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Green Industries SA (GISA)

DRAFT Guidelines Toolkit

South Australia



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1 Overview

The following toolkit comprises templates, checklists, forms and reference materials provided to assist local governments in planning and implementing waste audits.

Appendix A – Operational Checklists

- Audit planning and equipment checklist
- Tender checklist for local governments engaging external waste audit service providers

Appendix B – Reference Material

- Sorting category definitions and inclusions
- Material categories acceptance in each kerbside collection stream
- Material categories consolidation for analysis purposes
- Sorting tips for auditors
- Decision-making matrix: guidance for other applicable methods

Appendix C – Audit Forms and Templates

- Single-unit dwellings sample collection form template
- Multi-unit dwellings sample collection form template
- Example sorting form: minimum audit categories
- Example sample sorting form: including all additional optional audit subcategories

Appendix D – WHS Supporting Tools

- Example of Job Safety and Environment Analysis template
- Examples of Safe Work Method Statement (SWMS) adapted to waste audits

Appendix E – Statistical Considerations

Appendix F – Additional material analysis

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2 Appendix A – Operational Checklists

2.1 Audit planning and equipment checklist

Planning and major equipment	
Project manager appointed	☐
Dedicated council point of contact appointed	☐
Street selection complete, including reserve streets	☐
Sorting categories agreed	☐
Council has confirmed which materials are accepted in kerbside bins and those considered 'contamination'	☐
Local government waste collection supervisor (internal or contractor) consulted on collection timing	☐
Covered sorting area or marquee organised, 10 m x 10 m minimum, protected from wind and weather	☐
Kerbside collection truck(s) and driver(s) organised for sample collection	☐
Access to weighbridge organised, where available	☐
Bins for sorted waste	☐
Site inductions and any required WHS briefings for auditors arranged	☐
Disposal of sorted waste arranged	☐
Data from previous audits accessed/requested, where available	☐
Job Safety and Environment Analysis completed and signed	☐
Letter of authorisation on local government's letterhead to give to any concerned residents	☐
Staffing and rosters organised	☐

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Sample collection and sorting equipment	
Collection run sheets, sorting sheets, data-entry sheets and incident reporting forms ready	☐
PPE – safety footwear	☐
PPE – high-visibility vests	☐
PPE – head torches	☐
PPE – overalls/long pants/long-sleeved shirts	☐
PPE – masks	☐
PPE – gloves (cut and puncture resistant)	☐
PPE – eye protection	☐
PPE – hearing protection (earplugs or earmuffs)	☐
PPE – broad-brimmed hats (if collecting and sorting outside during daylight hours)	☐
Mobile phone	☐
First-aid kit – truck and sorting site	☐
Spill kit – truck and sorting site	☐
Drinking water – truck and sorting site	☐
Pedestal scales	☐
Table scales	☐
Shovels/brooms	☐
Trestle tables	☐
Tarpaulins	☐
Tubs/buckets for weighing sorted material	☐

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Tongs	☐
Sharps container	☐
Asbestos kit	☐
Caution tape	☐
Garbage bags	☐
Permanent markers and masking tape for labelling sorting tubs	☐
Handwash/hand sanitiser	☐
Moist disposable towels/wipes (e.g. baby wipes)	☐
Sunscreen	☐
Insect repellent	☐
Disinfectant	☐
Deodoriser	☐
Laptop/wi-fi	☐
Any other items identified in the JSEA	☐

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2.2 Tender checklist for local governments engaging external waste audit service providers

Information for local government to provide to potential tenderers	
Information on purpose, objectives and scope of the audit, including expected number of households and waste streams to be audited	☐
Description of kerbside services, including waste streams, bin size and collection frequency, maps of collection zones	☐
Local government demographic information, including number of households, single-unit dwellings vs multi-unit dwellings, urban vs regional/remote zones	☐
Copy of the SA 2026 Kerbside Waste Audit Guidelines	☐
Information on whether local government or contractor is expected to provide collection vehicle/driver, sorting site, access to weighbridge, bins for sorted waste and disposal of sorted waste	☐
Proposed audit sorting categories (including which categories are considered contamination) and/or areas of special interest (e.g. e-waste, textiles, high-rise units)	☐
Availability of historic audit data to enable trend analysis	☐
Whether an in-person presentation of results to local government is required	☐
Proposed timeline by which audits must be completed	☐
Information for local government to request in tender documents	
Proposed sample size and selection, with justification	☐
Project plan, including timeline, milestones, sample collection procedures, sort site location, sample sorting procedures and disposal	☐
Data analysis and reporting plan, including how local government audit objectives will be reported in metrics	☐
Provision of all raw data for each waste stream	☐
Quality, health, safety and environment plan	☐
Key personnel, experience and qualifications, reference projects and referees	☐
Project communication and reporting plan, including how many draft revisions are expected	☐
Household data privacy, audit data ownership	☐
Pricing, including for any alternative options (e.g. additional sorting categories)	☐

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3 Appendix B – Reference Material

3.1 Sorting category definitions and inclusions

Minimum required categories for routine audits	Expanded list of audit sorting subcategories	Definition
Paper and cardboard		
Paper	Newspapers	Newspapers, newspaper-like pamphlets
	Magazines	Magazines (glossy and non-glossy), pamphlets, brochures
	Office paper	Office paper, A4 document paper, writing pads, letters, etc.
	Other recyclable paper	Paper packaging, paper bags, wrapping paper, envelopes
Cardboard	Non-corrugated cardboard	Cardboard without corrugation (cereal boxes, business cards, egg cartons)
	Corrugated cardboard	Cardboard with corrugation (e.g. clean pizza boxes, shipping or moving boxes)
CDS-eligible LPB containers	Liquid paperboard (LPB) containers (CDS-eligible)	CDS-eligible LPB containers for fruit juice, fruit juice drinks and flavoured milks
Other recyclable liquid paperboard (LPB)	Other recyclable liquid paperboard (LPB)	Other liquid paperboard (not silver-lined) such as milk cartons, cream cartons, ice cream containers. Check local council guidelines to see if TetraPak containers are included in this category as recyclables.
Non-kerbside recyclable paper and cardboard	Other non-kerbside recyclable paper/cardboard	Shredded paper, other non-recyclable paper products. Check local council guidelines to see if non-CDS silver-lined liquid paperboard stock cartons and TetraPak containers are included in this category since they are not being recycled.
Glass		
CDS-eligible glass containers	CDS-eligible glass containers	CDS-eligible beer bottles, wine bottles, spirit, cider/fruit-based, flavoured water, fruit juice
Other recyclable glass	Other recyclable glass	Other glass food and beverage containers, other glass packaging
Non-kerbside recyclable glass	Non-recyclable glass fines	Small crushed glass, particles typically measuring less than 5 mm
	Other non-kerbside recyclable glass	Plate glass (window/ windscreen), Pyrex, mirror glass, Corningware, light globes, laboratory, glass >4.75 mm
Plastics		
CDS-eligible plastic containers	Polyethylene terephthalate (PET) (1) drink containers (CDS-eligible)	CDS eligible (PET) soft drink, flavoured water, fruit juice, sports drinks, plain water (carbonated/non-carb)
	High density polyethylene (HDPE) (2) drink containers (CDS-eligible)	CDS-eligible HDPE container, e.g. flavoured milk bottles
Kerbside-recyclable hard plastic	Polyethylene terephthalate (PET) (1) packaging	PET (1) food containers, mouthwash containers, detergent bottles
	High-density polyethylene (HDPE) (2) packaging	HDPE milk bottles, shopping bags, etc. HDPE may be coloured or opaque.
	Polyvinyl chloride (PVC) (3)	PVC (3) packaging and containers (i.e. PVC (3) cordial and juice bottles)

Minimum required categories for routine audits	Expanded list of audit sorting subcategories	Definition
Kerbside-recyclable soft plastic	Low-density polyethylene (LDPE) (4)	Ice cream container lids, cream bottle lids, squeeze bottles
	Polypropylene – PP (5)	PP bottles and ice-cream containers, drinking straws, plant pots, some bottle caps, microwave oven ware, plastic garden settings
Other bulky or non-kerbside recyclable plastics	Polystyrene	Hard, rigid or clear polystyrene, such as yogurt and dairy containers, multipack pull-apart yoghurt cups, rigid CD cases, small rigid single-serve sour cream and custard tubs, multi-slot rigid plastic inner package for biscuits
	Expanded plastic foam packaging – EPS (6)	Fragile item packaging, foam beans, foam cups or trays, coat hangers, office accessories, packaging foam
	Other polyvinyl chloride (PVC) (3)	PVC (3) packaging, pipes, fittings, blister packs, toys
	Soft plastic and plastic bags (4)	Plastic film, plastic bags, chip packets, biscuit wrappers
	Other non-kerbside recyclable plastics	Other plastics, crates, pallets, bins, rigid moulded products, appliance parts, houseware/kitchenware, furniture, plant pots, composite plastic (mostly plastic), acrylics, nylon, rope, other mixed plastics (7)
Metals		
CDS-eligible metal containers	Steel containers (CDS-eligible)	CDS-eligible steel containers, i.e. alcoholic sodas and spirit-based mixers, beer, soft drinks
	Aluminium containers (CDS-eligible)	CDS-eligible aluminium containers, i.e. alcoholic sodas and spirit-based mixers, beer and soft drinks
Ferrous metals	Ferrous metals	Steel packaging, i.e. food cans, pet food cans, clean and empty tins, steel bottle caps
Aluminium (non-CDS)	Aluminium (non-CDS)	Aluminium packaging, i.e. food cans, pet food cans, aerosols, industrial cans, aluminium foil
Non-ferrous metals (excluding aluminium)	Non-ferrous metals (excluding aluminium)	Recyclable non-ferrous metals, i.e. metal bottle tops and lids
Non-kerbside-recyclable metal	Other steel/ferrous metals	Other non-packaging steel items, e.g. kitchen utensils, steel offcuts, metal shelving or furniture components, nails, screws, bolts
	Other non-ferrous metals	Other non-ferrous metal items, e.g. copper, brass, bronze
Organics		
Garden organics	Garden organics/vegetation	Grass clippings, tree trimmings/pruning, flowers, tree wood. Check individual council acceptance criteria for length and maximum diameter
	Wood/timber – untreated	Milled wood/timber, wooden skewers, uncoated bamboo or wooden cutlery
	Oversized garden organics	Stumps, logs, branches and trees that exceed council's acceptance criteria with regard to length and diameter
Food organics	Loose food waste	Vegetable scraps, meat scraps, leftover food, animal food
	Food waste in certified compostable bags/caddy liners (AS4736 and/or AS5810)	Food waste in certified compostable bags /caddy liners (with Australian Standards AS4736 and/or AS5810)
Compostable packaging	Compostable packaging	Compostable packaging, bags or caddy liners with Australian Standards AS4736 and/or AS5810

Minimum required categories for routine audits	Expanded list of audit sorting subcategories	Definition
Other organics (compostable)	Disposable paper products	Paper towels, paper napkins and tissues
	Food-soiled paper and cardboard	Food soiled, paper wrappers, pizza boxes, paper plates, paper straws, cardboard clam takeaway containers
	Other organic	Dead animals, fur/hair, other organics
	Compostable pet waste	Pet waste, compostable cat litter made from 100% paper, sawdust, or products certified to Australian Standard AS4736, out of bag or in certified compostable bags/caddy liners
Other organics (contamination)	Containerised food – non compostable	Food waste in non-compostable containers, in its original packaging, out of date discarded food
	Wood/timber – treated	Treated wood/timber, children's wooden toys
Building and demolition materials		
Building and demolition materials	Building and demolition materials	Building materials (not included in other material categories), including plasterboard, composite fittings, bricks, concrete and pavers
Hazardous wastes		
Hazardous wastes	Hazardous – household chemicals and paint	Containers containing bleach, cleaning products, petrol and flammable liquids, pesticides, other or unknown chemicals, paints
	Hazardous – clinical/medical	Household medications and vitamins, sharps, face masks, dressings and bandages, any blood-stained disposable material or equipment
	Hazardous – other items	Gas bottles, aerosol cans, fire extinguishers, fluorescent lights, smoke detectors, flares and any other hazardous material, asbestos, motor oil, explosives, fire extinguishers
	Lead–acid batteries	Used lead–acid batteries
Textiles, leather and rubber (excl. tyres)		
Textiles	Clothing	Clothing, non-leather shoes
	Other textiles	Carpet, non-clothing wool/cotton/natural fibre materials, bedding, towels, curtains, pillows, sleeping bags, dog beds and mixed textiles
Leather and rubber	Leather and rubber	Leather clothing, craft leather, some shoes, belts with belt buckle, rubber bands, rubber toys, shoes, latex gloves
E-waste		
E-waste	TVs and computer equipment (NTCRS scheme products)	NTCRS – TVs, laptops, tablets/iPad, keyboard, computer monitor, hard drives, printers, peripheral devices, associated cables, etc.
	Mobile phones	Mobile phones, chargers, mobile accessories
	Toner cartridges	Printer and toner cartridges
	Electrical items and peripherals (non-lithium battery)	Non rechargeable radios, stereos, speakers, VCR, DVD players, power tools, wiring and cables, small electrical items (toaster, blender, etc.)
Lithium-ion batteries	Lithium-ion batteries	Rechargeable batteries powering smartphones, laptops, power tools, e-bikes, and electric vehicles

