Sanitary paper		9.7%
Rubble	Cleanfill	0.0%
	New plasterboard	0.0%
	Other	2.1%
	Subtotal	2.1%
Timber	Reusable	0.0%
	Unpainted & untreated	0.0%
	Non-recoverable	1.3%
	Subtotal	1.3%
Rubber		0.2%
Potentially hazardous		1.1%
TOTAL		100.0%

Appendix 5 - Gore RTS Waste to SRL

Gore RTS General and overall waste composition 20-26 June 2018		General waste (excludes kerbside collections)		Overall waste (includes kerbside collections)	
		% of total	Tonnes per week	% of total	Tonnes per week
Paper	Recyclable	8.9%	6 T/week	8.3%	10 T/week
	Cardboard	4.6%	3 T/week	2.8%	3 T/week
	Non-recyclable	2.9%	2 T/week	2.0%	2 T/week
	Subtotal	16.4%	11 T/week	13.1%	16 T/week
Plastics	Recyclable	1.8%	1 T/week	2.1%	3 T/week
	Non-recyclable	24.9%	16 T/week	16.4%	20 T/week
	Subtotal	26.7%	17 T/week	18.5%	23 T/week
Organics	Kitchen/food waste	4.4%	3 T/week	18.9%	23 T/week
	Compostable greenwaste	1.3%	1 T/week	8.6%	10 T/week
	Non-compostable	0.2%	0 T/week	1.0%	1 T/week
	Other organic	0.8%	1 T/week	2.0%	2 T/week
	Subtotal	6.7%	4 T/week	30.4%	37 T/week
Ferrous metals	Primarily ferrous	1.5%	1 T/week	1.2%	1 T/week
	Multimaterial/other	1.8%	1 T/week	1.4%	2 T/week
	Subtotal	3.3%	2 T/week	2.6%	3 T/week
Non-ferrous metals		0.8%	1 T/week	0.7%	1 T/week
Glass	Recyclable	2.4%	2 T/week	2.9%	4 T/week
	Non-recyclable	4.9%	3 T/week	2.9%	3 T/week
	Subtotal	7.3%	5 T/week	5.8%	7 T/week
Textiles	Clothing/textile	3.4%	2 T/week	2.8%	3 T/week
	Multimaterial/other	8.2%	5 T/week	5.0%	6 T/week
	Subtotal	11.6%	8 T/week	7.8%	10 T/week
Sanitary paper		5.4%	3 T/week	7.4%	9 T/week
Rubble	Cleanfill	0.1%	0 T/week	0.1%	0 T/week
	New plasterboard	0.5%	0 T/week	0.3%	0 T/week
	Other	4.5%	3 T/week	3.4%	4 T/week
	Subtotal	5.1%	3 T/week	3.7%	5 T/week
Timber	Reusable	0.3%	0 T/week	0.2%	0 T/week
	Unpainted & untreated	2.6%	2 T/week	1.4%	2 T/week
	Non-recoverable	12.4%	8 T/week	7.2%	9 T/week
	Subtotal	15.3%	10 T/week	8.7%	11 T/week
Rubber		0.8%	0 T/week	0.5%	1 T/week
Potentially hazardous		0.5%	0 T/week	0.8%	1 T/week
TOTAL		100.0%	65 T/week	100.0%	122 T/week

