KERBSIDE WASTE AUDIT REPORT

March-April 2025

Berri Barmera Council

Murraylands and Riverland Local Government Association

Solo Resource Recovery

MRL Murraylands and Riverland Local Government Association

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This Report represents information obtained at the time the audit took place and is intended to provide a summary of such information observed and recorded.

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Glossary

CDS (Container Deposit Scheme) Mixed: Beverage containers eligible for a refund under South Australia's container deposit scheme.
Contamination: Incorrectly sorted materials that reduce the quality or usability of recyclable or compostable waste streams.
Containerised Food: Food waste disposed of in bags or packaging, which can impact composting efficiency or be considered contamination.
Diversion Rate: The proportion of waste diverted from landfill through recycling, composting, or other recovery processes.

Diversion Rate (%) = (Total Diverted Waste ÷ Total Waste Generated) × 100

Food Waste – Avoidable: Edible food that is unnecessarily discarded (e.g. leftovers, expired products).
Food Waste – Unavoidable: Inedible parts of food such as bones, eggshells, and fruit or vegetable peels.
Garden Organics: Plant-based material like grass clippings, leaves, small branches, and weeds.
Green Industries SA: The South Australian government agency supporting waste reduction, recycling, and circular economy initiatives.
Hard Plastics (Recyclable): Rigid plastic containers accepted in the recycling stream, including bottles, tubs, and jugs.
Hard Plastics (Non-Recyclable): Rigid plastic items not accepted in recycling, such as toys or multi-material plastic products.
Hazardous Materials: Materials that pose environmental or health risks, including batteries, gas bottles, paint, and electronic waste.
Kerbside Collection: Regular household bin collection service from the property frontage.
Kg/bin/w (Kilograms per bin per week): Measurement indicating the average weight of waste collected per bin each week.
LPB (Liquid Paperboard): Cartons made from paperboard lined with plastic or foil, used for liquids like milk and juice.
L/bin/w (Litres per bin per week): Measurement indicating the average volume of waste collected per bin each week.
Organics: Compostable materials such as food waste, garden waste, and certified compostable packaging.
Other Putrescible: Biodegradable waste not classified as food or garden organics, e.g. pet waste, hair, and dust.
Physical Sort and Weigh: Manual waste auditing method involving sorting by material type and weighing each category.
Recycle / Commingled Recycling: Materials such as paper, plastics, metals, and glass collected together in the recycling bin.
Residual Waste: Non-recyclable and non-compostable waste destined for landfill.
Resource Recovery Rate: The percentage of total waste collected that is successfully reused, recycled, or composted, rather than being sent to landfill.

Resource Recovery Rate (%) = (Recovered Material ÷ Total of that Material Generated) × 100

Rural Garbage: Waste collected from households in non-urban areas, often with unique service arrangements.
Soft Plastics: Flexible plastic materials like bread bags and food wrappers not accepted in kerbside recycling.
Textiles: Fabric-based waste including clothing, towels, and rags.
Volume: The amount of physical space occupied by waste, measured in litres (L).
Weight: The mass of waste material, measured in kilograms (kg).

Executive Summary

This report presents the results of the 2025 kerbside waste audit conducted across five councils in the Murraylands and Riverland Local Government Association (MRLGA): Berri Barmera Council, Renmark Paringa Council, District Council of Loxton Waikerie, Rural City of Murray Bridge, and Coorong District Council. This report provides a high level overview of the results from all five Councils, but also provides the individual Council with its municipality's specific data results. The audit aimed to assess the composition and performance of township (garbage, recycling and organics) and rural (garbage) waste streams to inform future waste management strategies, education initiatives and resource recovery planning.

A total of 600 bin samples were collected and analysed using a physical sort-and-weigh method, with measurements recorded by both weight (kg) and volume (L). Across all councils, common trends and challenges were identified:

- **Recyclables in garbage:** An average of 10–15% of the garbage stream by weight was made up of materials that could have been recycled, including paper/cardboard, rigid plastics, and metals.
- **Food waste in garbage:** Food waste represented 30–50% of the garbage stream in most councils, indicating significant potential for diversion to organics processing.
- **Contamination in recycling:** Contamination rates in recycling bins averaged around 20%, with soft plastics, bagged waste, and non-recyclable plastics as the most common contaminants.
- **Organics stream contamination:** Organics bins had lower contamination overall, with average contamination below 5%, including materials such as soil, soft plastics and treated timber.
- **Rural waste composition:** Rural bins generally had higher levels of recyclables in garbage, likely due to limited service access or bin confusion. Levels of organics were not as high as expected given the limited recovery options.

These findings suggest a strong opportunity to improve diversion rates and reduce contamination across all councils.

The data from this audit will assist MRLGA and its member councils in identifying priority areas for improvement, optimising collection services, and developing targeted waste education and resource recovery initiatives.

Key Themes and Opportunities

To improve recycling outcomes, councils are encouraged to enhance education efforts focused on reducing contamination. Utilising clear and consistent messaging about what belongs in the recycling bin will help address common issues such as the inclusion of soft plastics, bagged waste, and non-recyclable materials.

The use of organics bins could be encouraged through public awareness campaigns and the promotion of correct sorting practices. Increasing participation in organics services and ensuring food and garden waste are diverted from garbage bins could significantly improve recovery rates.

Soft plastics were frequently identified in the wrong streams. A coordinated strategy to divert soft plastics—such as promoting drop-off options or local collection partnerships—could be developed to keep them out of kerbside recycling and garbage.

Bagged waste, especially in recycling and organics bins, should be actively discouraged. Residents need to be reminded that recyclable and compostable materials must be placed loose in the bin for effective processing.

Rural households often face unique challenges with waste sorting and service access. Tailored education programs and improved bin infrastructure for rural areas could help reduce the presence of recyclables and organics in general waste.

There is also a need to improve diversion of materials like textiles, e-waste, and hazardous items, which were commonly found in garbage bins. Councils could provide and promote convenient drop-off locations or special collection events for these items.

To support behaviour change, councils could consider implementing or expanding bin inspection programs that provide feedback to households. This can reinforce correct sorting and identify areas needing targeted education.

Finally, this audit data could be used to guide service improvements. Councils are encouraged to review waste generation patterns and consider adjustments to collection frequency, bin sizes, or service types to better support diversion goals.

