

WA Department of Environment and Conservation

# Kerbside Waste and Recycling Audit Manual

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July 2008

Towards  
**ZERO WASTE**  
[www.zerowastewa.com.au](http://www.zerowastewa.com.au)



Department of  
Environment and Conservation

Our environment, our future 



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# Glossary

<b>Domestic Waste (sometimes called 'household waste')</b>	All material from households collected by local government or Local Government contractors.
<b>Green waste (organics)</b>	Organic green and woody material from both public and private parks or garden areas. Green waste often includes grass clippings, tree limbs, vegetation trimmings and whole vegetation cleared for the purpose of residential development. It does not include processed wooden products such as furniture or pallets.
<b>Hard Waste</b>	Bulky waste items, such as white goods and furniture, generated by households but not able to be collected via a kerbside collection. It does not include green waste.
<b>Kerbside recycling collection</b>	Separated recyclables collected from the householder in a specific collection for recyclable materials. In WA, this is often a co-mingled collection. Recyclables may be stored in a specific MGB, crate or sack.
<b>Kerbside waste collection</b>	Regular containerised collection service provided to households that collects waste from outside of the dwelling.
<b>MGB</b>	Mobile Garbage Bin. Also known as a 'wheelie bin'. A wheeled bin that may come in a range of sizes for temporary storage of waste prior to collection.
<b>MUD</b>	Multi-unit dwelling (i.e. flats)
<b>ONP</b>	Old news print
<b>Recyclable</b>	Materials that are reasonably able to be recovered through collection or drop-off points and are able to be reprocessed and used as a raw material for the manufacture of a new product.
<b>Recycling</b>	Where material undergoes a physical or mechanical process to create a new product. This does not include 're-use'.
<b>SUD</b>	Single unit dwelling (ie. house or free standing unit)
<b>Transfer station</b>	Location where waste is collected and stored temporarily before to transport to a final destination. Sometimes a level of sorting of recyclable material may occur at this site. Transfer stations can be located either at a landfill premises or at an independent site.
<b>Strategic Waste Management Plan (SWMP)</b>	A plan intended to help local governments align activities to the State's vision of "Towards Zero Waste". The plan will clearly identify goals/ targets and set out strategies and actions that will be undertaken in order to achieve them. It is essential that the plan includes procedures for recording and reporting waste management data as a means of measuring the progress of the plan.



# 1. Overview of the Zero Waste Plan Development Scheme

## 1.1 Towards Zero Waste

The Zero Waste Plan Development Scheme (Scheme) is one of a number of new schemes the Department of Environment and Conservation (DEC) has initiated to support local governments with their efforts in moving *Towards Zero Waste*.

One of the key aspects of the second phase of this Scheme is the development of strategic waste management plans (SWMP) for each local government in Western Australia. The plans will enable local government to commence or improve existing strategies for the achievement of best practice municipal waste management. It is recognised that each plan will be unique, reflecting the different demographic, geographical and social constitution of the local government region. The plan will also reflect the current level of waste management services provided by each of the local governments involved in the formulation of the plan.

To achieve this, it is important that each plan be based on data that accurately represents the current levels of waste generation and diversion activities for the individual local government region. The purpose of this document is to provide local governments, constituted regional local governments and informal local government groups with guidance on how to collect this data through waste audits.

Reference should be made to “Waste Management Board of Western Australia, *Guidelines for the Preparation of a Strategic Waste Management Plan for Phase 2 of the Zero Waste Plan Development Scheme, 2007*” available from our website [www.zerowastewa.com.au](http://www.zerowastewa.com.au) or by contacting the Waste Management Branch of DEC on (08) 6467 5011.



## 1.2 Who should do a kerbside audit?

In addition to implementing a kerbside audit program as part of a local government's initiative under the Zero Waste Plan Development Scheme, this standard methodology and reporting format can be used by any local government (or contracted service providers) for the following purposes:

- Reporting within a local government area on the performance of a chosen waste and recycling system.
- Comparing performance with that of other local governments in similar circumstances.
- Providing the Government with data on the performance of kerbside systems.
- Providing feedback to the community on their recycling efforts.
- Reviewing the performance of a new system (for example, six months after its introduction).
- Reviewing an existing system prior to tendering for a new kerbside contract or at a mid-term review.
- Provide decision makers with information on changes in community waste generation and recycling behaviours between different locations and over time.

A kerbside audit program may also be conducted as part of a local government's responsibilities for other programs and organisations. For example, a local government may be reporting on greenhouse gas emissions resulting from disposal of waste to landfill and/or recycling materials. The methodology contained in this document can also be used for these other purposes. Consideration may be needed on issues including extending the sample size and/or types of waste and recycling materials that will be classified, to ensure that these other reporting responsibilities are adequately addressed by this waste audit program.