Minimum required categories for routine audits	Expanded list of audit sorting subcategories	Definition
Items with embedded batteries	Items with embedded batteries	Vapes, electric toothbrushes, cordless power tools, cordless vacuums, rechargeable toys, etc.
Batteries other (excluding lead–acid batteries)	Batteries other (excluding lead–acid batteries)	Other batteries, such as standard single-use batteries (e.g., AA, AAA, C, D, 9V), and small round batteries used in watches, hearing aids, calculators, and car key fobs
Other materials		
Other - unclassified materials	Nappies and sanitary products	Used disposable nappies, hygiene and sanitary products
	Non-compostable cat litter/pet waste in non-compostable packaging	Cat litter or pet waste in plastic bags
	Ceramics, dust, dirt, rock, inert, ash	Ceramic cups, bowls, pottery items, ash, dirt, vacuum bag contents, soil, rock
	Other (please specify)	Other materials not covered in the above categories – engine block, tyres, books
Bagged materials (except organic materials in certified compostable bags)	Bagged garbage	This category applies to audits for recycling, organics and FOGO stream loads only, where general waste in bags is classified as a contaminant. It does not apply to general waste stream audits, as all bagged contents must be dispersed and sorted.
	Bagged recyclables	For the recycling stream, this is commingled recycling in plastic bags. For FOGO stream, this is solely food and garden organics placed in non-compliant plastic bags.

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3.2 Material categories acceptance in each kerbside collection stream

NOTE: Prior to commencing analysis, the classification and reporting of sorting categories must be based on a verified understanding of the materials accepted in each kerbside collection stream. This should be confirmed through a review of relevant council waste and recycling information and consultation with the receiving material recovery facility (MRF) and other relevant processing facilities. The final allocation of materials to sorting categories must be validated and formally approved by the council before analysis begins to ensure consistency, accuracy and alignment with local collection and processing arrangements.

			Accepted in			
Minimum audit sorting category	**Expanded audit sorting subcategories**	**Include a count of these items?**	General Waste	Organics	Comingled Recycling	**Comments**
Paper and cardboard						
Paper	Newspapers	☐			Y	
	Magazines	☐			Y	
	Office paper	☐			Y	
	Other recyclable paper	☐			Y	Books included in 'Other'.
Cardboard	Non-corrugated cardboard	☐			Y	
	Corrugated cardboard	☐			Y	
CDS-eligible LPB containers	Liquid paperboard (LPB) containers (CDS-eligible)	☑			Y	
Other recyclable liquid paperboard (LPB)	Other recyclable liquid paperboard (LPB)	☐			Y	Check local council guidelines to see if TetraPak containers are included in this category as recyclables.
Non-kerbside recyclable paper and cardboard	Other non-kerbside recyclable paper/cardboard	☐	Y			Check local council guidelines to see if non-CDS silver-lined liquid paperboard stock cartons and TetraPak containers are included in this category as they are not being recycled.
Glass						
CDS-eligible glass containers	CDS-eligible glass containers	☑			Y	
Other recyclable glass	Other recyclable glass	☐			Y	
Non- kerbside recyclable glass	Non-recyclable glass fines	☐	Y			
	Other non- kerbside recyclable glass	☐	Y			

			Accepted in			
Minimum audit sorting category	**Expanded audit sorting subcategories**	**Include a count of these items?**	General Waste	Organics	Comingled Recycling	**Comments**
Plastics						
CDS-eligible plastic containers	Polyethylene terephthalate (PET) (1) drink containers (CDS-eligible)	☑			Y	
	High-density polyethylene (HDPE) (2) drink containers (CDS-eligible)	☑			Y	
Kerbside-recyclable hard plastic	Polyethylene terephthalate (PET) (1) packaging	☐			Y	
	High-density polyethylene (HDPE) (2) packaging	☐			Y	
	Polyvinyl chloride (PVC) (3)	☐			Y	Some PVC (3) can be recyclable through kerbside collection. Check with council and MRF.
Kerbside-recyclable soft plastic	Low-density polyethylene (LDPE) (4)	☐			Y	
	Polypropylene – PP (5)	☐			Y	
Other bulky or non-kerbside recyclable plastics	Polystyrene	☐	Y			Ideally, all types of polystyrene and expanded plastic foam should not be placed in the bin but can be recycled if taken to a drop-off point.
	Expanded plastic foam packaging - EPS (6)	☐	Y			Ideally, all types of polystyrene and expanded plastic foam should not be placed in the bin but can be recycled if taken to a drop-off point.
	Other polyvinyl chloride (PVC) (3)	☐	Y			Some PVC (3) can be recyclable through kerbside collection. Check with council and MRF.
	Soft plastic and plastic bags (4)	☐	Y			
	Other non- kerbside recyclable plastics	☐	Y			
Metals						
CDS-eligible metal containers	Steel containers (CDS-eligible)	☑			Y	
	Aluminium containers (CDS-eligible)	☑			Y	
Ferrous metals	Ferrous metals	☐			Y	Accepted in kerbside yellow bin – check council guides
Aluminium (non-CDS)	Aluminium (non-CDS)	☐			Y	
Non-ferrous metals (excluding aluminium)	Non-ferrous metals (excluding aluminium)	☐			Y	Can be accepted in kerbside yellow bin in SA. Check with council and MRF.

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			Accepted in			
Minimum audit sorting category	**Expanded audit sorting subcategories**	**Include a count of these items?**	General Waste	Organics	Comingled Recycling	**Comments**
Non-kerbside-recyclable metal	Other steel/ferrous metals	☐	Y			Many of these items are recyclable but not through kerbside systems
	Other non-ferrous metals	☐	Y			Many of these items are recyclable but not through kerbside systems
Organics						
Garden organics	Garden organics/vegetation	☐		Y		
	Wood/timber – untreated	☐		Y		
	Oversized garden organics	☐		Y		
Food organics	Loose food waste	☐		Y		
	Food waste in certified compostable bags/caddy liners (AS4736 and/or AS5810)	☐		Y		
Compostable packaging	Compostable packaging	☐		Y		
Other organics (compostable)	Disposable paper products	☐		Y		
	Food-soiled paper and cardboard	☐		Y		
	Other organic	☐		Y		
	Compostable pet waste	☐		Y		Only certified compostable cat litter can go in the green bin – if not certified, it should be placed in the general waste bin
Other organics (contamination)	Containerised food – non-compostable	☐	Y			
	Wood/timber – treated	☐	Y			
Building and demolition materials						
Building and demolition materials	Building materials	☐	N	N	N	Should be dropped at an appropriate depot.
Hazardous wastes						
Hazardous wastes	Hazardous – household chemicals and paint	☑	N	N	N	These items should not be placed in the kerbside collection system
	Hazardous – clinical/medical	☑	N	N	N	These items should not be placed in the kerbside collection system
	Hazardous – other items	☑	N	N	N	These items should not be placed in the kerbside collection system

			Accepted in			
Minimum audit sorting category	**Expanded audit sorting subcategories**	**Include a count of these items?**	General Waste	Organics	Comingled Recycling	**Comments**
	Lead–acid batteries	☑	N	N	N	These items should not be placed in the kerbside collection system
Textiles, leather and rubber (excl. tyres)						
Textiles	Clothing	☐	Y			
	Other textiles	☐	Y			
Leather and rubber	Leather and rubber	☐	Y			
E-waste						
E-waste	TVs and computer equipment (NTCRS scheme products)	☑	N	N	N	These items should not be placed in the kerbside collection system
	Mobile phones	☑	N	N	N	These items should not be placed in the kerbside collection system
	Toner cartridges	☑	N	N	N	These items should not be placed in the kerbside collection system
	Electrical items and peripherals (non-lithium battery)	☑	N	N	N	These items should not be placed in the kerbside collection system
Lithium-ion batteries	Lithium-ion batteries	☑	N	N	N	These items should not be placed in the kerbside collection system
Items with embedded batteries	Items with embedded batteries	☑	N	N	N	These items should not be placed in the kerbside collection system
Batteries other (excluding lead acid batteries)	Batteries other (excluding lead acid batteries)	☑	N	N	N	These items should not be placed in the kerbside collection system
Other materials						
Other – unclassified materials	Nappies and sanitary products	☐	Y			
	Non-compostable cat litter/pet waste in non-compostable packaging	☐	Y			
	Ceramics, dust, dirt, rock, inert, ash	☐	Y			
	Other (please specify)	☐	Y			Books are usually encouraged to be donated to library or charities, as the spine can makes them hard to recycle
	Bagged garbage (leave blank for general waste loads)	☐	Y			

			Accepted in			
Minimum audit sorting category	**Expanded audit sorting subcategories**	**Include a count of these items?**	General Waste	Organics	Comingled Recycling	**Comments**
Bagged materials (except organic materials in certified compostable bags)	Bagged recyclables (leave blank for general waste loads)	☐	Y			

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3.3 Material categories consolidation for analysis purposes

Due to the large number of waste sorting categories, data can be shown in both detailed form and consolidated into some major material types, depending on analysis purposes. Category consolidation needs to be reviewed and approved by council before data analysis is carried out to avoid inconsistent results. An example of consolidated analysis options is shown below:

All sorting categories	Consolidation for routine audit categories	Consolidation for residual stream analysis	Consolidation for FOGO stream analysis	Consolidation for recyclable analysis
Paper and cardboard				
Newspapers	Paper	Recyclables	Contamination	Recyclable paper and cardboard
Magazines		Recyclables	Contamination	Recyclable paper and cardboard
Office paper		Recyclables	Contamination	Recyclable paper and cardboard
Other recyclable paper		Recyclables	Contamination	Recyclable paper and cardboard
Non-corrugated cardboard	Cardboard	Recyclables	Contamination	Recyclable paper and cardboard
Corrugated cardboard		Recyclables	Contamination	Recyclable paper and cardboard
Liquid paperboard (LPB) containers (CDS-eligible)	CDS-eligible LPB containers	Recyclables	Contamination	Recyclable paper and cardboard
Other recyclable liquid paperboard (LPB)	Other recyclable liquid paperboard (LPB)	Recyclables	Contamination	Recyclable paper and cardboard
Other non-kerbside recyclable paper/cardboard	Non-kerbside recyclable paper and cardboard	General waste	Contamination	Contamination
Glass				
CDS-eligible glass containers	CDS-eligible glass containers	Recyclables	Contamination	Recyclable glass
Other recyclable glass	Other recyclable glass	Recyclables	Contamination	Recyclable glass
Non-recyclable glass fines	Non-recyclable glass	General waste	Contamination	Contamination
Other non-recyclable glass		General waste	Contamination	Contamination
Plastics				
Polyethylene terephthalate (PET) (1) drink containers (CDS-eligible)	CDS-eligible plastic containers	Recyclables	Contamination	Recyclable plastics
High-density polyethylene (HDPE) (2) drink containers (CDS-eligible)		Recyclables	Contamination	Recyclable plastics
Polyethylene terephthalate (PET) (1) packaging	Kerbside-recyclable hard plastic	Recyclables	Contamination	Recyclable plastics