Audit Details and Methodology

Solo Resource Recovery (Solo) was engaged by the Murraylands and Riverland Local Government Association (MRLGA) to undertake a series of kerbside waste audits. These audits involved sampling and analysing materials from garbage, recycling, and organics bins across the following member Councils:

- Berri Barmera Council (Berri Barmera)
- Renmark Paringa Council (Renmark Paringa)
- District Council of Loxton Waikerie (Loxton Waikerie)
- Rural City of Murray Bridge (Murray Bridge)
- Coorong District Council (Coorong)

2.1 Aim and Objectives

The aim of the kerbside waste audits is to quantify and analyse the composition of materials collected from household waste bins within the participating Councils. The results of this audit will support: Waste education program development; Strategic planning and targeted initiatives; and Improved resource recovery and diversion outcomes

2.2 Scope of Works

Solo Resource Recovery currently holds a kerbside waste collection contract with the MRLGA. As part of this contract, Solo provides funding toward the auditing of domestic waste bins across five member Councils. A suggested methodology and quotation for the required services were requested. Solo was successful in providing a submission to carry out these works.

Solo worked in conjunction with MRLGA's Waste Education Lead to scope, consult and deliver the audit across the five Councils in a centralised method. Garbage, Recycling, and Organics streams were requested to be processed from township samples. While, only garbage was required for rural samples.

The audits were to be conducted in two separate stages:

- Part 1: Berri Barmera, Renmark Paringa, and Loxton Waikerie
- Part 2: Coorong and Murray Bridge

Sample Size per Council: 50 township garbage bins; 50 township recycling bins; 25 township organics bins; and 25 rural garbage bins.

Sample Collection Schedule:

	Date	Council	Suburb	Bins Collected
Part 1	Tuesday, 18 March	Berri Barmera	Berri	50 Garbage, 25 Organics
	Wednesday, 19 March	Renmark Paringa	Renmark	50 Garbage, 25 Organics
	Thursday, 20 March	Loxton Waikerie	Loxton, Moorook South	50 Recycling, 25 Rural Garbage
	Tuesday, 25 March	Berri Barmera	Berri, Monash	50 Recycling, 25 Rural Garbage
	Wednesday, 26 March	Renmark Paringa	Renmark, Renmark South	50 Recycling, 25 Rural Garbage
	Thursday, 27 March	Loxton Waikerie	Loxton	50 Garbage, 25 Organics

	Date	Council	Suburb	Bins Collected
Part 2	Monday, 31 March	Coorong	Tailem Bend	25 Organics
	Tuesday, 1 April	Murray Bridge	Murray Bridge	50 Recycling
		Coorong	Jabuk, Peake, Sherlock	25 Rural Garbage
	Wednesday, 2 April	Murray Bridge	Murray Bridge South	25 Rural Garbage
	Monday, 7 April	Coorong	Tailem Bend	50 Recycling
	Tuesday, 8 April	Murray Bridge	Murray Bridge	50 Garbage, 25 Organics
	Wednesday, 9 April	Coorong	Tailem Bend	50 Garbage

2.3 Project Methodology

In 2025, the kerbside waste audit as carried out in two parts. The first part was conducted at the Cleanaway Monash Solid Waste Transfer Station and included the collection of bins from the Berri Barmera, Renmark Paringa, and Loxton Waikerie Councils. The second part was undertaken at Peats Soil Brinkley and Solo Resource Recovery North Plympton, covering bin collections from the Murray Bridge and Coorong Councils. Solo Resource Recovery was responsible for the collection and sorting of all bin samples. The audit methodology followed protocols outlined in the Green Industries SA guidelines and relevant Council requirements.

Each day, a driver was provided with a collection map and retrieved the designated bin samples. For each Council, the following waste sample targets were set: 50 garbage bins, 50 recycling bins, 25 organics bins, and 25 rural garbage bins. Bin samples were collected according to the schedule detailed in the project scope. These bins were transported to the appropriate audit sites, where sorting and processing took place. The audit employed a “physical sort and weigh” method. Sorting categories—outlined in Appendix 1—were used to separate materials. Contents were removed from each bin, sorted into separate empty bins or buckets, and weighed accordingly.

This process was repeated for each sample throughout the audit period. Upon sorting, the weight and volume of each material category were recorded using a digital spreadsheet, with measurements taken

to the nearest 0.05 kg. Photographic documentation of the audit process was captured and is included in the gallery in Appendix 2. All data was entered into a master spreadsheet following the field audit. This spreadsheet was provided to MRLGA. This dataset was then analysed to inform the findings presented in this audit report.

- *Note: An error margin of ±0.01 units may occur due to rounding to two decimal places.*

Results Comparison Overview

This section provides an overview of key findings across all five participating Councils: Berri Barmera, Renmark Paringa, Loxton Waikerie, Coorong, and Murray Bridge. The data represents the average performance and material trends observed during the kerbside waste audits.

A total of 6.34 tonne (68.63 m3) of materials was examined from 750 bins during the audit period.

3.1 Township Waste Generation

The average generation of garbage was 8.36 kg/bin/w compared to 77.27 L/bin/w. Recycle was generated at 2.67 kg/bin/w compared to 51.76 L/bin/w. Garden organics was generated at 8.02 kg/bin/w compared to 47.22 L/w. And rural garbage was generated at 7.33 kg/bin/w compared to 93.05 L/bin/w.

Renmark Paringa generated the highest amount of garbage (9.56 kg/bin/w), Berri Barmera generated the highest amount of recycling (3.38 kg/bin/w), Coorong generated the highest amount of garden organics (10.76 kg/bin/w) and Renmark Paringa generated the highest amount of rural garbage (8.86 kg/bin/w).