## 1.3 Why measure kerbside performance?

There are compelling reasons for DEC and local governments to have access to accurate, reliable and consistent data in order to plan future waste reduction strategies. The key message is "what cannot be measured cannot be managed".

The purpose of this manual is to provide a standard methodology for local governments and others to undertake audits of kerbside waste and recyclables.

Importantly, by adhering to the set methodology, performance comparisons can be made with other local governments as well as with the data collected from future audits conducted on each individual local government's kerbside collection system(s).

The main purpose of the data collection program is to be able to determine:

- material composition of the domestic waste and recycling stream
- total diversion of materials from landfill
- which kerbside systems (and other initiatives) contribute to maximum diversion rates
- types and quantities of contamination in the streams audited.



This will then guide the development of programs that will improve current levels of performance in regards to maximising diversion of waste from landfill and the recovery of valuable resources. To achieve this, it is paramount that accurate data is collected.

The Manual is structured as follows:

- section 2 provides a check list for the audit process
- section 3 summarises the auditor's responsibilities
- section 4 discusses audit sample size criteria
- section 5 outlines the specific methodology for sample collections
- section 6 summarises auditor training requirements
- section 7 provides the outline of the OHS aspects of the audit program
- section 8 summarises the actual audit procedures
- audit FAQ's that provide answers to some issues you may encounter
- appendices that provide pro-formas and other essential information.

## 1.4 The benefits of a standard methodology

Data collection in the field of waste management has become complicated and disjointed in recent times, with a range of agencies contacting local governments and others with requests for information. These requests are often very specific yet use differing definitions and classifications of waste streams. As such, it is not currently possible for local governments to maintain a set of data that will meet the requirements of all these agencies. This standard methodology for Kerbside Waste and Recycling Audit Reporting is designed to simplify that process by providing local governments and others with a common method for recording yield data.

It is important for consistency and to ensure data on issues such as contamination of the recycling stream and/or leakage of recyclables into the domestic waste stream that the audit program is conducted on all services (i.e. domestic waste, recycling, green organics and hard waste), provided at the same time.

## 1.5 Confidentiality

Audit reports should not contain individual tenement information. Adequate notice should be given to the residents about the audit in order to enable them to notify the local government should they choose not to participate. It is important to ensure such notification is provided with sufficient time allowed before the audit is conducted. In this way you can be sure that the results of your audit represent a 'typical week' in your local government area (LGA). It is generally accepted that a minimum of six weeks notice is required before the audit. Refer to Section 8.2 for more details.

Appendix L contains a sample newspaper advertisement that can be used to advise the community of the audit program.



## 2 Checklist for Audit Program

The following provides a list of requirements that must be addressed in preparing for, conducting and analysing data for the kerbside audit program.

### Project scope and information

- Scope of the audit program finalised
  - Plan requirements
  - Additional scope requirements
- Timing for audit program finalised
- Waste/recycling collection systems and schedules determined
- Determination of materials allowed in systems
- Contractor data on weights collected
- Demographic data for the Local Government area obtained

### Audit competency

- Qualified auditors
- Training/briefing program for all auditors developed
- Confidentiality agreements signed

### Quality assurance program

- Data forms – controlled distribution, use and recovery
- Data input protocols designed to minimise error and highlight errors
- Data verification process in place
- Procedures developed to report any adverse findings (e.g. illegal disposal of waste materials)

### Insurance

- Public liability details provided to local government
- Professional indemnity insurance details provided to local government
- Appropriate workers' compensation insurance in place

### Occupational health and safety program

- Full risk assessment conducted for this audit
- Developed and submitted an OHS plan prior to commencing auditing
- OHS plan contains information including, but not limited to:
  - sample collection procedures – kerbside collections
  - waste handling and sorting procedures
  - waste storage and collection
  - specific responsibilities
  - medical monitoring program
  - required vaccinations identified (minimum Hepatitis A and B, and Tetanus)
  - first-aid provision
  - training
  - specific audit site issues
  - audit site evacuation procedures
  - personal protective equipment – requirements, use and maintenance
  - risk matrix with hazard identification and risk management program
  - program developed to monitor ambient conditions
- OHS plan approved by local government



### Sample

- Methodology based on:
  - plan requirements
  - timeframes
- Streets and houses nominated – based on random sampling (or a comparable methodology such as stratified random sampling, where random samples are determined according to a system of stratification – for example on a per street or per block or truck-run basis )
- Process communicated to sample collectors to account for households who do not place waste/recycling containers out for collection
- Procedures adopted to ensure confidentiality of origin of materials (i.e. household street and number)
- Public notification issued minimum of six weeks prior to audit
- Letter provided to sample collectors authorising collection