All sorting categories	Consolidation for routine audit categories	Consolidation for residual stream analysis	Consolidation for FOGO stream analysis	Consolidation for recyclable analysis
High-density polyethylene (HDPE) (2) packaging		Recyclables	Contamination	Recyclable plastics
Polyvinyl chloride (PVC) (3)		Recyclables	Contamination	Recyclable plastics
Low-density polyethylene (LDPE) (4)	Kerbside-recyclable soft plastic	Recyclables	Contamination	Recyclable plastics
Polypropylene – PP (5)		Recyclables	Contamination	Recyclable plastics
Polystyrene	Other bulky or non-kerbside recyclable plastics	General waste	Contamination	Contamination
Expanded plastic foam packaging – EPS (6)		General waste	Contamination	Contamination
Other polyvinyl chloride (PVC) (3)		General waste	Contamination	Contamination
Soft plastic and plastic bags (4)		Alternative disposal - soft plastic and plastic bags	Contamination	Alternative disposal - soft plastic and plastic bags
Other non-recyclable plastics		General waste	Contamination	Contamination
Metals				
Steel containers (CDS-eligible)	CDS-eligible metal containers	Recyclables	Contamination	Recyclable metal
Aluminium containers (CDS-eligible)		Recyclables	Contamination	Recyclable metal
Ferrous metals	Ferrous metals	Recyclables	Contamination	Recyclable metal
Aluminium (non-CDS)	Aluminium (non-CDS)	Recyclables	Contamination	Recyclable metal
Non-ferrous metals (excluding aluminium)	Non-ferrous metals (excluding aluminium)	Recyclables	Contamination	Recyclable metal
Other steel/ferrous metals	Non-kerbside-recyclable metal	Alternative disposal – metal	Contamination	Alternative disposal – metal
Other non-ferrous metals		Alternative disposal – metal	Contamination	Alternative disposal – metal
Organics				
Garden organics/vegetation	Garden organics	FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant
Wood/timber – untreated		FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant
Oversized garden organics		FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant
Loose food waste	Food organics	FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant
Food waste in certified compostable bags/caddy liners (AS4736 and/or AS5810)		FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant
Compostable packaging	Compostable packaging	FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant
Disposable paper products	Other organics (compostable)	FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant
Food-soiled paper and cardboard		FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant

All sorting categories	Consolidation for routine audit categories	Consolidation for residual stream analysis	Consolidation for FOGO stream analysis	Consolidation for recyclable analysis
Other organic		FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant
Compostable pet waste		FOGO-compliant	FOGO-compliant	Contamination / FOGO-compliant
Containerised food – non compostable	Other organics (contamination)	General waste	Contamination	Contamination
Wood/timber – treated		General waste	Contamination	Contamination
Building and demolition materials				
Building and demolition materials	Building and demolition materials	Contamination/building and demolition materials	Contamination/building and demolition materials	Contamination/building and demolition materials
Hazardous wastes				
Hazardous – household chemicals and paint	Hazardous wastes	Contamination/hazardous wastes	Contamination/hazardous wastes	Contamination/hazardous wastes
Hazardous – clinical/medical		Contamination/hazardous wastes	Contamination/hazardous wastes	Contamination/hazardous wastes
Hazardous – other items		Contamination/hazardous wastes	Contamination/hazardous wastes	Contamination/hazardous wastes
Lead–acid batteries		Contamination/hazardous wastes	Contamination/hazardous wastes	Contamination/hazardous wastes
Textiles, leather and rubber (excl. tyres)				
Clothing	Textiles	Alternative disposal - textile	Contamination	Contamination/textiles
Other textiles		Alternative disposal - textile	Contamination	Contamination/textiles
Leather and rubber	Leather and rubber	Alternative disposal - textile	Contamination	Contamination/textiles
E-waste				
TVs and Computer equipment (NTCRS scheme products)	E-waste	Contamination/e-waste	Contamination/e-waste	Contamination/e-waste
Mobile phones		Contamination/e-waste	Contamination/e-waste	Contamination/e-waste
Toner cartridges		Contamination/e-waste	Contamination/e-waste	Contamination/e-waste
Electrical items & peripherals (non-lithium battery)		Contamination/e-waste	Contamination/e-waste	Contamination/e-waste
Lithium-ion batteries	Lithium-ion batteries	Contamination/e-waste	Contamination/e-waste	Contamination/e-waste
Items with embedded batteries	Items with embedded batteries	Contamination/e-waste	Contamination/e-waste	Contamination/e-waste
Batteries other (excluding lead–acid batteries)	Batteries other (excluding lead acid batteries)	Contamination/e-waste	Contamination/e-waste	Contamination/e-waste
Other materials				

All sorting categories	Consolidation for routine audit categories	Consolidation for residual stream analysis	Consolidation for FOGO stream analysis	Consolidation for recyclable analysis
Nappies and sanitary products	Other - unclassified materials	General waste	Contamination/other	Contamination/other
Non-compostable cat litter/pet waste in non-compostable packaging		General waste	Contamination/other	Contamination/other
Ceramics, dust, dirt, rock, inert, ash		General waste	Contamination/other	Contamination/other
Other (please specify)		General waste	Contamination/other	Contamination/other
Bagged garbage	Bagged materials (except organic materials in certified compostable bags)	General waste	Contamination/other	Contamination/other
Bagged recyclables		General waste	Contamination/other	Contamination/other

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3.4 Sorting tips for auditors

DID YOU KNOW THAT?

SOUTH AUSTRALIA CONTAINER DEPOSIT SCHEME (CDS) ELIGIBLE CONTAINERS INCLUDE:

- **Glass:** includes containers used for beer, cider and soft drinks. Under consultation for future inclusion of glass bottles used for wine, spirits or cordials.
- **Aluminium:** beverage containers used for a wide range of alcoholic and soft (non-alcoholic) drinks.
- **Polyethylene terephthalate (PET):** beverage containers used mostly for soft (non-alcoholic) drinks.
- **High-density polyethylene (HDPE):** beverage containers used for fruit juice and flavoured milk drinks.
- **Liquid paperboard (LPB):** beverage cartons used for fruit juice, fruit juice drinks and flavoured milk.
- **Other eligible containers:** other containers accepted are for example: less than 1 litre aseptic packs/casks (cardboard and/or plastic and/or foil) for wine or flavoured alcoholic beverages with a wine base; less than 250 ml wine sachets (plastic and/or foil).

CDS-eligible container eligibility can change. It is recommended to check SA EPA website regularly on CDS eligibility.

THE FOLLOWING ITEMS ARE ACCEPTED IN GREEN BINS

- Food-soiled paper and cardboard (this is accepted in organic bins in SA)
- Paper towels, paper napkins and tissues are accepted in SA green bin
- Only certified compostable cat litter can go in the green bin. If it's not certified, it belongs in the general waste bin.
- Other pet waste that is compostable/in compostable packaging can go in the green bin

CERTAIN SINGLE-USE PLASTIC ITEMS ARE BANNED IN SOUTH AUSTRALIA

In September 2020, the South Australian Parliament passed the *Single-use and Other Plastic Products (Waste Avoidance) Act 2020*, the first legislation of its kind in Australia. This paved the way for a series of bans on single-use plastic items that commenced in March 2021. Items banned as at 1 September 2025 include:

- Single-use plastic straws
- Single-use plastic cutlery and stirrers
- Expanded polystyrene (EPS) cups, bowls, plates, trays and clamshell containers
- Oxo-degradable plastic products
- Plastic-stemmed cotton buds
- Single-use plastic bowls and plates
- Plastic pizza savers
- Plastic barrier bags
- Thick supermarket or boutique-style plastic bags
- Single-use plastic beverage containers (including coffee cups)
- Single-use plastic food containers
- Expanded polystyrene (EPS) consumer food and beverage containers
- EPS trays used for meat, fruit and other food items
- Plastic confetti
- Plastic balloon sticks/ties
- Food bag tags
- Plastic soy sauce fish
- Attached or enclosed plastic straws and cutlery
- Pre-packaged EPS cups and EPS bowls

3.5 Decision-making matrix: guidance for other applicable methods

The South Australia Kerbside Waste Audit Guidelines recommend a standardised methodology for routine kerbside waste audits to be undertaken at least every three years to support the collection of consistent, robust, reliable and comparable data across the state. Consistent application of this methodology enables councils to benchmark performance, monitor trends over time and contribute to a statewide evidence base for planning, policy development and service improvement.

The Guidelines also recognise waste audits may be undertaken for a range of purposes and that alternative methodologies may be more appropriate on a fit-for-purpose basis. For example, councils may want to undertake visual audits to identify and address contamination hotspots through education and engagement programs. The decision-making matrix below is intended to assist councils in selecting the most suitable audit method by outlining the strengths, limitations, typical applications and key considerations associated with approaches such as bin-by-bin audits, cone-and-quarter sampling, and visual assessments.

CRITERIA	BIN-BY-BIN 'BAG AND TAG' AND PHYSICAL SORTING	CONE-AND-QUARTER METHOD AND PHYSICAL SORTING	VISUAL ASSESSMENT
Application	• Suitable where specific information is required about individual household behaviours– e.g. to identify how many and which households are not maximizing the use of kerbside recycling services; or to identify the source of repeated high-level contamination. • Suitable for kerbside collected commercial waste where there it is beneficial to identify generation and composition by different industry sectors	• Suitable for large scale audits with homogenous waste streams e.g. truck delivered garden organics / FOGO where successive loads are audited over the course of the day or longer. • Useful for identifying/ verifying contamination thresholds/ triggers in waste contracts • Suitable for known area profiles (i.e. homogeneous area profile, with uniform characteristics) and you need high level information only on generation and composition	• Suitable for bin flip style audits where there is direct communication with residents about visible contamination in bins and/or rewarding compliant behaviors with bin tags or similar as part of targeted education campaigns. • Suitable for known area profiles (i.e. homogeneous area profile, with uniform characteristics) and you need high level information only on generation and composition
Strengths	• Statistically valid method of obtaining a representative sample. • Can be used to conduct stratified samples to audit specific subpopulations (e.g. MUDs, commercial precincts), providing more granular data • Can achieve acceptable level of precision with smaller sample size. Can identify and exclude 'outliers' and assess the accuracy of audit results. • Allows assessment of the profile of different waste management behaviours by households or by specific industries (in commercial audits)	• Cheaper auditing option when requiring information about waste generation • Smaller sample extracted for physical compositional audit reducing audit costs.	• Cheapest auditing option • Lower WHS risks as there is no sorting • Can be used in conjunction for other auditing physical compositional methods
Challenges and limitations	• WHS concerns with the manual handling and lifting of waste and exposure of collection crews to traffic • More expensive	• Less reliable for highly variable waste streams • Increases sample uncertainty. • Reduced levels of accuracy	• Limited application for household kerbside waste audits

	• Perceived privacy issues: households being audited can be seen as an invasion of privacy by the community • Council PR and auditors' safety: higher risk of customer confrontation		• Visual audits can identify visible contents. Cannot identify the contents or bagged waste or waste that is obscured. • May overestimate visible items and overlook smaller or hidden waste • Does not provide reliable, robust data
Cost comparison ($, $$, $$$)	$$$	$$	$

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4 Appendix C – Audit Forms and Templates

4.1 Single dwellings sample collection form (example with general waste and FOGO matched-pair collection)

SINGLE DWELLINGS SAMPLE COLLECTION RUN SHEET	Sample number: *e.g. SD1*	Date:	Collection supervisor:
Matched pairs being collected: GW / REC / FOGO / GO	Local government:	Net weight of load (kg):	Target number of households to collect:

	CODE	DATE	Address			Substitute?	GENERAL WASTE (GW)		ORGANICS (FOGO/GO)		COMINGLED RECYCLING (REC)		COMMENTS
			No.	Street Name	Suburb	Blank if no	Bin size	Bin % full	Bin size	Bin % full	Bin size	Bin % full	*Note: comingled recycling will be collected in week 2*
	NOTES: Only record volume where the bins are collected. If no matched GW and FOGO, do not record vol, then sample next house and record as substitute.												
EXAMPLES	*1*	*25/1*	*1*	*William St*	*Avon*		*240*	*70*	*140*	*90*			
	2	*25/1*	*5*	*William St*	*Avon*		*240*	*P*		*NP*			*FOGO not presented. GW presented, not collected*
	3	*25/1*	*7*	*William St*	*Avon*	✓	*240*	*80*	*140*	*60*			*Substitute*

Code	Date	Address			Substitute?	GW		REC		FOGO/ORG		Comments
		No.	Street name	Suburb	Blank if no	Bin size	Bin % full	Bin size	Bin % full	Bin size	Bin % full	
1												
2												
3												
4												
Add rows as necessary												

4.2 Multi-unit dwellings sample collection form (example with general waste and FOGO matched-pair collection)

MULTI-UNIT DWELLINGS SAMPLE COLLECTION SHEET	Sample number: *e.g. MUD1*	Date:	Collection supervisor:
Matched pairs being collected: **GW / REC , FOGO / GO**	Local government:	Net weight of load (kg):	Target number of households to collect:

Code	Date	Unit block number	Street	Suburb	Number of units in block	Bin type	Number of bins presented	Substitute? (Blank if no)	Bin size e.g. 240 L	Bin volume (% full) One square for each bin, including empty bins. Circle those that were collected for sorting.										Comments
Example	8/5/26	55	Hutt Street	Adelaide	41	GW	6		240	100	100	20	60	80	100					
						REC														
						FOGO	6		240	100	90	95	110	100	100					
1						GW														
						REC														
						FOGO														
2						GW														
						REC														
						FOGO														
3						GW														
						REC														
						FOGO														

Add rows as necessary.