3.2 Township Compositional Breakdown (Mass)

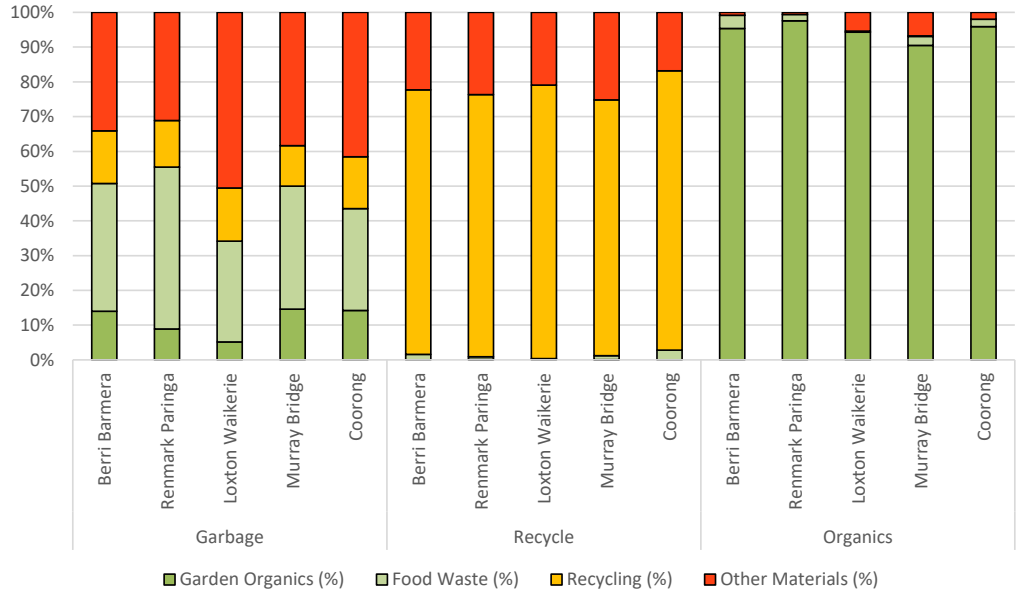

Figure 1. Compositional Breakdown of Each Council Bin Type.

Within the garbage bins presentation of garden organics was highest in Murray Bridge with 14.62%, food waste was highest in Renmark Paringa with 46.54% and recycling was presented in the largest amount by Loxton Waikerie with 15.32%. In the recycle bins Coorong presented the largest portion of recyclables with 80.38%. Within the garden organics bins food waste was found in the highest quantities in Berri Barmera with 3.74%.

3.3 Township Contamination Rates (Mass)

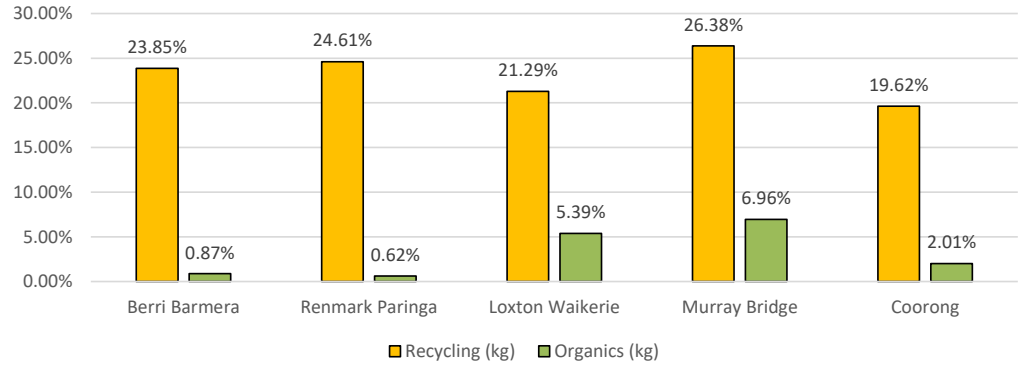

Figure 2. Comparison of Contamination Rates (Mass).

Contamination rates in the recycling stream ranged from 19.62% to 26.38%. Murray Bridge presented the highest rate amongst the Councils with 26.38%. Organics bins contamination ranged from 0.62% to 6.96%. Murray Bridge also presented the highest rate with 6.96%.

3.4 Township Recovery and Diversion Rates (Mass)

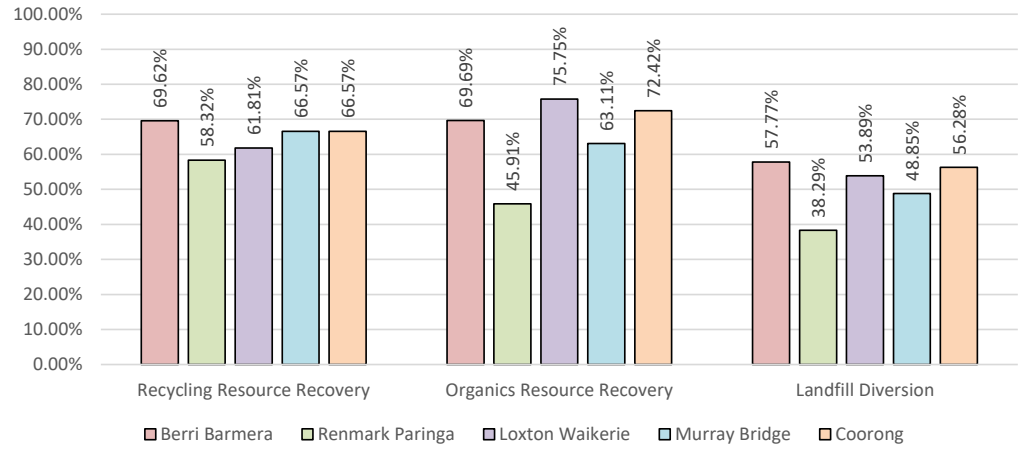

Figure 3. Resource Recovery and Diversion Rates Comparison by each Council.

Recycling Resource Recovery Rates ranged between 58.32% and 69.62%, with Berri Barmera performing best. Organics Resource Recovery Rates ranged between 45.91% and 75.75%, with Loxton Waikerie producing the best rate. Diversion Rates (proportion of waste diverted from landfill via

recycling/organics) ranged from 38.29% to 57.77%, with Berri Barmera out-performing the other Councils.

Common lost resources contributing to these rates included paper/cardboard, plastic and food waste placed in garbage bins.