Appendix 6 - Invercargill RTS Waste to SRL

Invercargill RTS - General and overall waste composition 1-28 April 2018		General waste (excludes kerbside collections)		Overall waste (includes kerbside collections)	
		% of total	Tonnes per week	% of total	Tonnes per week
Paper	Recyclable	6.7%	9 T/week	7.3%	27 T/week
	Cardboard	4.5%	6 T/week	2.2%	8 T/week
	Non-recyclable	2.0%	3 T/week	1.3%	5 T/week
	Subtotal	13.2%	18 T/week	10.8%	40 T/week
Plastics	Recyclable	1.3%	2 T/week	2.0%	8 T/week
	Non-recyclable	18.6%	26 T/week	11.2%	42 T/week
	Subtotal	19.9%	28 T/week	13.2%	49 T/week
Organics	Kitchen/food waste	4.2%	6 T/week	23.7%	88 T/week
	Compostable greenwaste	2.3%	3 T/week	11.4%	42 T/week
	Non-compostable	0.6%	1 T/week	1.4%	5 T/week
	Other organic	0.6%	1 T/week	2.2%	8 T/week
	Subtotal	7.7%	11 T/week	38.7%	144 T/week
Ferrous metals	Primarily ferrous	2.0%	3 T/week	1.3%	5 T/week
	Multimaterial/other	2.8%	4 T/week	1.6%	6 T/week
	Subtotal	4.7%	7 T/week	2.9%	11 T/week
Non-ferrous metals		0.7%	1 T/week	0.7%	2 T/week
Glass	Recyclable	1.9%	3 T/week	2.9%	11 T/week
	Non-recyclable	4.0%	6 T/week	1.8%	7 T/week
	Subtotal	5.8%	8 T/week	4.7%	18 T/week
Textiles	Clothing/textile	2.8%	4 T/week	2.4%	9 T/week
	Multimaterial/other	9.1%	13 T/week	4.2%	16 T/week
	Subtotal	11.9%	17 T/week	6.6%	25 T/week
Sanitary paper		3.9%	5 T/week	7.5%	28 T/week
Rubble	Cleanfill	0.3%	0 T/week	0.1%	0 T/week
	New plasterboard	0.9%	1 T/week	0.3%	1 T/week
	Other	7.3%	10 T/week	4.0%	15 T/week
	Subtotal	8.5%	12 T/week	4.5%	17 T/week
Timber	Reusable	0.5%	1 T/week	0.2%	1 T/week
	Unpainted & untreated	3.6%	5 T/week	1.3%	5 T/week
	Non-recoverable	18.5%	26 T/week	7.7%	29 T/week
	Subtotal	22.6%	31 T/week	9.3%	34 T/week
Rubber		0.7%	1 T/week	0.4%	1 T/week
Potentially hazardous		0.4%	1 T/week	0.8%	3 T/week
TOTAL		100.0%	139 T/week	100.0%	372 T/week

Invercargill RTS - Composition by activity source 1-28 April 2018		C&D	ICI	Landscaping	Residential
Paper	Recyclable	0.0%	11.1%	0.0%	3.5%
	Cardboard	2.6%	4.6%	0.0%	5.7%
	Non-recyclable	0.2%	3.7%	0.0%	0.4%
	Subtotal	2.8%	19.4%	0.0%	9.5%
Plastics	Recyclable	0.0%	2.3%	0.0%	0.3%
	Non-recyclable	2.2%	31.0%	3.8%	8.1%
	Subtotal	2.2%	33.3%	3.8%	8.5%
Organics	Kitchen/food waste	0.0%	4.5%	0.0%	6.5%
	Comp. greenwaste	0.0%	0.6%	58.6%	4.3%
	Non-comp. greenwaste	0.2%	0.0%	27.6%	0.7%
	Other organic	0.0%	1.1%	0.0%	0.2%
	Subtotal	0.2%	6.2%	86.2%	11.7%
Ferrous metals	Primarily ferrous	2.0%	1.0%	0.9%	3.6%
	Multi/other	0.8%	0.9%	1.1%	7.3%
	Subtotal	2.8%	1.9%	2.0%	10.9%
Non-ferrous metals		0.1%	0.8%	0.0%	1.0%
Glass	Recyclable	0.0%	2.9%	0.0%	1.2%
	Non-recyclable	1.0%	5.7%	0.0%	2.9%
	Subtotal	1.0%	8.7%	0.0%	4.1%
Textiles	Clothing/textile	0.0%	4.0%	0.0%	2.7%
	Multimaterial/other	2.1%	7.2%	0.0%	17.1%
	Subtotal	2.1%	11.2%	0.0%	19.8%
Sanitary paper		0.0%	6.7%	0.0%	1.7%
Rubble	Cleanfill	0.8%	0.0%	8.1%	0.3%
	New plasterboard	4.5%	0.1%	0.0%	0.1%
	Other	30.4%	2.0%	0.0%	2.1%
	Subtotal	35.7%	2.1%	8.1%	2.5%
Timber	Reusable	1.8%	0.2%	0.0%	0.3%
	Unpainted & untreated	13.2%	1.7%	0.0%	1.0%
	Non-recoverable	37.8%	6.4%	0.0%	28.0%
	Subtotal	52.7%	8.2%	0.0%	29.4%
Rubber		0.2%	0.9%	0.0%	0.5%
Potentially hazardous		0.1%	0.6%	0.0%	0.2%
TOTAL		100.0%	100.0%	100.0%	100.0%
Tonnes per week		26 T/week	71 T/week	2 T/week	41 T/week