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4.3 Example sample sorting form: minimum routine audit categories (32 categories)

Council:	
Waste stream (GW, REC, FOGO, ORG)	
Sample number:	*Note: This is found on the collection run sheet*
Date:	
Auditor(s):	

Material	Weight (kg)	Count (number)	Comments
Paper and cardboard			
Paper			
Cardboard			
CDS-eligible LPB containers			
Other recyclable liquid paperboard (LPB)			
Non-kerbside recyclable paper and cardboard			
Glass			
CDS-eligible glass containers			
Other recyclable glass			
Non-kerbside recyclable glass			
Plastics			
CDS-eligible plastic containers			
Kerbside-recyclable hard plastic			
Kerbside-recyclable soft plastic			
Other bulky or non-kerbside recyclable plastics			
Metals			
CDS-eligible metal containers			
Ferrous metals			
Aluminium (non-CDS)			
Non-ferrous metals (excluding aluminium)			
Non-kerbside recyclable metal			
Organics			
Garden organics			
Food organics			
Compostable packaging			
Other organics (compostable)			
Other organics (contamination)			

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Material	Weight (kg)	Count (number)	Comments
Building and demolition materials			
Building and demolition materials			
Hazardous wastes			
Hazardous wastes			
Textiles, leather and rubber (excluding tyres)			
Textiles			
Leather and rubber			
E-waste			
E-waste			
Lithium-ion batteries			
Items with embedded batteries			
Batteries other (excluding lead-acid batteries)			
Other materials			
Other - unclassified materials			
Bagged materials (except organic materials in compostable bags)			

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4.4 Example sample sorting form: including all additional optional audit subcategories (maximum 65 categories)

Council:	
Waste stream (GW, REC, FOGO, ORG)	
Sample number:	*Note: This is found on the collection run sheet*
Date:	
Auditor(s):	

Material	Weight (kg)	Count (number)	Comments
Paper and cardboard			
Newspapers			
Magazines			
Office paper			
Other recyclable paper			
Non-corrugated cardboard			
Corrugated cardboard			
Liquid paperboard (LPB) containers (CDS-eligible)			
Other recyclable liquid paperboard (LPB)			
Other non-kerbside recyclable paper/cardboard			
Glass			
CDS-eligible glass containers			
Other recyclable glass			
Non-recyclable glass fines			
Other non-recyclable glass			
Plastics			
Polyethylene terephthalate (PET) (1) drink containers (CDS-eligible)			
High-density polyethylene (HDPE) (2) drink containers (CDS-eligible)			
Polyethylene terephthalate (PET) (1) packaging			
High-density polyethylene (HDPE) (2) packaging			
Polyvinyl chloride (PVC) (3)			
Low-density polyethylene (LDPE) (4)			
Polypropylene – PP (5)			
Polystyrene			
Expanded plastic foam packaging – EPS (6)			
Other polyvinyl chloride (PVC) (3)			
Soft plastic and plastic bags (4)			
Other non-recyclable plastics			
Metals			
Steel containers (CDS-eligible)			
Aluminium containers (CDS-eligible)			
Ferrous metals			

Material	Weight (kg)	Count (number)	Comments
Aluminium (non-CDS)			
Non-ferrous metals (excluding aluminium)			
Other steel/ferrous metals			
Other non-ferrous metals			
Organics			
Garden organics/vegetation			
Wood/timber – untreated			
Oversized garden organics			
Loose food waste			
Food waste in certified compostable bags/caddy liners (AS4736 and/or AS5810)			
Compostable packaging			
Disposable paper products			
Food-soiled paper and cardboard			
Other organic			
Compostable pet waste			
Containerised food – non compostable			
Wood/timber – treated			
Building and demolition materials			
Building and demolition materials			
Hazardous wastes			
Hazardous – household chemicals and paint			
Hazardous – clinical/medical			
Hazardous – other items			
Lead–acid batteries			
Textiles, leather and rubber (excluding tyres)			
Clothing			
Other textiles			
Leather and rubber			
E-waste			
TVs and computer equipment (NTCRS scheme products)			
Mobile phones			
Toner cartridges			
Electrical items and peripherals (non-lithium battery)			
Lithium-ion batteries			
Items with embedded batteries			
Batteries other (excluding lead–acid batteries)			
Other materials			
Nappies and sanitary products			
Non-compostable cat litter/pet waste in non-compostable packaging			
Ceramics, dust, dirt, rock, inert, ash			

Material	Weight (kg)	Count (number)	Comments
Other (please specify)			
Bagged garbage (leave blank for general waste loads)			For recycling, FOGO and organics loads only.
Bagged recyclables (leave blank for general waste loads)			For recycling stream, this is commingled recycling in plastic bags. For organics stream, this is garden organics in plastic bags. For FOGO stream, this is FOGO in non-compliant plastic bags.

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5 Appendix D – WHS

5.1 Example of Job Safety and Environment Analysis template

Date: _____ Written by: _____

Reviewed by: _____ Next review date: _____

Task description:

Equipment:

Location:

Qualifications/permits/licence required:
e.g. forklift/confined space

Reference documentation: e.g. safe work statements

Special considerations for the task(s):

Personal protective equipment (PPE) required:

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Item	Task	Hazard/risk description	Risk rating	Hazard control measures (How do we control the hazard?)	Risk rating after controls	
					Score	Action by
1	Driving to collection area or sorting site, driving during sample collection	Injury or death from collision	10	Drive defensively, always obey road rules, follow any instructions from law enforcement officials. Drivers will not drive more than two hours without at least a 20-minute break.	4	e.g. Driver, project manager, site supervisor, audit staff
2	Operating collection vehicle	Death or injury due to vehicle malfunction, misuse of equipment	15	Driver to have appropriate licence. Operate vehicle in accordance with manual and training. Undertake pre-departure checks. Three points of contact getting in and out of vehicle.	5	
3	Entering and leaving truck	Injury from falling or jumping out of truck or landing heavily; struck by another vehicle	10	Wear high-visibility vests, three points of contact when entering and leaving truck, assess condition of ground, check for traffic before entering or leaving truck, truck lights in vehicle on at all times, always obey directions of supervisor, others to keep a look out for traffic	4	
4	All collection activities	Assault or threats from residents	3	Have letter from local government for distribution. Depending on severity, contact project manager or police	1	
5	Walking around site	Injury from tripping on foot, obstacle and or uneven/steep ground (slips, trips and falls).	9	Be aware of possible trip hazards, e.g. uneven ground, hidden obstacles. Always pay attention while on-site, particularly when on uneven surfaces and wet areas. Walk do not run. Wear appropriate protective footwear for the conditions. Stay alert – look where you are walking. Keep to marked paths	4	
6	Working on site	Struck by heavy equipment, plant and trucks with potential for serious injury, permanent disability or death	15	Comply with site safety requirements. Stay out of areas where heavy machinery is in operation. If walking through these areas is required, ensure equipment operators are aware of your presence. Do not turn your back on the equipment. Stand clear min 10 metres of tipping vehicles. Stay within sight of driver while they are operating vehicle. Always wear all PPE. Use two-way radios to communicate to traffic controller as required. Slow traffic if required. Check for traffic before moving around site. Be familiar with site procedures, including traffic hazards, vehicles and safety signs.	5	
7	Waste sorting	Risk of infection	9	Comply with site safety requirements. Always wear all PPE. Ensure staff are vaccinated. Increased personal hygiene – wash hands thoroughly or use hand sanitiser.	6	
8	Sorting garbage and recycling	Injury from sharp objects, unhygienic conditions, needle-stick injury, inhale asbestos and other dusts	12	Wear PPE, including heavy-duty gloves and masks. Read and sign sorting procedures, Tongs to be used if required. Do not work alone. Stop sorting and report if syringes and/or asbestos found. Tell site supervisor immediately so they can enact onsite procedures.	6	
Add rows as necessary.						

Approved by: _____ Signature: _____

Title: _____ Date: _____

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Audit staff to sign:

I have read, understand and agree to work to this JSEA.

Name	Position	Role	Signature	Date

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5.1.1 Risk-rating criteria

Each identified risk is assessed using two indicators – the likelihood and consequences of an incident. The likelihood of a risk occurring is matched against the potential consequence and given a score, as shown in the risk matrix table.

Risk Likelihood Table

Level	Descriptor	Description
1	Almost certain	Over 99% probability; happens often (once or more a week); could occur within days to weeks
2	Likely	50% probability; could easily happen (once or more a month); could occur within weeks or months
3	Possible	10% probability; can happen; has occurred before (once or more a year); could occur after several years
4	Unlikely	1% probability; has not happened yet but could (once or more every 5 years); could occur after several years
5	Rare	<1% probability; conceivable but only in extreme circumstances (once or more every 10 years); exceptionally unlikely, even in the long term

Risk Consequence Table

Level	Descriptor	Example detailed description (definition)
A	Insignificant	Minor injuries; minimal financial loss ($<2 K); minimal disadvantage experienced; limited impact on objectives
B	Minor	Minor injuries requiring medical attention; minor financial loss ($2 K to $5 K); disadvantage for stakeholders (days–weeks); impedes one or more objectives or causes inefficiencies in key processes
C	Moderate	Multiple casualties requiring hospital attention; moderate financial loss ($50 K to $100K); significant disadvantage to multiple stakeholders (weeks); impedes achievement of important objectives/causes extensive inefficiencies in key processes
D	Major	Multiple severe injuries, or a single fatality; major financial loss ($100 K to $1 million); multiple stakeholders severely disadvantaged (weeks); serious process breakdown that substantially impedes the achievement of core objectives
E	Catastrophic	Multiple severe injuries including fatalities; catastrophic financial loss (>$1 million); majority of stakeholders severely disadvantaged (months); serious process breakdown that prevents the achievement of mission-critical objectives

Each identified risk is assessed using the matrix below. The likelihood of a risk occurring is matched against the likely effect and is assigned a score.

Risk Matrix

		Insignificant	Minor	Moderate	Major	Catastrophic
		A	B	C	D	E
Almost Certain	1	5	10	15	20	25
Likely	2	4	8	12	16	20
Possible	3	3	6	9	12	15
Unlikely	4	2	4	6	8	10
Rare	5	1	2	3	4	5

5.2 Examples of Safe Work Method Statement (SWMS) adapted to waste audits

SAFE WORK METHOD STATEMENT – PERSONAL HYGIENE & INFECTIOUS DISEASES

JOB NUMBER AND TITLE:		**PAGE: 1 of 2**
CLIENT:	DATE:	PREPARED BY:
LOCATION OF WORK:		APPROVED BY:
REQUIRED AND/OR RECOMMENDED PERSONAL PROTECTIVE/SAFETY EQUIPMENT: In addition to job and site-specific PPE, operators to make use of inner gloves, disposable overalls, face masks and sanitiser. **Site supervisors authorised to stop work in adverse conditions**		

SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED ACTION OR PROCEDURE	PERSON RESPONSIBLE
Driving to site	Contamination from fuel bowser Spread of disease/virus to others	Use disposable gloves at service stations Use hand sanitiser afterward Avoid contact with others during high-risk periods (e.g. influenza during winter)	Driver Passenger
Bin handling	Contamination through touching bins	Wash hands regularly with soap and water Wash hands before eating or drinking Use inner gloves where appropriate Use hand sanitiser in between hand washing	All staff
Sorting garbage and recycling	Injury from sharp objects	Wear heavy-duty gloves, overalls, eye protection Be trained on sorting procedures Read and sign sorting procedures Staff warned of likely hazards and how to deal with them Tongs provided if required Staff must not work alone	All staff
	Unhygienic conditions	Wear appropriate PPE In unhygienic conditions or high-risk times, additional PPE may be required (i.e. inner gloves, eye protection, face masks) Good handwashing practice, especially before eating Use sanitiser when handwashing is not practicable	
	Injury from syringes	In addition to above: Stop sorting if syringes are found Advise supervisor and other auditors immediately Use tongs to remove syringe from count area and isolate using a sharps container Supervisor to assess pile and determine if more syringes are likely to be found If so, pile should be isolated, preferably weighed. In consultation with the manager, the supervisor will make a decision to dispose of the remaining pile. If a needle injury is sustained, flush the area with water and disinfectant. Seek medical attention immediately. Safely retain syringe. Advise workers immediately present of the danger.	