3.5 Rural Garbage Composition (Mass)

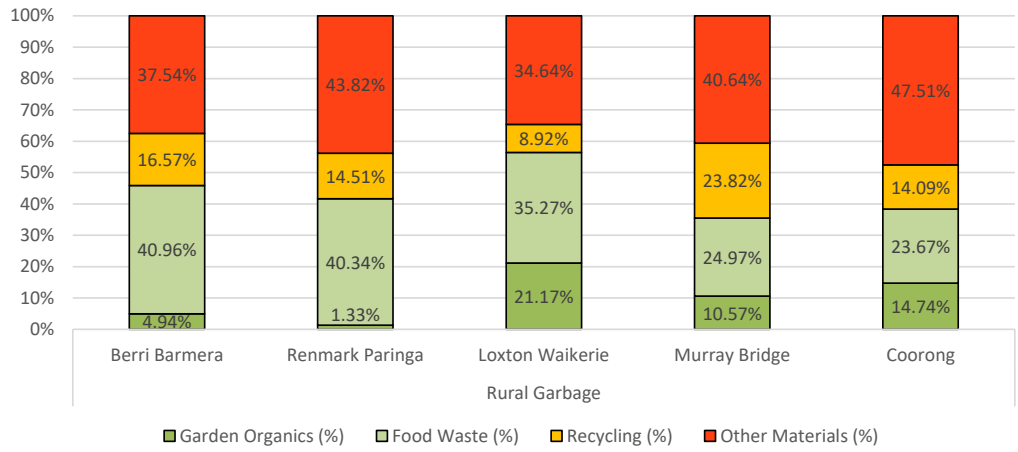

Figure 4. Comparison of Rural Composition (Mass)

Loxton Waikerie presented the highest amount of garden organics with a significant 21.17%. Berri Barmera presented the highest amount of food waste with 40.96%. And Murray Bridge produced the highest amount of recycling with 23.82%. Higher quantities of garden organics were expected across rural areas, yet in most cases this did not occur. Indicating residents have alternative disposal methods.

Berri Barmera Council

A total combined sample of 1,306.00 kg (13,263.10 L) was processed from 150 bins between 18th March and 25th March 2025. For comparison, Recycling and Organics data has been divided to represent a weekly sample size. A summary of the combined results is provided below.

- *Note that rural data is excluded from the Resource Recovery and Landfill Diversion rates, as it represents a separate sample set; this may result in variation from the regional quarterly reporting results.*

4.1 Generation, Diversion and Resource Recovery

Table 1. Comparison of all Waste Streams.

	Mass (Kg)				Volume (L)			
	Garbage	Recycling	Organics	Rural	Garbage	Recycling	Organics	Rural
Total Weight (kg)	369.35	337.90	440.90	157.85	3351.50	5789.00	2101.10	2021.50
Number of Bins Collected	50	50	25	25	50	50	25	25
Garden Organics (%)	13.97	0.00	95.38	4.94	3.88	0.00	93.86	2.72
Food Waste (%)	36.78	1.57	3.74	40.96	14.64	1.22	4.28	16.37
Recycling (%)	15.18	76.15	0.02	16.57	37.27	79.29	0.05	33.14
Other Materials (%)	34.07	22.28	0.85	37.54	44.22	19.49	1.81	47.76
Generation Rate (kg/bin/w)	7.39	3.38	8.82	6.31	67.03	57.89	42.02	80.86
Garden Organics (kg/bin/w)	1.03	0.00	8.41	0.31	2.60	0.00	39.44	2.20
Food Waste (kg/bin/w)	2.72	0.05	0.33	2.59	9.81	0.71	1.80	13.24
Recycling (kg/bin/w)	1.12	2.57	0.00	1.05	24.98	45.90	0.02	26.80
Other Materials (kg/bin/w)	2.52	0.75	0.08	2.37	29.64	11.29	0.76	38.62
Contamination Rate (%)	NA	23.85	0.87	NA	NA	20.71	1.86	NA
Resource Recovery Rate (%)	NA	69.62	69.69	NA	NA	64.74	75.87	NA
Landfill Diversion Rate (%)	57.77	NA	NA	NA	52.20	NA	NA	NA

A combined generation rate of 19.58 kg per week (166.94 L) was recorded across the garbage, recycling, and organics streams. This suggests that residents are not fully utilising the available capacity of their kerbside services across all streams; with a potential 380L for a standard service (weekly 140L garbage, and fortnightly 240L recycle and 240L organics).

Currently, only 57.77% by mass (52.20% by volume) of materials are being successfully diverted from landfill. Recycling recovery rates were recorded at 69.62% by mass (64.74% by volume), while organics recovery reached 69.69% by mass (75.87% by volume). These figures indicate that a significant portion of recoverable materials continues to be placed in incorrect waste streams, highlighting the need for improved source separation and resident education.

Let it be noted that outliers were present in the recycling sample; these were removed to ensure statistically relevant results without introducing unreliable skews to the data. A portion of garden organics (34.80 kg, 140 L) and treated timber (18.60 kg, 240 L) was removed.

4.2 Township Garbage Stream

A garbage sample totalling 369.35 kg (3,351.50 L) was collected from 50 bins and processed on 18th March 2025. This corresponds to a generation rate of 7.39 kg per bin per week (67.03 L/bin/w).

The composition of the sample, by mass and volume, was as follows:

- Garden Organics: 13.97% (mass), 3.88% (volume)
- Food Waste: 36.78% (mass), 14.64% (volume)
- Recycling: 15.18% (mass), 37.27% (volume)
- Other Materials: 34.07% (mass), 44.22% (volume)

The composition is further visualised in Figure 5 below.

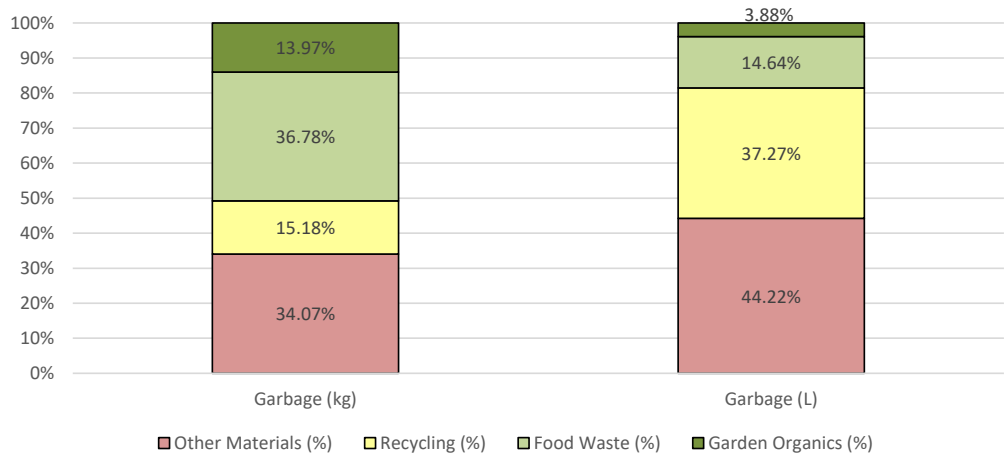

Figure 5. Summary of Garbage Mass (Kg) vs Volume (L).