Invercargill RTS - Composition by vehicle type 1-28 April 2018		Cars	Gantry truck	Hook truck	Other truck	Trailer
Paper	Recyclable	5.2%	4.7%	25.9%	1.4%	1.2%
	Cardboard	9.6%	3.3%	3.7%	2.3%	4.4%
	Non-recyclable	0.7%	2.5%	7.0%	1.0%	0.3%
	Subtotal	15.5%	10.6%	36.6%	4.7%	6.0%
Plastics	Recyclable	0.4%	1.6%	3.6%	0.3%	0.6%
	Non-recyclable	12.7%	32.1%	21.3%	51.8%	6.4%
	Subtotal	13.1%	33.8%	24.9%	52.1%	7.0%
Organics	Kitchen/food waste	13.9%	19.1%	1.5%	1.7%	1.1%
	Comp. greenwaste	5.2%	2.8%	0.0%	1.6%	3.2%
	Non-comp. greenwaste	1.2%	0.3%	0.0%	0.0%	0.9%
	Other organic	0.5%	2.5%	0.0%	0.0%	0.4%
	Subtotal	20.8%	24.7%	1.5%	3.4%	5.7%
Ferrous metals	Primarily ferrous	3.8%	0.9%	0.9%	0.1%	2.7%
	Multi/other	4.3%	1.5%	0.6%	0.2%	4.2%
	Subtotal	8.1%	2.4%	1.5%	0.3%	6.9%
Non-ferrous metals		1.2%	0.9%	1.0%	0.2%	0.6%
Glass	Recyclable	0.6%	1.5%	5.4%	1.1%	0.9%
	Non-recyclable	2.4%	1.3%	13.7%	0.0%	1.9%
	Subtotal	3.0%	2.9%	19.1%	1.1%	2.8%
Textiles	Clothing/textile	2.0%	1.9%	0.7%	14.8%	1.3%
	Multimaterial/other	11.0%	7.1%	0.9%	8.1%	12.4%
	Subtotal	13.0%	8.9%	1.6%	22.9%	13.7%
Sanitary paper		4.5%	10.8%	2.9%	13.0%	0.3%
Rubble	Cleanfill	1.7%	0.0%	0.0%	0.0%	0.4%
	New plasterboard	0.0%	0.0%	0.0%	0.0%	2.0%
	Other	2.6%	1.1%	0.9%	0.5%	14.0%
	Subtotal	4.2%	1.1%	0.9%	0.5%	16.3%
Timber	Reusable	0.3%	0.0%	0.0%	0.0%	1.0%
	Unpainted & untreated	1.1%	0.0%	1.5%	0.0%	6.7%
	Non-recoverable	14.1%	0.9%	7.6%	1.2%	32.4%
	Subtotal	15.5%	0.9%	9.1%	1.2%	40.1%
Rubber		0.6%	1.4%	0.6%	0.5%	0.5%
Potentially hazardous		0.4%	1.6%	0.3%	0.0%	0.2%
TOTAL		100.0%	100.0%	100.0%	100.0%	100.0%
Tonnes per week		13 T/week	18 T/week	34 T/week	14 T/week	62 T/week