Sorting garbage and recyclables	Risk of infection	Additional PPE Use of inner gloves Use of disposable overalls Use of face mask to avoid infection but also stops operator from touching face Ensure other PPE such as eye protection is used at all times Increased personal hygiene: wash hands thoroughly and regularly Use of tongs as appropriate Dispose of overalls and gloves	All staff

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SAFE WORK METHOD STATEMENT: WASTE SORTING

JOB NUMBER AND TITLE:		PAGE: 1 of 3
CLIENT:	**DATE:**	**PREPARED BY:**
LOCATION OF WORK:		**APPROVED BY:**

REQUIRED AND/OR RECOMMENDED PERSONAL PROTECTIVE/SAFETY EQUIPMENT:

Long-sleeved shirt, long pants, reflective high-visibility vests, safety footwear, inner gloves, puncture-resistant gloves, safety glasses, ear plugs. Disposable overalls (may be worn in lieu of long-sleeved shirts and long pants). Sun hats, sunscreen.

Optional subject to site requirements: hard hats, face masks (as applicable)

Site supervisors authorised to stop work in adverse conditions

SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED ACTION OR PROCEDURE	PERSON RESPONSIBLE
Driving to site	• Injury from traffic accident • Injury to others from traffic accident • Fatigue leading to accident	• Obey road rules at all times • Follow any instructions from law enforcement officials • Stop and take a 20-minute break every 2 hours of driving and/or when feeling fatigued	Driver
Lifting and carrying bags/bins of garbage and recycling	• Injury from protruding object • Injury from lifting and carrying	• Wear overalls when sorting general waste. Sorting recycling can be conducted with normal work wear • Wear safety footwear at all times • Staff instructed on correct method to carry bags away from body • Test weight – no more than 20 kg. More than 20 kg requires 2 x man lift (max: 35 for 2 people) • Read and sign sorting procedures	All staff
Sorting garbage and recycling	• Injury from sharp objects • Unhygienic conditions	• Wear heavy-duty gloves, overalls, eye protection • Read and sign sorting procedures • Staff warned of likely hazards and how to deal with them • Staff must not work alone	
	• Injury from syringes	In addition to above: • Stop sorting if syringes are found • Use tongs to safely lift syringe and place it in sharps container • Inform supervisor and site manager	
Working in transfer stations	• Injury from being hit by vehicles	• Wear safety footwear at all times • Wear high-visibility clothing • Remain in designated areas at all times • Obey directions of supervisor at all times • Barriers to be erected showing designated sorting area • Watch and listen for forklifts or machinery • Give way to forklifts and other vehicles on site • Make eye contact with machinery operator and confirm with them that it is safe to leave/return to work zone	
Emptying MGBs into skip bins	• Muscle and back injury	• Only empty MGBs into a skip bin with an openable door. Never lift bin over the side of the skip bin • 2 x person lift	

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All waste-sorting activities	• Snake, spider or insect bites	• Wear appropriate PPE • Do not walk in tall grass and ensure that you have good visibility at all times • If snake is sighted, stay calm and do not make sudden movement. Leave the area quietly and keep an eye on the snake. Alert others to keep out of the area. DO NOT attempt to intimidate or harm the snake as they only bite when feeling threatened. Causing harm to wildlife is illegal. • Do not pick up/touch a dead snake • Ensure location of site's first aid kit is known. This is to be advised during daily toolbox and site induction • Follow procedure for snake, spider and insect bites	
	• Risk of infection	• Use of inner gloves. • Use of disposable overalls. • Use of face mask to avoid infection but also stops operator from touching face. • Ensure other PPE such as eye protection warn at all times. • Increased personal hygiene – wash hands thoroughly and regularly	
	• Lung disease due to asbestos exposure	• Appropriate protective respiratory equipment • Full protective clothing • If it looks like asbestos, it must be treated as asbestos. If found, cease sorting immediately and inform supervisor. • Inform site manager, who will enact the asbestos-handling procedure	
	• Respiratory damage due to dust	• Approved respiratory mask and eye protection • Undertake assessment and cease work on site if dust levels are unacceptable.	
	• Heat stress	• Evaluate ambient conditions when beginning work • Be aware of forecast weather and workplace conditions • Where temperatures exceed 35°C, take hourly breaks of 30 minutes • Where temperatures exceed 38°C, contact project manager about potentially ceasing work • If heat stress signs are observed, reduce the workload, seek shade if outdoors, replace lost fluids (i.e. drink water and avoid caffeine), rest frequently if the job cannot be postponed until a cooler time of day • Take regular hourly breaks	All staff
Waterways	• Liquid waste accessing waterways	• The audit will take place in an undercover area away from drains, stormwater pits, etc. • Site owner should provide a bunded area or containment barrier around the sorting to ensure containment of liquids	Site supervisor

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Unacceptable waste	• Receiving unacceptable waste	• For unacceptable waste such as gas bottles, lead–acid and lithium batteries, medical waste, sharps and asbestos, flammable liquid waste, fuel, chemicals, the following procedures should be in place: ○ Gas bottles and lead–acid/lithium batteries will be isolated, and the client informed prior to depositing items in dedicated areas. ○ Syringes are placed in a sharps' container for disposal. ○ Medical waste is separated, weighed and placed in the waste container for removal – dialysis tubing is common. ○ Asbestos – if suspected, all sorting to cease and supervisor is notified. Site manager to be informed to ensure asbestos-handling procedures are implemented. Cease sorting and inform client.	Site supervisor

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6 Appendix E – Statistical Considerations

6.1 Sample Methodology

A sampling methodology has been developed as part of the SA Kerbside Waste Audit Guidelines. This methodology is intended to enable the collection of data that provides robust and reliable information on kerbside waste and recycling activity in a cost-effective way. The sampling methodology is designed for application by local councils in both urban and regional parts of South Australia, with local government areas (LGAs) as the primary geographic unit for sampling. The sample collection points for the audits are households, which are taken to be either a separate dwelling, townhouse or terrace, or a multi-unit dwelling.

Multiple sample size options are presented for LGAs, affording councils a range of potential sampling costs and resulting data value. Sample sizes for LGAs are broadly proportional to population (and household) estimates, enabling aggregation of kerbside recycling data for reasonable estimates for South Australia as a whole. Additional information has been provided in this methodology to guide councils in making decisions on sample size selection, given the implications for sample accuracy.

6.1.1 Demographic characterisation of areas within LGAs

Household demographic characteristics, such as household structure and income levels, influence recycling behaviour and this tends to vary at a finer geographic level than LGA level. The larger the resident population within an LGA, the greater the expected level of diversity (or subpopulations) that can become important for recycling behaviour. This is not an exact relationship – a small LGA may have more demographic diversity and therefore a greater number of subpopulations than a larger one.

The sampling plan for South Australian LGAs is stratified by ABS SA2s[1], which is intended to reflect the population of functional communities (a suburb or small group of suburbs). ABS SA2s are 'subpopulations' from which a sample is drawn that is considered representative of the LGA.

Sample size options are set on the basis of the number of households and the number of SA2s in an LGA. While in general terms this follows a metropolitan and regional breakdown, the population distribution of South Australia strongly reflects its topography.

[1] ABS SA2s stand for Statistical Areas Level 2, which are medium-sized geographic regions defined by the Australian Bureau of Statistics (ABS) under the Australian Statistical Geography Standard (ASGS). They represent a localised community where people interact together socially and economically. In major urban centers, a SA2 typically aligns with a single suburb or a cluster of related suburbs; in regional and remote areas, they cover larger rural catchments.

The number of households varies substantially between, and in some cases within, an LGA. The number of SA2s overlapping an LGA tends to reflect both LGA population density and size (detailed at example maps of SA2s within LGAs[2]).

In **most metropolitan and some large regional LGAs** (described as 'Group A'), population sizes are substantially larger than for a SA2. The number of SA2s for this group ranges from two to nine. The difference is inversely driven by population density, due to the percentage of multi-unit dwellings. While sample sizes are a matter for the Council, sample sizes are expected to range between 100 to 250, with a skew towards large sample numbers.

For some **smaller metropolitan and larger regional LGAs** (described as 'Group B'), a high proportion of the population is typically within the range of a single SA2. However, as LGA and SA2 boundaries are not in accordance, there are between one and five SA2s within or overlapping each LGA in this group. Sample sizes are expected to range between 100 and 200.

For **smaller regional LGAs** (described as 'Group C'), there is typically one or two SA2s within or overlapping an LGA. These tend to be an area with one or more towns in a predominantly agricultural or coastal region. Sample sizes are expected to range between 50 and 100.

Overall, the methodology was designed for 68 LGAs (19 metro councils and 49 regional councils). Information on each council is detailed in *6.2 Council Data* section.

6.1.2 Sampling logistics for different types of councils

The sampling methodology is designed to be adaptable to some of the key differences between South Australia's LGAs. This includes differences in LGA size, population density, bin types and collection frequency.

The expected ranges of sample size are intentionally wide. Sampling logistics bring costs that have a bearing on cost effectiveness and what is feasible for an individual council. There are two main considerations:

- efficiency of sample collection
- council collection schedules

Sampling teams can collect and sort bins from 45 to 50 households per day. Smaller collections will generally be inefficient and the number of sampling days is the major determinant of sample size and sampling costs.

[2] Boundary maps of SA2 regions, overlaying streets and geographical features within each LGA can be readily generated on the 'Data by Region' platform provided by the ABS - https://dbr.abs.gov.au.

Councils generally collect bins over five days to make efficient use of vehicles. Collection schedules are also set to minimise travel costs. These schedules may or may not align with taking samples from each LGA in less than five days. When more than one bin type is being sampled, sampling may need to take place over successive weeks.

Nevertheless, it can be feasible to construct sampling plans with smaller sample numbers and fewer sampling days. Given that councils need to balance information requirements and audit costs, they should explore feasible options with potential audit providers.

6.1.3 Sample allocation within an LGA

For LGAs with more than two SA2 strata, SA2s are sampled in proportion to their number of households. The shares of SA2s within each LGA for sampling purposes are detailed below. A threshold approach has been adopted whereby SA2s that contribute a relatively small proportion of people to an LGA's population are not represented in that LGAs sampling.

Proportionate sampling is statistically preferable to the alternative of sampling SA2s equally – while equal sampling can be preferred due to sampling logistics, post-stratification (weighting the samples taken from each SA2 by their relative number of households) would be necessary to correct for sampling imbalances within the relevant LGA.

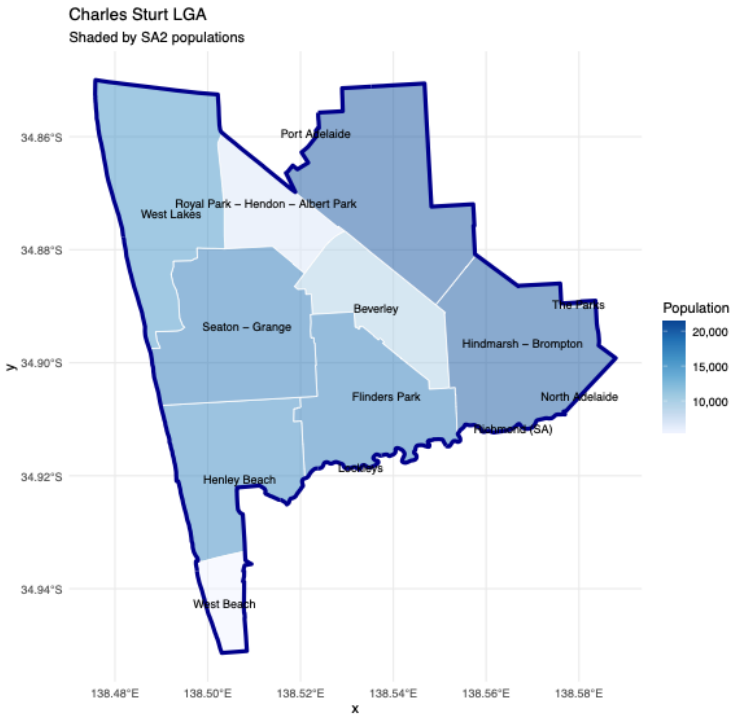
Street selection within each sampled area is to be randomised, subject to sampling constraints. These include bin type collection schedules and proportionate collection of bins from households that are single-unit dwellings (SUDs) and those which are part of multi-unit dwellings (MUDs). MUDs are sampled when the overall percentage of MUD households within the area exceeds some threshold (a threshold of 10% is used in other jurisdictions). The proportion of SUDs and MUDs in each LGA is detailed in ***6.2 Council Data*** table.