Food Waste was generated in the largest quantity by mass, at 2.72 kg per bin per week. Other Materials followed at 2.52 kg/bin/w, while Recycling and Garden Organics were recorded at 1.12 kg/bin/w and 1.03 kg/bin/w, respectively.

In contrast, Other Materials was generated in the largest quantity by volume, at 29.64 L per bin per week. Recycling followed at 24.98 L/bin/week, while Food Waste and Garden Organics were recorded at 9.81 L/bin/week and 2.60 L/bin/week, respectively.

This indicates that while Food Waste and Garden Organics constitute the largest portion by mass, Recycling occupies a greater proportion of bin space by volume.

Given the environmental impact of organic material in landfills, reducing its presence in the garbage stream should remain a priority. Additionally, efforts to support residents in diverting recyclable materials from garbage bins, along with addressing potential capacity issues within the recycling stream for these residents, could be considered.

Table 2 provides further insights into areas of resource loss, opportunities for material recovery, and other key waste categories.

Table 2. Composition of Combined Key Categories of Note in Garbage Stream.

	Mass		Volume	
	Kg	%	L	%
CDS Mixed	1.55	0.42%	30.00	0.90%
Metals (Aluminium/Steel)	5.60	1.52%	70.00	2.09%
Paper/Cardboard	22.60	6.12%	605.00	18.05%
Glass	7.10	1.92%	24.00	0.72%
Plastics	19.20	5.20%	520.00	15.52%
Avoidable Food	35.65	9.65%	100.00	2.98%
Unavoidable Food	46.55	12.60%	130.00	3.88%
Containerised Food	43.20	11.70%	110.00	3.28%
Tissues, Paper Towel, Compostable Packaging	10.45	2.83%	150.50	4.49%
Garden Organics	11.65	3.15%	55.00	1.64%
Other Putrescible (Pet waste, Hair, Dead Animals)	39.95	10.82%	75.00	2.24%
Hazardous, E-Waste, Batteries	1.90	0.51%	5.70	0.17%
Soft Plastic	30.55	8.27%	600.00	17.90%
Non-Recyclable Hard Plastic	17.85	4.83%	190.00	5.67%
Textiles	47.25	12.79%	350.00	10.44%
Sanitary	11.70	3.17%	80.00	2.39%
Other Materials	16.60	4.49%	256.30	7.65%

Paper and cardboard (6.12%) and plastics (5.20%) were the most prevalent recyclable materials by mass. Together, these represent a potential diversion of 22.60 kg and 19.20 kg respectively from landfill into the existing recycling stream. Notably, paper and cardboard also comprised the largest recyclable volume in the waste stream, accounting for 18.05%.

Avoidable food (9.65%), unavoidable food (12.60%), containerised food (11.70%) and other putrescibles (10.82%) all fell within a similar range by mass. These figures indicate a potential to recover: 35.65 kg of avoidable food and 43.20 kg of containerised food (both of which could potentially be redirected away from kerbside bins), 46.55 kg of unavoidable food and 39.95 kg of other putrescibles, which could have been recovered through the organics bin service.

A low quantity of hazardous and electronic waste (0.51%) was found by mass. These materials should not be placed in any kerbside bin and require safe, designated disposal methods.

Soft plastics accounted for 8.27% by mass and were the second-largest category by volume at 17.90%. Textiles were the most significant contributor by mass (12.79%) and also ranked highly by volume (10.44%). These findings highlight key opportunities for targeted recovery and diversion programs.

Key Themes and Opportunities

- Promote organics bin usage: Increase awareness of accepted materials for the organics bin and implement programs to encourage food waste avoidance, such as meal planning and shopping lists to reduce over-purchasing and food expiry. Encourage food donations before it expires to further reduce waste.
- Assess paper and cardboard recycling capacity: Research whether the quantity of paper and cardboard in general waste is due to insufficient capacity in the current recycling service. If

capacity issues are identified, consider expanding recycling services or offering additional drop-off locations.

- Promote proper hazardous and electronic waste disposal: Continue messaging to ensure residents know the proper disposal methods for hazardous and electronic waste to protect waste management personnel's safety.
- Address soft plastic recycling: Explore alternative collection or recycling methods for soft plastics, given current limitations in supermarket recycling programs, to reduce their presence in the waste stream.
- Increase textile recovery: Many textiles found in the waste stream were still in recoverable condition. Promote donation opportunities (e.g., opportunity shops) and explore broader textile recovery programs to reduce landfill waste.

4.3 Township Recycling Stream

A recycling sample totalling 337.90 kg (5,789.00 L) was collected from 50 bins and processed on 25th March 2025. This corresponds to a generation rate of 3.38 kg per bin per week (57.89 L/bin/w).

The composition of the sample, by mass and volume, was as follows:

- Garden Organics: not present
- Food Waste: 1.57% (mass), 1.22% (volume)
- Recycling: 76.15% (mass), 79.29% (volume)
- Other Materials: 22.28% (mass), 19.49% (volume)

The composition of the recycling stream can be seen below in Figure 6.

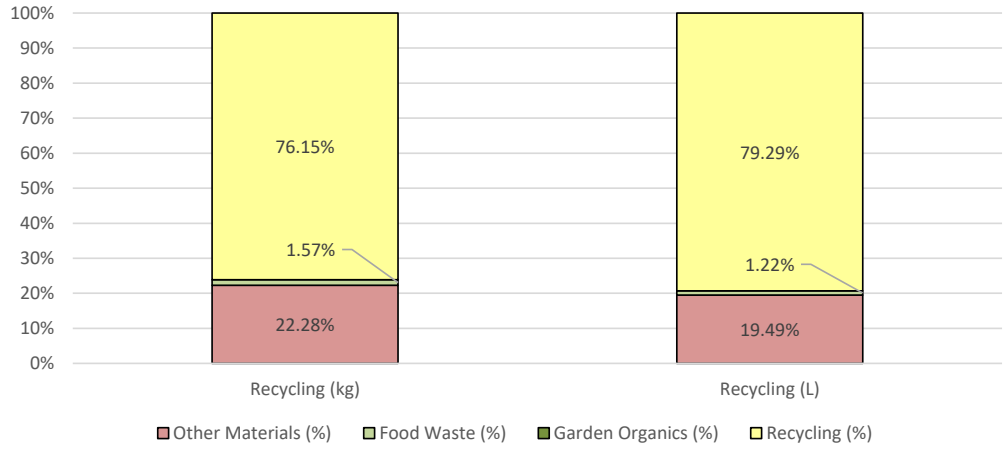

Figure 6. Summary of Recycling Mass (Kg) vs Volume (L).