Appendix 7 - Invercargill City Waste to SRL

Invercargill City Waste to Southern Regional Landfill 12 April 2017 - 11 April 2018		% of total	Tonnes/week
Paper	Recyclable	6.9%	37 T/week
	Cardboard	3.5%	19 T/week
	Non-recyclable	1.2%	6 T/week
	Subtotal	11.5%	62 T/week
Plastics	Recyclable	1.6%	9 T/week
	Non-recyclable	12.8%	69 T/week
	Subtotal	14.5%	78 T/week
Organics	Kitchen/food waste	19.2%	103 T/week
	Compostable greenwaste	8.0%	43 T/week
	Non-compostable greenwaste	1.0%	5 T/week
	Other organic	2.4%	13 T/week
	Subtotal	30.7%	165 T/week
Ferrous metals	Primarily ferrous	1.2%	6 T/week
	Multimaterial/other	1.6%	9 T/week
	Subtotal	2.8%	15 T/week
Non-ferrous metals		0.7%	4 T/week
Glass	Recyclable	2.9%	15 T/week
	Non-recyclable	1.8%	10 T/week
	Subtotal	4.7%	25 T/week
Textiles	Clothing/textile	2.3%	12 T/week
	Multimaterial/other	3.9%	21 T/week
	Subtotal	6.2%	33 T/week
Sanitary paper		7.0%	38 T/week
Rubble	Cleanfill	0.3%	2 T/week
	New plasterboard	0.2%	1 T/week
	Other	3.5%	19 T/week
	Subtotal	4.1%	22 T/week
Timber	Reusable	0.1%	1 T/week
	Unpainted & untreated	0.9%	5 T/week
	Non-recoverable	6.0%	32 T/week
	Subtotal	7.0%	38 T/week
Rubber		0.6%	3 T/week
Potentially hazardous		10.2%	55 T/week
TOTAL		100.0%	537 T/week

Appendix 8 - Southland District RTS

Southland District RTS General and overall waste composition April- June 2018		General waste (excludes kerbside collections)		Overall waste (includes kerbside collections)	
		% of total	Tonnes per week	% of total	Tonnes per week
Paper	Recyclable	3.7%	2 T/week	4.7%	4 T/week
	Cardboard	4.5%	3 T/week	3.5%	3 T/week
	Non-recyclable	0.9%	1 T/week	0.9%	1 T/week
	Subtotal	9.1%	5 T/week	9.2%	7 T/week
Plastics	Recyclable	0.6%	0 T/week	1.1%	1 T/week
	Non-recyclable	10.2%	6 T/week	9.3%	7 T/week
	Subtotal	10.8%	6 T/week	10.4%	8 T/week
Organics	Kitchen/food waste	4.1%	2 T/week	12.4%	10 T/week
	Compostable greenwaste	3.2%	2 T/week	6.8%	5 T/week
	Non-compostable	0.8%	0 T/week	1.1%	1 T/week
	Other organic	0.3%	0 T/week	1.1%	1 T/week
	Subtotal	8.4%	5 T/week	21.3%	16 T/week
Ferrous metals	Primarily ferrous	2.6%	2 T/week	2.2%	2 T/week
	Multimaterial/other	4.2%	2 T/week	3.3%	3 T/week
	Subtotal	6.9%	4 T/week	5.5%	4 T/week
Non-ferrous metals		0.7%	0 T/week	0.7%	1 T/week
Glass	Recyclable	1.1%	1 T/week	1.8%	1 T/week
	Non-recyclable	2.8%	2 T/week	2.2%	2 T/week
	Subtotal	3.9%	2 T/week	4.0%	3 T/week
Textiles	Clothing/textile	2.1%	1 T/week	2.1%	2 T/week
	Multimaterial/other	10.7%	6 T/week	8.2%	6 T/week
	Subtotal	12.8%	7 T/week	10.3%	8 T/week
Sanitary paper		2.0%	1 T/week	4.1%	3 T/week
Rubble	Cleanfill	0.5%	0 T/week	0.4%	0 T/week
	New plasterboard	1.4%	1 T/week	1.0%	1 T/week
	Other	10.4%	6 T/week	8.2%	6 T/week
	Subtotal	12.3%	7 T/week	9.6%	7 T/week
Timber	Reusable	0.7%	0 T/week	0.5%	0 T/week
	Unpainted & untreated	4.7%	3 T/week	3.4%	3 T/week
	Non-recoverable	26.8%	15 T/week	20.1%	15 T/week
	Subtotal	32.2%	18 T/week	24.1%	19 T/week
Rubber		0.5%	0 T/week	0.4%	0 T/week
Potentially hazardous		0.3%	0 T/week	0.5%	0 T/week
TOTAL		100.0%	57 T/week	100.0%	77 T/week