A sampling methodology designed on ABS data is not a substitute for the knowledge held by local councils. Accordingly, there is room for discretionary adjustments of a sampling plan where a council, for example, wishes to pick up additional samples of different types of bins within its LGA. Sampling should be such that its cost remains in proportion to the benefits likely to be derived by the LGA.

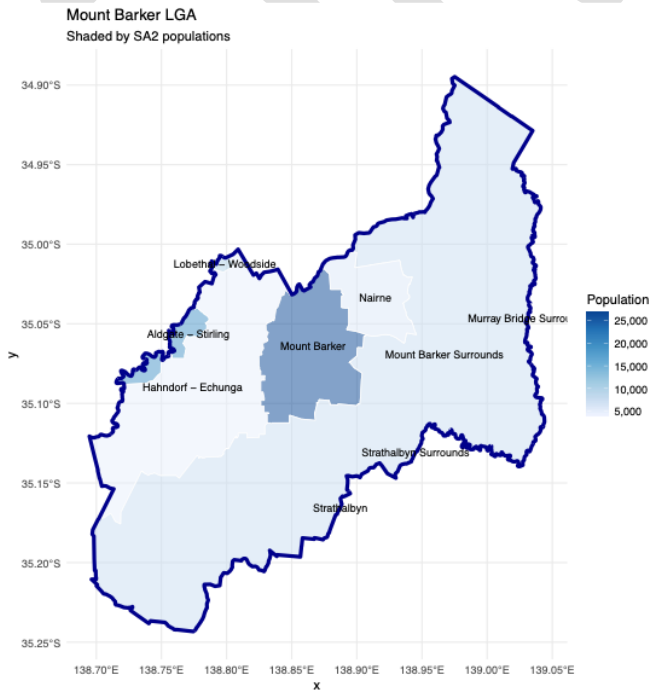
Example maps of SA2s within LGAs

Note: Location names on maps are SA2 names. As SA2 boundaries often do not align with LGA boundaries, some SA2s are named by the ABS after urban centres or localities that sit outside a particular LGA. For example, when the sampling plan says "Mannum" within the Karoonda East Murray LGA it refers to the area within Mannum SA2 (darker blue shaded area in Group C map), but within Karoonda East Murray LGA, not the town of Mannum.

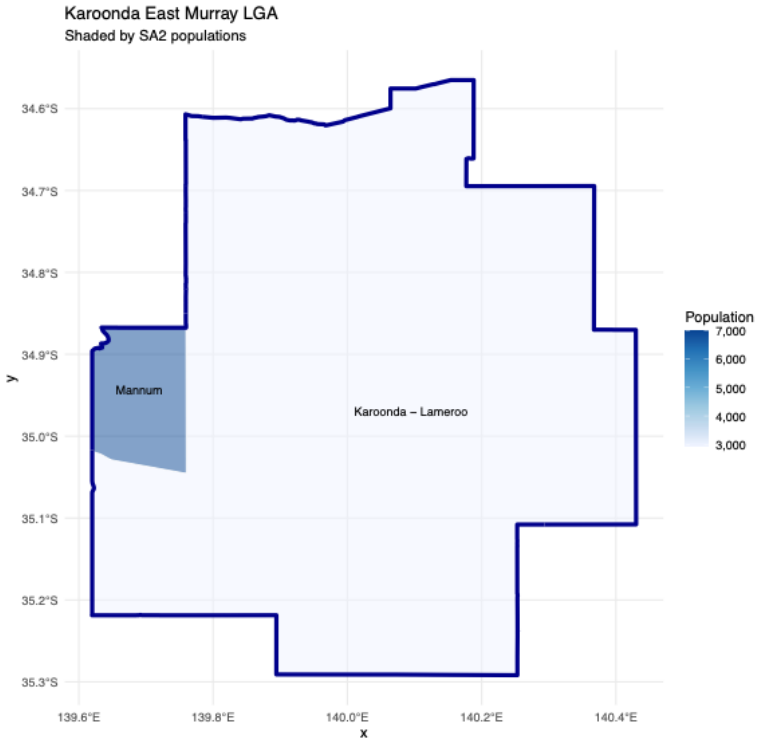
Group A – Charles Sturt (metro LGA)



Group B – Mount Barker (larger regional LGA)



Group C – Karoonda East Murray (smaller regional LGA)



6.1.4 Sample size and accuracy

Key concerns in good sample design are achieving the desired level of accuracy and freedom from bias, given the risk of under-representing those subpopulations within an LGA that have different household behaviour in waste disposal.

Sampling accuracy is a matter of sample size. Bias is a systematic overestimation or underestimation of subpopulations. In contrast to random sampling error, bias persists within the survey design and is inherently difficult to design against when behavioural characteristics are not well known. For the South Australian Kerbside Audit Plan, the potential for bias is accounted for by creating strata that are intended to reflect community groups – that is, strata based on ABS SA2s.

As sample sizes and the complexity of the design affect costs, the optimal design for an individual council will reflect information on sample requirements and costs relative to competing needs for the provision of council services. To that end, options (primarily in terms of sample size) are made as suggestions available for consideration.

6.1.4.1 *Waste Audit Sampling Accuracy of Proportions*

Sampling error can be measured in absolute and percentage terms expressed as confidence intervals or error margins. Absolute standard errors are, as with the estimates, percentages by weight and relate directly to the volume of waste materials. Relative standard errors express error as a percentage of the estimate. They provide a consistent basis for comparing the accuracy of estimates with different proportions of materials.

The formulas for the two measures are for a proportion *p* and sample size *n*:

$$SE = \sqrt{\frac{p * (1 - p)}{n}}$$

$$RSE = SE/p$$

Sampling errors of proportions differ from levels. In the latter, accuracy is purely a matter of sample size, given an assumed level of variation in the population. In the former, accuracy depends on the true proportion as well as the sample size. To characterise the relationship between absolute and relative standard errors for a given sample size:

- Absolute error is largest when the proportion is 50% and declines symmetrically as it falls or increases.
- Relative accuracy declines as the proportion falls in percentage terms – that is, relative accuracy declines as the number of material categories rises.

The question of selecting a sample size to achieve a desired level of accuracy is complex, given the audit covers different bin types and the nested categorisation of materials in the audit guidelines. This is because the level of absolute accuracy varies between waste material categories within different bins.

A proportion of 50% is a conservative reference point in terms of absolute error, though it substantially understates relative standard errors that increase with the number of material categories. It is also possible to calculate a threshold category proportion below which the lower confidence bound is zero[3]. Table 1 shows the sample size, the minimum standard error and the threshold proportion at 90% and 95% confidence levels.

[3] As proportions are bounded at zero and the distribution becomes skewed with a peak near zero and long right tail, the estimated proportion is still the mean and the standard error formula is unchanged but most of the probability mass is toward zero. The sampling distribution is taken to be chi square (X^2).

Table 1 – Minimum standard error and the threshold proportion at 90% and 95% confidence levels

Sample size	Standard error	Relative standard Error	95% category Threshold	90% category Threshold
50	0.071	14.1%	0.054	0.033
100	0.050	10.0%	0.027	0.017
150	0.041	8.2%	0.200	0.011
200	0.035	7.1%	0.015	0.009
250	0.032	6.3%	0.012	0.007

The table provides an indication that for materials and subcategories with proportions greater than about 3%, sample sizes of 100 may be regarded as adequate at the 95% confidence level. Materials and subcategory proportions less than 1% require higher sample numbers (over 250) or alternatively, the acceptance of lower confidence levels.

For example, an estimate of the level of contamination in yellow bins is around 13%. Given the 10 top level material categories agreed for the SA kerbside audit, there are nine potential material categories of contamination. Within this group, the proportions of each material would average less than 1.5%. Estimates derived from a sample size of 100 would have a confidence level average slightly above the 90% threshold level of confidence but still be acceptable. Some materials may be dominant, and some subcategories of those materials may be above the threshold, but most will not.

6.1.4.2 Hazardous Materials and Rare Events

Hazardous materials and atypical disposal events need special consideration when they are rare. Simply put, they may not be observed in an audit sample. Even if these items are present in household bins, a sample may miss them simply because they occur infrequently. To address this, we can consider binomial probability calculations to estimate the likelihood of not finding any of these items in a sample of a given size. For example, we can calculate the probability of not finding something from a given sample size, for a range of true probability that a household bin contains at least one of these items. The probability of an item being in the samples at various sample sizes and actual probabilities of the material being in the household bin are shown in Table 2.

For example, if a given material is prevalent in one out of 100 household bins, then in a sample of 50 bins, there is a 40% probability of finding the material. If the sample is increased to 100 bins, then the probability of finding the material rises to 64%. Even when a material occurs in 1% of household bins, there is still a substantial likelihood of missing it entirely in an audit. Increasing the sample size improves the chance of detection but does not guarantee it.

Table 2 – Probabilities of the occurrence of a material or material subcategory and probability it will be found in samples of different sizes

Prevalence of household bin with material	Sample size				
	50	100	150	200	250
1 in 50	64%	87%	95%	98%	99%
1 in 100	40%	64%	78%	87%	92%
1 in 250	18%	33%	45%	55%	63%
1 in 500	10%	18%	26%	33%	39%
1 in 1000	5%	10%	14%	18%	22%

6.1.4.3 How reliable will the sampling estimates be?

Relative standard errors (RSEs) give a good indication about what to expect at various levels of categorisation across the audit. In particular, RSEs indicate to what extent meaningful comparisons can be made:

- between the prevalence of materials within categories and subcategories
- between estimates of prevalence of materials in the same category over time.

General guidance is provided by the ABS and other research advisers with respect to RSEs and reliability, as follows:

- RSEs above 50% are considered unreliable and should not be reported
- RSEs between 30% and 50% are not considered reliable but can be reported with an indication that the estimate should be used with caution
- RSEs below 30% indicate that related estimates can be reliably used.

RSEs are calculated for selected material proportions and the average proportion in additional subcategories ranging from 2 to 12 in number. The indicative errors for a sample size of 100 and 200 are presented in Table 3.

For example, suppose we are considering plastics. If a collected sample of 100 bins is expected to contain 40% plastics and 60% other materials, then with four subcategories of plastics, the RSE is 30%, which means that on average, corresponding estimates are statistically reliable but should be used with caution. For the remaining 60% of the sample, the remaining nine material categories (paper and cardboard, glass, etc.) will have an average RSE of about 6.7 (that is, 60/9), which again would be acceptable with a note of caution. However, dominant material types will be relatable as well as some subcategories.

Table 3 – Relative standard errors with different numbers of material categories for bin types

Sample size of 100 households

		Material subcategories										
Material %	First material	2	3	4	5	6	7	8	9	10	11	12
90	3	11	15	19	21	24	26	28	30	32	33	35
80	5	12	17	20	23	25	28	30	32	34	36	37
70	6	14	18	22	25	28	30	32	34	36	38	40
60	8	15	20	24	27	30	33	35	37	40	42	44
50	10	17	22	24	30	33	36	39	41	44	46	48
40	12	20	26	30	34	37	41	44	46	49	51	54
30	15	24	30	35	40	44	47	51	54	57	60	62
20	20	30	37	44	49	54	58	62	66	70	73	77
15	24	35	44	51	57	62	68	72	77	81	85	89
10	30	44	54	62	70	77	83	89	94	99	104	109
5	44	62	77	89	99	109	118	126	134	141	148	155
2.5	63	89	109	126	141	155	167	179	189	200	210	219

Sample size of 200 households

		Material subcategories										
Material %	First material	2	3	4	5	6	7	8	9	10	11	12
90	2	8	11	13	15	17	18	20	21	22	24	25
80	4	9	12	14	16	18	20	21	23	24	25	26
70	5	10	13	15	18	19	21	23	24	23	27	28
60	6	11	14	17	19	21	23	25	26	25	29	31
50	7	12	16	19	21	23	25	27	29	31	32	34
40	9	14	18	21	24	26	29	31	33	35	36	38
30	11	17	21	25	28	31	33	36	38	40	42	44
20	14	21	26	31	35	35	41	44	47	49	52	54
15	17	25	31	36	40	44	48	51	54	57	60	63
10	21	32	31	38	44	49	54	59	63	67	74	77
5	31	44	54	63	70	77	83	89	95	100	105	109
2.5	44	63	77	89	100	109	118	126	134	141	148	155

Orange denotes RSEs that are unreliable and related sample estimates should be used with caution

red denotes RSEs that are unreliable and related sample estimates reported under ABS guidelines

Different bin types will have different distributions for the prevalence of particular material types. Organics bins (FOGO or GO) will have a high proportion of organics, and comingled recycling bins will have a high proportion of recyclable materials. The balance will be distributed across the remaining types of materials and is expected to be uneven. Two examples are provided to illustrate this.