Recycling was generated in the largest quantity by mass, at 2.57 kg per bin per week. Other Materials followed at 0.75 kg/bin/week, while Food Waste was recorded at 0.05 kg/bin/week. Garden Organics was not present.

By volume, Recycling was also the largest, at 45.90 L per bin per week, with Other Materials following at 11.29 L/bin/week. Food Waste was recorded at 0.71 L/bin/week.

The contamination rate for recycling by mass is 23.85%, indicating that nearly a quarter of the materials in the recycling stream are improperly sorted. By volume, the contamination rate for recycling is 20.71%, which suggests that a significant portion of the capacity is occupied by materials that should not be there. These rates highlight the need for improved sorting practices and education to reduce contamination and ensure more efficient recycling processes.

Table 3 provides further insights into areas of contamination and other key waste categories.

Table 3. Composition of Combined Key Categories of Note in Recycling Stream.

	Mass		Volume	
	Kg	%	L	%
CDS Mixed	7.45	2.20%	140.00	2.42%
Metals (Aluminium/Steel)	2.95	0.87%	100.00	1.73%
Paper/Cardboard	152.35	45.09%	3120.00	53.90%
Glass Jars/Other	12.10	3.58%	40.00	0.69%
Glass Wine & Spirit	49.80	14.74%	200.00	3.45%
Plastics	32.65	9.66%	990.00	17.10%
Food	4.45	1.32%	30.50	0.53%
Tissues, Paper Towel, Compostable Packaging	0.85	0.25%	40.00	0.69%
Garden Organics & Putrescible	0.00	0.00%	0.00	0.00%
Hazardous, E-Waste, Batteries	7.05	2.09%	45.50	0.79%
LPB & Coffee Cups	4.00	1.18%	139.00	2.40%
Soft Plastic	3.05	0.90%	180.00	3.11%
Non-Recyclable Hard Plastic	14.40	4.26%	225.00	3.89%
Non-Recyclable Metal	5.65	1.67%	50.00	0.86%
Non-Recyclable Glass	0.40	0.12%	0.50	0.01%
Textiles	8.05	2.38%	180.00	3.11%
Sanitary	0.10	0.03%	1.00	0.02%
Bagged Garbage	22.45	6.64%	240.00	4.15%
Bagged Recycling	0.00	0.00%	0.00	0.00%
Other Materials	10.15	3.00%	67.50	1.17%

Contaminants such as bagged garbage (6.64%) and non-recyclable hard plastics (4.26%) were the most prevalent by mass in the recycling stream. These materials represent 22.45 kg and 14.40 kg respectively, indicating a significant portion of recyclables are being compromised by incorrect disposal.

By volume, bagged garbage (4.15%) was the most significant contaminant at 240.00 L, followed by non-recyclable hard plastics (3.89%) at 225.00 L, soft plastics (3.11%) and textiles (3.11%) at 180.00 L each, and LPB & coffee cups (2.40%) at 139.00 L. These high-volume contaminants reduce the efficiency of the recycling process and increase processing costs.

Hazardous and electronic waste made up a notable portion of 2.09% by mass and 0.79% by volume. These items pose safety risks and should be disposed of through appropriate collection services rather than kerbside recycling bins.

Key Themes and Opportunities

- Improve waste separation: Encourage better sorting of recyclables from non-recyclables, with clear guidelines.
- Increase education and awareness: Launch campaigns to highlight proper recycling practices and disposal methods for non-recyclable items like bagged garbage, LPB, soft plastics, and textiles.
- Promote safe disposal for hazardous waste: Ensure access to collection services for hazardous and electronic waste, with reminders for proper disposal.
- Target high-volume contaminants: Reduce soft plastics and textiles in recycling by partnering with recovery organisations and promoting recyclable packaging through manufacturer incentives.

4.4 Township Organics Stream

An organics sample totalling 440.90 kg (2,101.10 L) was collected from 25 bins and processed on 18th March 2025. This corresponds to a generation rate of 8.82 kg per bin per week (42.02 L/bin/w).

The composition of the sample, by mass and volume, was as follows:

- Garden Organics: 95.86% (mass), 96.24% (volume)
- Food Waste: 3.27% (mass), 1.90% (volume)
- Recycling: 0.02% (mass), 0.05% (volume)
- Other Materials: 0.85% (mass), 1.81% (volume)

The composition of the organics stream can be seen below in Figure 7.

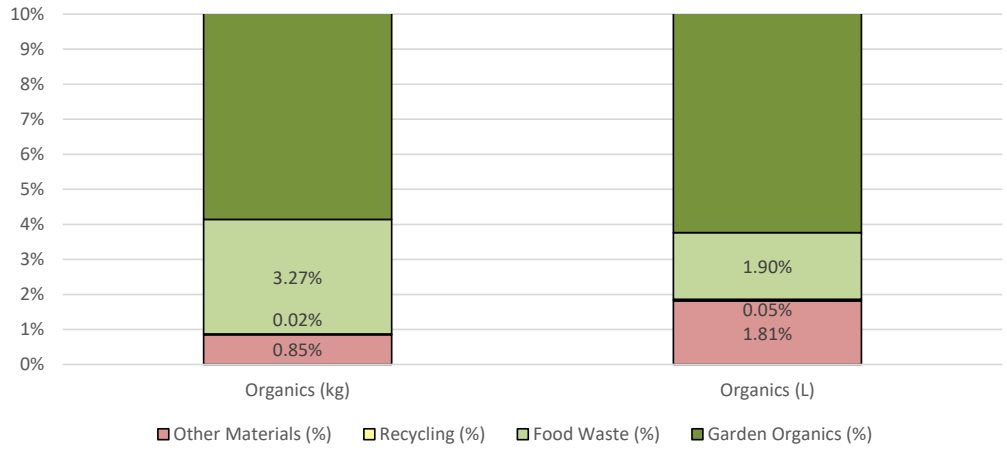

Figure 7. Summary of Recycling Mass (Kg) vs Volume (L).