Appendix 9 - Southland District Waste to SRL

Southland District Waste to SRL April- June 2018		% of total	Tonnes per week
Paper	Recyclable	5.8%	15 T/week
	Cardboard	2.2%	6 T/week
	Non-recyclable	1.3%	3 T/week
	Subtotal	9.3%	24 T/week
Plastics	Recyclable	1.5%	4 T/week
	Non-recyclable	11.0%	29 T/week
	Subtotal	12.5%	33 T/week
Organics	Kitchen/food waste	14.2%	37 T/week
	Compostable greenwaste	6.7%	17 T/week
	Non-compostable greenwaste	0.8%	2 T/week
	Other organic	1.4%	4 T/week
	Subtotal	23.1%	60 T/week
Ferrous metals	Primarily ferrous	1.1%	3 T/week
	Multimaterial/other	1.4%	4 T/week
	Subtotal	2.5%	7 T/week
Non-ferrous metals		0.5%	1 T/week
Glass	Recyclable	2.1%	5 T/week
	Non-recyclable	2.0%	5 T/week
	Subtotal	4.1%	11 T/week
Textiles	Clothing/textile	2.0%	5 T/week
	Multimaterial/other	4.3%	11 T/week
	Subtotal	6.3%	16 T/week
Sanitary paper		5.2%	14 T/week
Rubble	Cleanfill	0.1%	0 T/week
	New plasterboard	0.3%	1 T/week
	Other	3.4%	9 T/week
	Subtotal	3.8%	10 T/week
Timber	Reusable	0.2%	1 T/week
	Unpainted & untreated	1.4%	4 T/week
	Non-recoverable	7.6%	20 T/week
	Subtotal	9.2%	24 T/week
Rubber		0.4%	1 T/week
Potentially hazardous		23.1%	60 T/week
TOTAL		100.0%	261 T/week

Appendix 10 - Southland Region Waste to SRL

Southland region Waste to SRL April 2017-April 2018		% of total	Tonnes per week
Paper	Recyclable	6.7%	3,227 T/annum
	Cardboard	3.1%	1,522 T/annum
	Non-recyclable	1.2%	587 T/annum
	Subtotal	11.0%	5,336 T/annum
Plastics	Recyclable	1.6%	787 T/annum
	Non-recyclable	12.5%	6,032 T/annum
	Subtotal	14.1%	6,819 T/annum
Organics	Kitchen/food waste	18.3%	8,832 T/annum
	Compostable greenwaste	7.7%	3,739 T/annum
	Non-compostable greenwaste	1.0%	461 T/annum
	Other organic	2.2%	1,078 T/annum
	Subtotal	29.2%	14,110 T/annum
Ferrous metals	Primarily ferrous	1.1%	524 T/annum
	Multimaterial/other	1.5%	713 T/annum
	Subtotal	2.6%	1,237 T/annum
Non-ferrous metals		0.7%	336 T/annum
Glass	Recyclable	2.7%	1,317 T/annum
	Non-recyclable	1.8%	870 T/annum
	Subtotal	4.5%	2,187 T/annum
Textiles	Clothing/textile	2.2%	1,080 T/annum
	Multimaterial/other	3.7%	1,789 T/annum
	Subtotal	5.9%	2,869 T/annum
Sanitary paper		6.7%	3,232 T/annum
Rubble	Cleanfill	0.3%	129 T/annum
	New plasterboard	0.2%	98 T/annum
	Other	3.2%	1,549 T/annum
	Subtotal	3.7%	1,776 T/annum
Timber	Reusable	0.1%	58 T/annum
	Unpainted & untreated	0.9%	422 T/annum
	Non-recoverable	5.5%	2,662 T/annum
	Subtotal	6.5%	3,143 T/annum
Rubber		0.6%	282 T/annum
Potentially hazardous		14.5%	7,025 T/annum
TOTAL		100.0%	48,351 T/annum