First, estimates of contaminants in comingled recycling bins are around 13%, which is expected to be reliable with a sample size of 100.[4] However, with more than two subcategories of contaminants, the estimates would, on average, no longer be considered reliable. If the sample size were increased to 200, however, then five or six subcategories would, on average, be reported with a caution. It is also likely that one or two categories would have reliable estimates.

Second, estimates of contaminants in organics bins are around 2%. Even with a sample size of 200, estimates for a breakdown of contaminants would not be reliable according to ABS and other research guidelines. However, looking at the threshold levels in Table 3, it is clear that an estimate of 2% would be significant at the 90% confidence level with a sample size of 100 and significant at the 95% confidence level with a sample size of 200.

RSEs provide an overall picture of reliability in different bin types and waste categories. When councils are considering additional categories, results from past audits or audits in other jurisdictions may provide the basis for making that decision if it begins to impact on costs. Councils may also wish to consider the audit subcategories for some bin types if there are potential cost savings.

However, with small proportions of materials, RSEs as an indicator of the reliability of estimates can understate reliability. Reporting confidence levels or error bounds at an acceptable confidence level is the appropriate standard to indicate the significance of estimates and differences between estimates[5]. However, care does need to be taken to use appropriate test statistics for different magnitudes of material proportions[6].

[4] South Australia's Kerbside Waste Performance Report 2022–23, p.24
[5] What is statistically acceptable rests with the accuracy of the information required.
[6] When the sample size multiplied by p or 1-p is less than 10, it is suggested that a standard z test be replaced with a chi square test.

6.2 Council data

A sample methodology and sampling plan were developed based on the following council data:

Local government area	Location	Area (km^2)	Population 2025	Pop. density 2025	Number of households (2025 est)	SUDs%	MUDs%	Bins
Adelaide	Metro	16	30,173	1,937.5	16,763	41.4	56.9	3 Bin-Area-wide
Adelaide Hills	Metro	794	42,875	54.0	15,880	98.4	1.2	3 Bin-Town, 2 Bin-Rural
Adelaide Plains	Regional	932	11,736	12.6	4,347	98.4	0.3	3 Bin-Town, 2 Bin-Rural
Alexandrina	Regional	1,827	31,427	17.2	13,664	97.7	1.1	3 Bin-Area-wide
Barossa	Regional	894	26,817	30.0	11,174	98.2	0.9	3 Bin-Town, 2 Bin-Rural
Barunga West	Regional	1,590	2,688	1.7	1,280	97.4	0.8	3 Bin-Area-wide
Berri Barmera	Regional	476	10,758	22.6	4,677	97.0	1.9	3 Bin-Town, 2 Bin-Rural
Burnside	Metro	28	48,257	1,753.6	19,303	88.9	10.8	3 Bin-Area-wide
Campbelltown (SA)	Metro	24	58,826	2,416.0	23,530	90.5	9.3	3 Bin-Area-wide
Ceduna	Regional	5,420	3,757	0.7	1,565	95.5	1.8	1 Bin-Town
Charles Sturt	Metro	55	130,841	2,388.1	54,517	89.1	10.5	3 Bin-Area-wide
Clare and Gilbert Valleys	Regional	1,892	9,467	5.0	4,116	98.8	0.0	3 Bin-Town
Cleve	Regional	5,019	1,771	0.4	770	98.7	0.0	2 Bin-Town
Coober Pedy	Regional	78	1,526	19.6	848	89.8	6.1	1 Bin-Area-wide
Copper Coast	Regional	773	16,601	21.5	7,546	98.5	0.4	3 Bin-Area-wide
Elliston	Regional	6,742	1,057	0.2	460	96.3	0.0	2 Bin-Town
Flinders Ranges	Regional	4,070	1,662	0.4	791	96.0	1.9	2 Bin-Area-wide
Franklin Harbour	Regional	2,756	1,367	0.5	621	96.3	0.8	1 Bin-Area-wide
Gawler	Metro	41	27,564	670.0	11,984	97.8	1.2	3 Bin-Area-wide
Goyder	Regional	6,715	4,141	0.6	1,882	99.1	0.0	3 Bin-Town
Holdfast Bay	Metro	14	39,683	2,885.6	18,038	83.1	16.2	3 Bin-Area-wide
Kangaroo Island	Regional	4,401	5,212	1.2	2,369	97.4	1.2	3 Bin-Area-wide
Karoonda East Murray	Regional	4,416	1,026	0.2	466	97.7	0.0	2 Bin-Area-wide
Kimba	Regional	5,697	1,064	0.2	443	99.2	0.8	2 Bin-Town
Kingston (SA)	Regional	3,340	2,420	0.7	1,152	97.8	0.9	2 Bin-Area-wide

Local government area	Location	Area (km^2)	Population 2025	Pop. density 2025	Number of households (2025 est)	SUDs%	MUDs%	Bins
Light	Regional	1,277	17,317	13.6	6,185	99.4	0.1	3 Bin-Town, 2 Bin-Rural
Lower Eyre	Regional	4,721	6,268	1.3	2,507	98.7	0.0	2 Bin-Town
Loxton Waikerie	Regional	7,764	11,971	1.5	5,205	97.7	0.9	3 Bin-Town, 2 Bin-Rural
Marion	Metro	56	101,229	1,819.3	42,179	93.0	6.8	3 Bin-Area-wide
Mid Murray	Regional	6,272	9,674	1.5	4,607	95.7	0.5	2 Bin-Town, 1 Bin-Rural
Mitcham	Metro	76	71,267	943.3	27,410	90.2	9.4	3 Bin-Area-wide
Mount Barker	Regional	595	45,111	75.9	17,350	98.7	0.5	3 Bin-Town, 2 Bin-Rural
Mount Gambier	Regional	34	28,057	827.8	12,199	91.2	8.5	3 Bin-Area-wide
Mount Remarkable	Regional	3,423	2,861	0.8	1,300	96.9	0.7	3 Bin-Area-wide
Murray Bridge	Regional	1,832	23,539	12.9	10,234	98.2	0.4	3 Bin-Town, 2 Bin-Rural
Naracoorte Lucindale	Regional	4,520	8,930	2.0	3,721	98.9	0.3	3 Bin-Town, 2 Bin-Rural
Northern Areas	Regional	2,986	4,688	1.6	2,131	99.5	0.0	3 Bin-Town
Norwood Payneham and St Peters	Metro	15	40,845	2,704.3	18,566	80.8	18.6	3 Bin-Area-wide
Onkaparinga	Metro	518	184,827	356.7	77,011	97.5	1.8	3 Bin-Area-wide
Orroroo Carrieton	Regional	3,322	884	0.3	402	98.5	0.0	2 Bin-Town
Peterborough	Regional	3,020	1,701	0.6	895	99.0	0.0	2 Bin-Town
Playford	Metro	345	115,790	335.4	44,535	98.8	0.8	3 Bin-Area-wide
Port Adelaide Enfield	Metro	92	143,022	1,558.7	59,593	91.8	7.6	3 Bin-Area-wide
Port Augusta	Regional	1,158	14,469	12.5	6,291	91.7	7.0	3 Bin-Area-wide
Port Lincoln	Regional	30	15,065	496.1	6,550	93.0	6.1	2 Bin-Area-wide
Port Pirie	Regional	1,761	17,664	10.0	8,029	97.6	1.5	3 Bin-Area-wide
Prospect	Metro	8	23,459	3,010.8	9,384	85.3	14.5	3 Bin-Area-wide
Renmark Paringa	Regional	916	10,274	11.2	4,467	96.3	2.0	3 Bin-Area-wide
Robe	Regional	1,092	1,621	1.5	737	98.3	0.6	2 Bin-Area-wide
Roxby Downs	Regional	110	4,089	37.0	1,514	96.9	2.8	3 Bin-Area-wide
Salisbury	Metro	160	151,019	944.8	58,084	95.3	4.2	3 Bin-Area-wide
Southern Limestone Coast (formerly Grant)	Regional	1,898	9,223	4.9	3,547	96.9	0.1	2 Bin-Area-wide, FOGO Opt-in

Local government area	Location	Area (km^2)	Population 2025	Pop. density 2025	Number of households (2025 est)	SUDs%	MUDs%	Bins
Southern Mallee	Regional	5,702	2,013	0.4	915	96.7	1.4	2 Bin-Town
Streaky Bay	Regional	6,223	2,292	0.4	997	96.5	1.0	1 Bin-Town
Tatiara	Regional	6,527	7,088	1.1	2,953	98.9	0.3	3 Bin-Area-wide
Tea Tree Gully	Metro	95	105,120	1,104.1	42,048	97.3	2.5	3 Bin-Area-wide
Coorong	Regional	8,833	5,627	0.6	2,558	98.7	0.2	3 Bin-Town
Tumby Bay	Regional	2,669	2,963	1.1	1,347	93.5	4.1	1 Bin-Town
Unley	Metro	14	40,731	2,854.2	17,709	76.6	23.1	3 Bin-Area-wide
Victor Harbor	Regional	385	17,457	45.4	8,313	97.5	1.6	3 Bin-Area-wide
Wakefield	Regional	3,468	6,993	2.0	2,914	98.5	0.4	3 Bin-Town
Walkerville	Metro	4	8,673	2,456.9	3,771	87.0	12.3	3 Bin-Area-wide
Wattle Range	Regional	3,926	12,378	3.2	5,382	96.7	2.5	3 Bin-Town
West Torrens	Metro	37	66,547	1,794.3	28,933	84.9	14.6	3 Bin-Area-wide
Whyalla	Regional	1,071	21,720	20.3	9,873	94.9	4.5	3 Bin-Area-wide
Wudinna	Regional	5,075	1,171	0.2	488	95.9	0.0	1 Bin-Area-wide
Yankalilla	Regional	751	6,299	8.4	2,863	96.2	2.1	3 Bin-Area-wide
Yorke Peninsula	Regional	5,900	12,242	2.1	5,830	96.9	0.5	3 Bin-Town, 2 Bin-Rural

Data sources:

Geographic boundaries for LGAs and SA2s are sourced from the ABS and are based on the 2021 Census of Population and Housing.

All demographic data is sourced from the ABS, with information related to household structure and the nature of housing (such as separate dwellings vs multi-unit dwellings) derived from 2021 Census estimates for each SA2 and LGA. Updated population estimates for 2025 have been used to derive household numbers in each LGA and ensure changes in the distribution of the population since the 2021 Census are reasonably well reflected in the sampling methodology.

Bin collection information for each LGA was drawn from data provided by Green Industries SA.

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6.3 Sampling options for each council

Sample options of differing sizes are presented for each LGA grouping, with expected sample sizes larger in the metropolitan and larger regional LGAs. The information in this sampling methodology on sample sizes and accuracy should serve as a guide to councils in making decisions on sampling sizes for their LGAs.

For each LGA and overall sample size option, sample numbers are presented for each SA2 with the LGA that contributes significantly to that LGA's population count. This means that of the 242 SA2s that span South Australia's LGAs, only 156 are included in the final sampling design.

The sampling methodology designed on ABS data is not a substitute for the knowledge held by local councils. Accordingly, councils may use their local knowledge to make discretionary adjustments to the sampling plan where, for example, they consider sampling logistics may inhibit sample collection in one designated area. Sampling should be such that its cost remains in proportion to the benefits likely to be derived by the LGA.

Important note:

For the routine audits, recommended minimum sample size option column for councils in Group A, Group B and Group C is highlighted.