### Waste audit site

- Has the following attributes:
  - adequate space for segregation of pre and post-audited waste, staff and equipment
  - protection from environmental conditions such as weather/wind
  - protection of storm water drains and other environmentally sensitive areas
  - adequate ventilation
  - power and water provided
  - secure to ensure audited materials are not tampered with
- Litter control program

### Auditing methodology

- Maintains integrity of sample size so that:
  - samples are not removed prior to being analysed
  - materials and/or streams are not mixed
- Planned to ensure efficient workflow and that audited and non-audited materials are not mixed
- Equipment available, including first-aid equipment
- Process to ensure correct disposal of audited materials
- Timing adequate for estimated quantity of waste sample
- Sorters instructed on process and categories
- Materials sorted according to DEC requirements
- Material data recorded in weight (to 0.01 kgs) and volume (this is conducted by estimating the litres that each type of material is to an accuracy of 0.01 litres)

### Validation procedures

- Compares quantity audited against historical data – variations explained

### Participation rate

- Data collected in accordance with plan protocols

### Reporting structure

- Provided in the specified manner – recording spreadsheet available on [www.zerowastewa.com.au](http://www.zerowastewa.com.au)
- Validation data and analysis provided
- Comments provided in report for any issues identified
- Draft report to local government
- Comments integrated into final report
- Submit final online report to DEC



### 3. Waste auditor responsibilities

DEC and the local government is relying on the waste auditor's expertise not only for the efficient delivery of the audit process and for the expected outcomes, but also for their experience in being able to identify what information is required and to request it in a timely manner.

To ensure that the selected audit meets all projected outcomes in a safe and efficient manner all parties have clear responsibilities and separate roles. However, to meet these responsibilities fully, the co-operation of all parties in supplying data and information is vital.

The waste audit coordinator/manager is responsible for the following:

- Requesting in writing all relevant information and providing advice as to where the information may be available.
- Agreeing on the audit objectives and outcomes.
- Performing the audit in an efficient manner so as to achieve the stated objectives.
- Advising the client if timeframes cannot be met and providing a rationale as to why they cannot be met, as well as when they can be met.
- Ensuring that all audit samples are collected in accordance with the developed methodology and in a safe manner.
- Ensuring that waste is transported to the audit site in a safe and environmentally responsible manner.
- Conducting the audit in a safe manner and coordinating with the supervising waste auditor to ensure good practice at the audit location. The supervising waste auditor is responsible for ensuring the safety of waste auditors, the environment surrounding the audit area, and site personnel that may come in contact with the audit process. The audit area should be secure at all times and waste must at all times be securely contained.
- Ensuring the audit team is familiar with the site, taking note of any environmental issues that may need to be considered during the audit (e.g. close proximity of storm water drain; close proximity of public places). Also, the availability of necessary utilities such as power, water and amenities.
- Estimating how much waste will be collected for sorting and ensuring adequate resources are available to effectively process this quantity. This will be related back to the audit scope.
- Ensuring all necessary equipment and resources are available as required and are in good order. Scales used for measuring should be calibrated, any electrical equipment used on-site must be compliant.
- Ensuring that staff employed on the waste audit have the necessary competencies and skills to effectively complete the tasks assigned to them.
- Ensuring the audit site manager has agreed in advance to the use of any on-site facilities or resources. This will include the actual sorting area, access to power and water.



- Advising the client immediately of any potential environmental issues that come to light as a result of the audit, even if this is outside of the scope of the audit.
- Ensuring all post-sorted waste is deposited into appropriate containers for final disposal/recycling in line with legislative and regulatory requirements and / or site licensing conditions.
- Maintaining confidentiality.
- Preparing all reports as required.



## 4. Audit samples

The following section provides an overview of the sampling criteria that are to be followed for conducting the Kerbside Waste and Recycling Audits. It is essential that the indicated sample sizes be followed so that the audits are valid and data can be used as described in Section 1.2.

### 4.1 Sampling for recyclables and residual waste

- For most circumstances, a sample size of 100 serviced tenements (e.g. households and multi unit dwellings (MUDs)) per local government area (LGA) can be specified for both the recyclables and residual waste. There may be situations where greater accuracy is required, therefore a different number of samples or a different sampling approach may be necessary. In this case, further expertise/advice should be sought.
- The bins must be collected from randomly selected tenements in locations that represent the diverse demographics within the local government. Refer to Section 5 for sample collection procedures
- The following parameters should be considered in determining where the samples should be collected:
  - Tenement size and structure (e.g. single parent households, two parent households, households with young children, single person households, elderly persons)
  - Home ownership (i.e. renting, purchasing or own outright)
  - Dwelling type (i.e. separate dwelling, semi detached or MUDs)
  - Tenement income
  - Vegetation cover.