Appendix 11 – Discretionary and Difficult Wastes

Permit #	Material	Permit #	Material
2150	Animal Carcasses	2205	Raw Animal wool on pelts
2153	Sump Waste - dead sheep	2206	Smocks, Hair Nets, General Rubbish, Gloves
2155	Sewage grit	2207	Asbestos
2156	Shorn Sheep Skins	2208	Oxidation Pond Grit
2160	Animal Carcasses	2209	Oxidation Pond Grit
2161	Animal Carcasses	2210	Contaminated Gravel
2162	Pelts Processing Waste	2211	Dead Cattle/Calves
2166	Smocks, Hair Nets, General Rubbish, Gloves	2212	Salted Cattle Hide
2168	Oxidation Pond Grit	2213	Meth Contaminated Furnishings
2167	Oxidation Pond Grit	2214	Salted Cattle Hide
2170	Raw Animal wool on pelts	2216	Animal Carcasses
2178	Animal Carcasses	2217	Oxidation Pond Biosolids
2181	Sump Waste - dead sheep	2218	Sawdust/Manure Cleanings
2182	Sewage grit	2219	Waste Water Screenings - Animal
2183	Shorn Sheep Skins for Disposal	2203	Contaminated Soil
2185	Animal Carcasses	2201	Meth Contaminated Furnishings
2192	Expired Milk Products	2187	Contaminated Oysters/Crates
2193	Pelts Processing Waste	2199	Asbestos
2196	Animal Carcasses	2195	Contaminated Soil
2198	Oxidation Pond Biosolids	2184	Asbestos
2202	Dewatered wastewater treatment solids	2169	Meth Contaminated Furnishings
2204	Meth Contaminated Furnishings		

Appendix B – Relevant Legislations

The 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 on the waste hierarchy in terms of reducing and recovering waste earlier in its lifecycle, shifting focus away from treatment and disposal. The purpose of the WMA (s3) 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 WMA introduced a number of useful tools such as a framework for developing accredited product stewardship schemes and the creation of a national waste disposal levy.

While the WMA provides many benefits to local councils, it also provides a number of responsibilities. Part 4 is fully dedicated to the responsibilities of Territorial Authorities which "must promote effective and efficient waste management and minimisation within their districts" (s42).

Climate Change Response Act 2002 and the Climate Change Response (Zero Carbon) Amendment 2019

The Climate Change Response Act 2002 and 2019 amendment provides the basis for a New Zealand Greenhouse Gas Emission Trading Scheme (ETS). The Act requires landfill owners to purchase emission trading units to cover methane emissions generated from their 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.

The legislative framework in relation to climate change continues to evolve with new legislation introduced in 2019.

The Local Government Act 2002 (LGA 2002)

This Act requires Territorial Authorities to assess how well they provide collection and reduction, reuse, recycling, recovery, treatment and disposal of waste in their district, and makes Territorial Authorities responsible for the effective and efficient implementation of their WMMP. The LGA 2002 contains various provisions that may apply to Territorial Authorities when they are preparing their WMMPs, including consultation (Part 8, sections 145-146) and bylaw provisions (Part 8, section 158). The procedure for making a bylaw and the requirement for completing a special consultative procedure, when making a bylaw, are contained in sections 155 and 156.