Garden Organics was generated in the largest quantity by mass in the organics stream, at 8.41 kg per bin per week. Food Waste followed at 0.33 kg/bin/week, while Other Materials and Recycling were recorded at 0.08 kg/bin/week and 0.00 kg/bin/week, respectively.

By volume, Garden Organics was again highest, at 39.44 L per bin per week. Food Waste was recorded at 1.80 L/bin/week, followed by Other Materials at 0.76 L/bin/week. Recycling was minimal, at just 0.02 L/bin/week.

The contamination rate for organics by mass is 0.87%, and by volume is 1.86%, indicating that the stream is largely composed of appropriate materials. These low rates reflect strong source separation practices and suggest the organics system is functioning effectively with minimal need for corrective intervention.

Table 4 provides further insights into areas of contamination and other key waste categories.

Table 4. Composition of Combined Key Categories of Note in Organics Stream.

	Mass		Volume	
	Kg	%	L	%
Recycling (excluding Paper/Cardboard)	0.10	0.02%	1.00	0.05%
Paper/Cardboard	2.10	0.48%	50.00	2.38%
Avoidable Food	9.60	2.18%	20.00	0.95%
Unavoidable Food	0.00	0.00%	0.00	0.00%
Tissues, Paper Towel, Compostable Packaging	0.00	0.00%	0.00	0.00%
Food Waste in Liner Bags	4.80	1.09%	20.00	0.95%
Garden Organics	420.55	95.38%	1972.00	93.86%
Other Putrescible (Pet waste, Hair, Dead Animals)	0.00	0.00%	0.00	0.00%
Containerised Food	0.00	0.00%	0.00	0.00%
Treated Timber/Wood	2.20	0.50%	15.00	0.71%
Soil	0.00	0.00%	0.00	0.00%
Other Materials	1.55	0.35%	23.10	1.10%

Paper and cardboard (commonly compostable when uncoated) made up 0.48% by mass (2.10 kg) and 2.38% by volume (50.00 L). This volume contribution is notable and highlights the potential for further diversion of compostable paper products, such as soiled packaging or cardboard food containers.

Other accepted compostable materials were present in relatively low quantities compared to the overall sample, suggesting underutilisation of the organics service for these waste types. Avoidable food accounted for 2.18% by mass (9.60kg) and 0.95% by volume (20.00 L), while food waste in liner bags represented 1.09% by mass (4.80 kg) and 0.95% by volume (20.00 L). These figures indicate a potential opportunity to divert a greater portion of food waste from landfill into the organics stream. Unavoidable food, tissues, paper towel, compostable packaging and other putrescible were not present in the sample, suggesting either low generation or improper disposal into other streams such as general waste.

Contaminants such as treated timber (0.50%) and other materials (0.35%) were the most prevalent by mass in the organics stream, amounting to approximately 2.20 kg and 1.55 kg respectively. Other materials included: Soft plastic, non-recyclable metal, textiles, building material and bagged garbage. By volume, other materials (1.10%) and treated timber (0.71%) again stood out, contributing 23.10 L and 15.00 L respectively. Although these may appear minor in percentage terms, they represent materials that are not suitable for composting and compromise the quality of the organics stream.

Although these compostable materials—paper/cardboard, avoidable food, unavoidable food, tissues, paper towel, compostable packaging, food waste in liner bags and other putrescible—are accepted in the organics stream, councils are not currently promoting their recovery. This lack of promotion could be contributing to underutilisation of the organics service for these types of waste.

Key Themes and Opportunities

- Increase awareness and promotion: Educate the public on accepted compostable materials such as avoidable food, food waste in liner bags, and compostable paper products. Promote the recovery of these materials through clearer labelling and targeted community campaigns.
- Enhance source separation: Improve practices around food waste recovery and compostable paper products, ensuring materials like unavoidable food, tissues, paper towel, and compostable packaging are properly disposed of in the organics bin.
- Reduce contamination: Focus on reducing contamination by raising awareness about non-compostable items like treated timber and miscellaneous materials, which can compromise the quality of the organics stream.
- Promote organics services more effectively: Encourage greater utilisation of the organics service through clearer messaging and support from local councils to increase diversion from landfill.

4.5 Rural Garbage Stream

A rural sample totalling 157.85 kg (2,021.50 L) was collected from 25 bins and processed on 25th March 2025. This corresponds to a generation rate of 6.31 kg per bin per week (80.86 L/bin/w).

The composition of the sample, by mass and volume, was as follows:

- Garden Organics: 4.94% (mass), 2.72% (volume)
- Food Waste: 40.96% (mass), 16.37% (volume)
- Recycling: 16.57% (mass), 33.14% (volume)
- Other Materials: 37.54% (mass), 47.76% (volume)

The composition is further visualised in Figure 8 below.

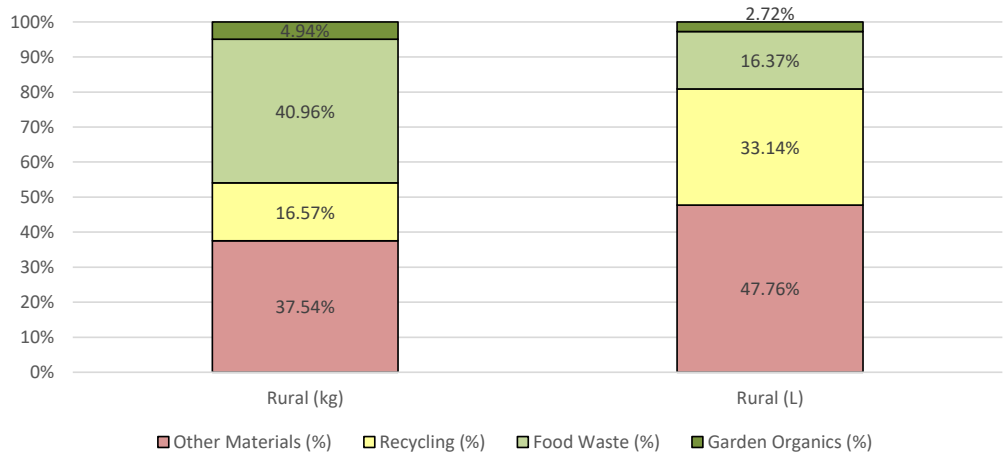

Figure 8. Summary of Garbage Mass (Kg) vs Volume (L).