STATISTICIANS NOTE:

1. **Groups are formed on the basis of a number of demographic variables including population, number of privately owned dwellings, proportion of single unit dwellings and multi-unit dwellings, income, SA2 areas and geographical areas.**
2. **Increasing the number of material categories will require a larger sample size in order to obtain reliable information.**

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Group A:

GROUP A			Sample size options			
Local government area	SA2 Name	SA2 share	100	150	Minimum 200	250
Adelaide	Adelaide	0.71	71	106	142	178
Adelaide	North Adelaide	0.29	29	44	58	72
Adelaide Hills	Adelaide Hills	0.32	32	48	64	80
Adelaide Hills	Aldgate - Stirling	0.28	28	42	56	70
Adelaide Hills	Lobethal - Woodside	0.25	25	38	50	63
Adelaide Hills	Uraidla - Summertown	0.15	15	22	30	37
Burnside	Burnside - Wattle Park	0.42	42	63	84	105
Burnside	Beaumont - Glen Osmond	0.28	28	42	56	70
Burnside	Toorak Gardens	0.3	30	45	60	75
Campbelltown (SA)	Athelstone	0.22	22	33	44	55
Campbelltown (SA)	Paradise - Newton	0.39	39	58	78	98
Campbelltown (SA)	Rostrevor - Magill	0.39	39	58	78	98
Charles Sturt	Flinders Park	0.15	15	22	30	38
Charles Sturt	Henley Beach	0.14	14	21	28	35
Charles Sturt	Hindmarsh - Brompton	0.18	18	27	36	45
Charles Sturt	Seaton - Grange	0.17	17	26	34	42
Charles Sturt	West Lakes	0.17	17	26	34	42
Charles Sturt	Woodville - Cheltenham	0.19	19	28	38	48
Holdfast Bay	Brighton (SA)	0.44	44	66	88	110
Holdfast Bay	Glenelg (SA)	0.56	56	84	112	140
Marion	Edwardstown	0.15	15	22	30	38
Marion	Hallett Cove	0.17	17	26	34	42
Marion	Mitchell Park	0.18	18	27	36	45
Marion	Morphettville	0.17	17	26	34	42
Marion	Sheidow Park - Trott Park	0.16	16	24	32	40
Marion	Warradale	0.17	17	26	34	42
Mitcham	Bellevue Heights	0.15	15	22	30	38
Mitcham	Blackwood	0.27	27	40	54	68
Mitcham	Colonel Light Gardens	0.2	20	30	40	50
Mitcham	Mitcham (SA)	0.25	25	38	50	62
Mitcham	Panorama	0.13	13	20	26	32
Norwood Payneham and St Peters	Norwood (SA)	0.28	28	42	56	70
Norwood Payneham and St Peters	Payneham - Felixstow	0.35	35	52	70	88
Norwood Payneham and St Peters	St Peters - Marden	0.38	38	57	76	95
Onkaparinga	Aldinga	0.1	10	15	20	25
Onkaparinga	Flagstaff Hill	0.18	18	27	36	45

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GROUP A			Sample size options			
Local government area	SA2 Name	SA2 share	100	150	Minimum 200	250
Onkaparinga	Seaford Rise - Moana	0.09	9	14	18	22
Onkaparinga	Seaford - Seaford Meadows	0.09	9	14	18	22
Onkaparinga	Happy Valley	0.11	11	16	22	28
Onkaparinga	Morphett Vale East	0.1	10	15	20	25
Onkaparinga	Aberfoyle Park	0.1	10	15	20	25
Onkaparinga	Christies Beach	0.12	12	18	24	30
Onkaparinga	Woodcroft	0.1	10	15	20	25
Playford	Craigmore - Blakeview	0.21	21	32	42	52
Playford	Davoren Park	0.2	20	30	40	50
Playford	Elizabeth East	0.14	14	21	28	35
Playford	Munno Para West - Angle Vale	0.32	32	48	64	80
Playford	Smithfield - Elizabeth North	0.13	13	20	26	32
Port Adelaide Enfield	Enfield - Blair Athol	0.22	22	33	44	55
Port Adelaide Enfield	Windsor Gardens	0.16	16	24	32	40
Port Adelaide Enfield	Northgate - Northfield	0.13	13	20	26	32
Port Adelaide Enfield	Largs Bay - Semaphore	0.11	11	16	22	28
Port Adelaide Enfield	North Haven	0.17	17	26	34	42
Port Adelaide Enfield	The Parks	0.21	21	32	42	52
Salisbury	Ingle Farm	0.13	13	20	26	32
Salisbury	Parafield Gardens	0.14	14	21	28	35
Salisbury	Paralowie	0.15	15	22	30	38
Salisbury	Salisbury	0.16	16	24	32	40
Salisbury	Salisbury East	0.15	15	22	30	38
Salisbury	Salisbury North	0.27	27	40	54	68
Tea Tree Gully	Highbury - Dernancourt	0.17	17	26	34	42
Tea Tree Gully	Hope Valley - Modbury	0.2	20	30	40	50
Tea Tree Gully	Modbury Heights	0.21	21	32	42	52
Tea Tree Gully	Redwood Park	0.23	23	34	46	58
Tea Tree Gully	St Agnes - Ridgehaven	0.19	19	28	38	48
Unley	Goodwood - Millswood	0.48	48	72	96	120
Unley	Unley - Parkside	0.52	52	78	104	130
West Torrens	Lockleys	0.23	23	34	46	58
West Torrens	Richmond (SA)	0.45	45	68	90	112
West Torrens	Plympton	0.32	32	48	64	80

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Group B

GROUP B		Sample size options			
Local government area	SA2 Name	SA2 share	100	Minimum 150	200
Adelaide Plains	Lewiston - Two Wells	0.39	39	58	78
Adelaide Plains	Mallala	0.61	61	92	122
Alexandrina	Goolwa - Port Elliot	0.27	27	40	54
Alexandrina	Strathalbyn	0.18	18	27	36
Alexandrina	Strathalbyn Surrounds	0.55	55	82	110
Barossa	Gawler - South	0.22	22	33	44
Barossa	Barossa - Angaston	0.42	42	63	84
Barossa	Lyndoch	0.2	20	30	40
Barossa	Nuriootpa	0.08	8	12	16
Barossa	Tanunda	0.09	9	14	18
Berri Barmera	Barmera	0.76	76	114	152
Berri Barmera	Berri	0.24	24	36	48
Clare and Gilbert Valleys	Clare	0.25	25	38	50
Clare and Gilbert Valleys	Gilbert Valley	0.75	75	112	150
Copper Coast	Kadina	0.38	38	57	76
Copper Coast	Moonta	0.36	36	54	72
Copper Coast	Wallaroo	0.25	25	38	50
Gawler	Gawler - South	1	100	150	200
Light	Gawler - North	0.29	29	44	58
Light	Light	0.62	62	93	124
Light	Nuriootpa	0.09	9	14	18
Lower Eyre	Eyre Peninsula	0.47	47	70	94
Lower Eyre	Port Lincoln	0.53	53	80	106
Loxton Waikerie	Loxton	0.27	27	40	54
Loxton Waikerie	Loxton Surrounds	0.41	41	61	82
Loxton Waikerie	Waikerie	0.32	32	48	64
Mid Murray	Mannum	0.58	58	87	116
Mid Murray	Waikerie	0.42	42	63	84
Mount Barker	Hahndorf - Echunga	0.15	15	22	30
Mount Barker	Mount Barker	0.35	35	52	70
Mount Barker	Mount Barker Surrounds	0.42	42	63	84
Mount Barker	Nairne	0.09	9	14	18
Mount Gambier	Mount Gambier - East	0.48	48	72	96
Mount Gambier	Mount Gambier - West	0.52	52	78	104
Murray Bridge	Murray Bridge	0.45	45	68	90

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GROUP B		Sample size options			
Local government area	SA2 Name	SA2 share	100	Minimum 150	200
Murray Bridge	Murray Bridge Surrounds	0.55	55	82	110
Naracoorte Lucindale	Naracoorte	0.37	37	56	74
Naracoorte Lucindale	Naracoorte Surrounds	0.63	63	94	126
Port Augusta	Port Augusta	1	100	150	200
Port Lincoln	Port Lincoln	1	100	150	200
Port Pirie	Port Pirie	0.44	44	66	88
Port Pirie	Port Pirie Surrounds	0.56	56	84	112
Prospect	Nailsworth - Broadview	0.29	29	44	58
Prospect	Prospect	0.71	71	106	142
Renmark Paringa	Renmark	0.24	24	36	48
Renmark Paringa	Renmark Surrounds	0.76	76	114	152
Roxby Downs	Roxby Downs	1	100	150	200
Southern Limestone Coast (formerly Grant)	Grant	0.36	36	54	72
Southern Limestone Coast (formerly Grant)	Mount Gambier - East	0.3	30	45	60
Southern Limestone Coast (formerly Grant)	Mount Gambier - West	0.34	34	51	68
Tatiara	Tatiara	1	100	150	200
Victor Harbor	Victor Harbor	1	100	150	200
Walkerville	Walkerville	1	100	150	200
Wattle Range	Millicent	0.24	24	36	48
Wattle Range	Penola	0.33	33	50	66
Wattle Range	Wattle Range	0.43	43	64	86
Whyalla	Whyalla	1	100	150	200
Yankalilla	Yankalilla	1	100	150	200
Yorke Peninsula	Yorke Peninsula - South	0.62	62	93	124
Yorke Peninsula	Yorke Peninsula - North	0.38	38	57	76

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Group C

GROUP C		Sample size options		
Local government area	SA2 Name	SA2 share	Minimum 50	100
Barunga West	Wakefield - Barunga West	0.87	44	87
Barunga West	Kadina	0.13	6	13
Ceduna	Ceduna	0.43	22	43
Ceduna	West Coast (SA)	0.57	28	57
Cleve	Kimba - Cleve - Franklin Harbour	1	50	100
Coober Pedy	Coober Pedy	1	50	100
Coorong	The Coorong	1	50	100
Elliston	Le Hunte - Elliston	1	50	100
Flinders Ranges	Quorn - Lake Gilles	1	50	100
Franklin Harbour	Kimba - Cleve - Franklin Harbour	1	50	100
Goyder	Goyder	1	50	100
Kangaroo Island	Kangaroo Island	1	50	100
Karoonda East Murray	Karoonda - Lameroo	0.8	40	80
Karoonda East Murray	Mannum	0.2	10	20
Kimba	Kimba - Cleve - Franklin Harbour	1	50	100
Kingston (SA)	Kingston - Robe	1	50	100
Mount Remarkable	Peterborough - Mount Remarkable	1	50	100
Northern Areas	Jamestown	1	50	100
Orroroo Carrieton	Peterborough - Mount Remarkable	1	50	100
Peterborough	Peterborough - Mount Remarkable	1	50	100
Robe	Kingston - Robe	1	50	100
Southern Mallee	Karoonda - Lameroo	1	50	100
Streaky Bay	West Coast (SA)	1	50	100
Tumby Bay	Eyre Peninsula	1	50	100
Wakefield	Wakefield- Barunga West	1	50	100
Wudinna	Le Hunte - Elliston	1	50	100

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7 Appendix F – Additional Material Analysis

Additional analysis can be done to identify the 'separation efficiency' for a specific material, in other words, the percentage of a material correctly disposed of in the correct waste stream, as a proportion of the total quantity of that same material disposed across the kerbside collected system.

For example, analysis can identify the percentage of recyclable materials correctly placed in the comingled recycling bin as a proportion of the total recyclable material being disposed of across all available bins (i.e. in the comingled recycling bin, the general waste bin or placed in another available household collection service). Material separation efficiency is useful for determining which materials warrant increased focus for education initiatives.

An example of the overall separation efficiency for recyclables is shown below:

$$\text{Recyclables separation efficiency rate (\%)} = \frac{\text{Total weight in comingled recycling bins (kg) } \mathbf{minus} \text{ total weight of contamination in comingled recycling bins (kg)}}{\text{Weight of recyclables in comingled recycling bins collected } \mathbf{+} \text{ weight of recyclables in general waste bins collected } \mathbf{+} \text{ weight of recyclables in organics bins collected}} \times 100$$

An example of the overall separation efficiency for garden organics is shown below:

$$\text{Organics separation efficiency rate (\%)} = \frac{\text{Total weight in organics bins (kg) } \mathbf{minus} \text{ total weight of contamination in organics bins (kg)}}{\text{Weight of organics in organics bins collected + weight of organics in general waste bins collected + weight of organics in comingled recycling bins collected}} \times 100$$