The LGA 2002 (Part 6, section 77) refers to legislative requirements for Territorial Authority decision-making, including consideration of the benefits and costs of different options in terms of the present and future social, economic, environmental and cultural wellbeing of the district. Schedule 10 of the Act also includes requirements for information to be included in a Long Term Plan (LTP), including summary information about their WMMP.

The 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 through national, regional and local policy, standards, plans and consent procedures.

In this role, the RMA exercises considerable influence over facilities for waste disposal and recycling, recovery, treatment, and others in terms of 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. Other regional council responsibilities that may be relevant to waste and recoverable materials facilities include managing the adverse effects of storing, using, disposing of, and transporting hazardous wastes; the dumping of wastes from ships, aircraft and offshore installations into the coastal marine area; and the allocation and use of water.

Under the RMA, Territorial Authority responsibility includes controlling the effects of land-use activities that have the potential to create adverse effects on the natural and physical resources of their district. Facilities involved in the disposal, treatment or use of waste or recoverable materials may carry this potential. Permitted, controlled, discretionary, non-complying and prohibited activities and their controls are specified within district planning documents, thereby defining further land-use-related resource consent requirements for waste-related facilities.

In addition, the RMA provides for the development of national policy statements and for the setting of National Environmental Standards (NES). There is now a National Policy Statement on Renewable Electricity Generation, which is defined as 'generation of electricity from solar, wind, hydro, geothermal, biomass, tidal, wave, or ocean currents resources. This is also relevant to the Waste Assessment as organic and green waste can be defined as forms of biomass, and therefore a source of renewable electricity generation.

There is currently one enacted NES that directly influences the management of waste in New Zealand – the Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins, and Other Toxics) Regulations 2004 (the NES for Air Quality). This NES 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 a source of energy. The result is increased infrastructure and operational costs for qualifying landfills, although with costs 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 waste 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.

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, be 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 would 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 that may apply to the disposal of a hazardous substance. However, under the RMA a regional council or Territorial Authority may set more stringent controls relating to the use of land for storing, using, disposing of or transporting hazardous substances.

The Health Act 1956

The Health Act 1956 places obligations on Territorial Authorities (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 Territorial Authorities to raise loans for certain sanitary works and/or to receive government grants and subsidies, where available.

The Health Act provisions for the removal of refuse by local authorities have been repealed by local government legislation. The Public Health Bill is currently progressing through Parliament. It is a major legislative reform reviewing and updating the Health Act 1956, but it contains similar provisions for sanitary services to those currently contained in the Health Act 1956.

The Litter Act 1979

The Litter Act provides Territorial Authorities with powers to create 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 Territorial Authority infringement fees, which are now increased from the original \$100 to a maximum of \$400. Territorial Authorities may adopt the amended infringement notice provisions provided they pass a new resolution including the 14 days' public notification.

Councils use the Litter Act as a method for regulating litter and illegal dumping although the enforcement process is difficult and often unsuccessful. There have been very few successful prosecutions in New Zealand under the Litter Act. It is accepted that prosecuting litter offenders through the courts is not the most efficient way of dealing the litter problem as the fines imposed are not high enough to act as a deterrent and full costs are usually not recovered.

The Health and Safety at Work Act 2015 (HSWA)

The Health and Safety at Work Act 2015 sets out the principles, duties and rights in relation to workplace health and safety. The HSWA outlines health and safety responsibilities for the management of hazards in relation to employees at work. This could potentially include working with hazardous substances and in the collection and management of waste.

The HSWA 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 (among other things) 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 HSWA places duties on any person in control of a place of work, (e.g. a principal), to ensure that people are not harmed by any hazard resulting from work activities. Those who employ contractors therefore "have the same occupational health and safety obligations to contractors or contracted labour as they do their own employees". Employers therefore need to establish systems to manage the health and safety of any contractors or contracted labour. Principals cannot contract out of their responsibilities for health and safety through contract disclaimer clauses. From discussions with council waste officers, it is believed that council staff are aware that the council is principal to the contract and that they take health and safety responsibilities seriously. At the time services are procured, many councils now require robust data and information (including health and safety) to ensure that they can make a considered choice of future collection methodology.