Food Waste was generated in the largest quantity by mass, at 2.59 kg per bin per week, followed by Other Materials at 2.37 kg/bin/w, Recycling at 1.05 kg/bin/w, and Garden Organics at 0.31 kg/bin/w.

By volume, Other Materials generated the highest volume at 38.62 L/bin/w, followed by Recycling at 26.80 L/bin/w, Food Waste at 13.24 L/bin/w, and Garden Organics at 2.20 L/bin/w.

These figures show that while Food Waste dominates by mass, Other Materials and Recycling account for more space in rural bins.

Importantly, organics bins are not currently offered to rural residents, which may contribute to the high levels of food waste in the rural stream. Yet levels of garden organics were low, suggesting other disposal methods, such as a tip. Expanding access to an organics collection service—or promoting alternative disposal methods such as home composting or drop-off sites—could significantly reduce landfill-bound organic waste. Simultaneously, improved recycling education and potential capacity enhancements would help increase recovery rates and lower contamination.

Table 5 provides further insights into areas of resource loss, opportunities for material recovery, and other key waste categories.

Table 5. Composition of Combined Key Categories of Note in Rural Garbage Stream.

	Mass		Volume	
	Kg	%	L	%
CDS Mixed	0.55	0.35%	15.00	0.74%
Metals (Aluminium/Steel)	3.20	2.03%	60.00	2.97%
Paper/Cardboard	12.35	7.82%	345.00	17.07%
Glass	4.00	2.53%	10.00	0.49%
Plastics	6.05	3.83%	240.00	11.87%
Avoidable Food	10.75	6.81%	35.00	1.73%
Unavoidable Food	25.40	16.09%	70.00	3.46%
Containerised Food	23.15	14.67%	110.00	5.44%
Tissues, Paper Towel, Compostable Packaging	5.35	3.39%	116.00	5.74%
Garden Organics	1.95	1.24%	30.00	1.48%
Other Putrescible (Pet waste, Hair, Dead Animals)	5.85	3.71%	25.00	1.24%
Hazardous, E-Waste, Batteries	2.00	1.27%	5.30	0.26%
Soft Plastic	14.95	9.47%	645.00	31.91%
Non-Recyclable Hard Plastic	2.35	1.49%	30.00	1.48%
Textiles	3.30	2.09%	40.00	1.98%
Sanitary	26.40	16.72%	125.00	6.18%
Other Materials	10.25	6.49%	120.20	5.95%

Paper and cardboard (7.82%) and plastics (3.83%) were the most prevalent recyclable materials by mass in the rural waste stream, representing 12.35 kg and 6.05 kg respectively. By volume, paper and cardboard made up a substantial 17.07%, while plastics accounted for 11.87% of the stream, indicating that these materials take up significant bin space and could be diverted into the existing recycling stream.

Organic waste was present in notable quantities by mass: Unavoidable food at 16.09% (25.40 kg), containerised food at 14.67% (23.15 kg), avoidable food at 6.81% (10.75 kg), other putrescible at 3.71% (5.85 kg) and tissues, paper towel, and compostable packaging at 3.39% (5.35 kg). In total, these organic fractions comprised more than 50% of the waste by mass. Given that rural areas do not currently have access to an organics service, this represents a significant opportunity for improved diversion if alternative solutions are explored.

Soft plastics were responsible for 9.47% by mass (14.95 kg) and dominated the volume at 31.91% (645.00 L), suggesting that while relatively lightweight, they occupy substantial bin space. Sanitary was

another elevated material, contributing a significant 16.72% by mass (26.40 kg) and 6.18% by volume (125.00 L).

A small proportion of hazardous, electronic, and battery waste was detected (1.27% by mass, 0.26% by volume). Although minimal, these items pose safety and environmental risks and must be disposed of through designated facilities, not kerbside bins.

These findings emphasise the need for expanded recycling access, organics alternatives for rural areas, and tailored education around safe disposal and material recovery.

Key Themes and Opportunities

- Introduce Organics Diversion Options: Offer an organics bin service or support alternatives such as home composting and community drop-off points. Complement this with education on food waste reduction through meal planning, storage tips, and food donation initiatives.
- Improve Recycling Access and Education: Ensure rural recycling services meet residents' needs, and provide clear guidance on what can be recycled to improve separation and reduce contamination.
- Address Soft Plastics and sanitary: Explore dedicated collection programs for soft plastics and expand awareness of reusable sanitary products to reduce landfill contributions.
- Promote Safe Disposal of Hazardous Waste: Continue public messaging around the correct disposal of hazardous and electronic waste to protect health and safety.
- Reinforce Environmental Benefits: Emphasise the environmental impact of organics in landfill and the broader importance of diverting materials from landfill through sustainable waste practices.

Appendix 1 – Sorting Categories

CDS Mixed
Metals (Aluminium/Steel)
Paper/Cardboard
Glass Jars/Other
Glass Wine & Spirit
Plastics

Avoidable Food
Unavoidable Food
Containerised Food
Tissues, Paper Towel, Compostable Packaging
Food Waste in Liner Bags/Loose Liner Bags

Garden Organics
Other Putrescible (Pet waste, Hair, Dead Animals)

Bagged Food Waste (Plastic)
Bagged Organics (Plastic)
Oversized Branches/Logs
Treated Timber
Soil
LPB
Coffee Cups
Disposable Paper (Receipts, Wipes)

Non-Recyclable Hard Plastic
Soft Plastic
Expanded Polystyrene
Non-Recyclable Metal
Composite Materials (Paper/Plastic)
E-Waste (Cord)
E-Waste (Imbedded battery) (including vapes)
Batteries
Hazardous Material (Paint, Chemicals, Pharma, Light Globes)
Children's Nappies
Hygiene/Sanitary Products/Adult Nappies
Textiles
CDS Containing Liquid
Ceramics
Non-Recyclable Glass
Building Material
Bricks, Rubble, Rocks
Wood (Not Building)
Bagged Garbage (Plastic)
Bagged Garbage (Liner)
Bagged Recycling (Plastic)
Bagged Recycling (Liner)
Other
Other Fine Material/Residual

Appendix 2 – Gallery



Garbage Sample



Organics Sample



Recycle Sample



Rural Sample



Example of Recycle Contamination



Example of Recycle Contamination