Each of these parameters may influence the type and quantity of recyclables and residual waste generated. Therefore, the potential variances must be considered when developing the sample collection methodology.

**Note:** Larger sample sizes may be required for those who are also conducting this waste audit as a component of other schemes. A smaller sample size to that specified in this publication cannot be used.

### 4.2 Sampling for green organics

Where a kerbside green organics bin collection service is provided, a random audit of 25 organic material bins should be undertaken. As for recyclables and residual waste, care should be taken to ensure this sample represents the broader range of tenements using this service. In particular, attention should be paid to the size of blocks and vegetation cover.

It is important to note that the green organics sampling process is not one that can be considered strictly statistically valid. There are several issues that can impact on accurately extrapolating the data to provide a representation of green organics



generation (types and quantities), over a 12 month period. These issues include demographics (e.g. size of household blocks), the season in which the sample is collected and the weather during the period that green organics could be deposited into the kerbside bins. That is, the sample may be collected during autumn but unseasonable weather may mean that residents are not gardening. In order to address these issues, more than one green waste audit over the course of the year may be required.

To assist in classifying green organics, the following definitions have been provided:

- lawn clippings - wet or dried grass/lawn clippings (i.e. from lawn mowing) - small quantities of weeds (e.g. oxalis and dandelion), could be included in this category
- shrubs/branches - this includes whole shrubs, or cuttings from shrubs, and branches up to 5cm in diameter
- logs - suitable for firewood (i.e. over 5cm in diameter), excludes such materials as treated pine
- other green waste – this includes any defined weed species (i.e. LGA specific), flower cuttings, treated pine dismantled fences.

### 4.3 Factoring single unit and multi-unit dwellings

Your sample of tenements must include all categories that represent 5 per cent or more of your total serviced tenements. That is, if your community has 7 per cent multi-unit dwellings (MUDs), your sample should also include 7 per cent MUDs.

Those single unit dwellings (SUDs, e.g. units), that have their own individual allocated/controlled residual waste and recyclable container are to be managed as a single tenement. That is, Unit 2/5 Smith St is to be considered the same in respect to sample selection as a house located at 10 Smith St. However, only one unit can be selected from the same group of units. To be considered as a SUD, the waste/recycling container should be marked as to the unit number or placed outside the unit. If it is not clear that the container is not being shared, then the dwelling is to be considered a MUD.

For MUDs, where the “tenants” share residual waste and recyclable containers, only one of each of the residual waste and recyclable containers placed out at the kerbside will be selected for auditing.

### 4.4 Audit timing

The following periods should be avoided for auditing of residual waste and recyclables.

- 1) 1 of December to 1 of February (to minimise the impact of Christmas holidays)
- 2) Easter
- 3) public holidays and long weekends
- 4) major local events or festivals
- 5) extreme weather conditions



It has been demonstrated through many kerbside audits that the types and quantities of materials generated during these periods can be significantly different than what is “normally” generated. Therefore to conduct the audits during these times and then extrapolate data could lead to incorrect assumptions regarding issues such as diversion rates and contamination of the various streams.

If possible green organics should be audited in the autumn months (in March, April and May of any given year).

Local governments should undertake the audit no less than six months after the introduction of a new system. Where applicable, the audit should be done within the time periods specified for the preparation of waste management plans.

Local governments may wish to undertake additional audits. A systematic audit program is highly recommended as it will allow local governments to track the performance of existing kerbside services or any new services that are introduced. In the interests of consistency, DEC strongly recommends the use of this standard methodology in such instances. This will allow for ready comparison of results with those generated by other local governments and, once provided to DEC, will allow results to be collated in a consistent manner.

## 4.5 Presentation rate calculations

Ascertaining accurate presentation rate data is essential for extrapolating audit data to provide a representation of “annual” rates of material generation, diversion and contamination.

Presentation rates are determined by dividing the number of tenements putting out their kerbside container by the total amount of tenements surveyed.

The following methodology should be adopted in calculating the presentation rate for all kerbside services (recyclables, residual waste and green organics). It is likely to get different rates for each waste stream. It is also likely that the presentation rate will change throughout the year due to many circumstances such as weather; season holiday period. It is strongly recommended that the presentation rate is calculated at the same time as the audit is conducted.

**Presentation rates are not to be calculated from the information provided by contractors in regards to the number of tenements serviced.**

**The presentation rate calculations should be conducted at around the same time as the sample is collected for the kerbside audit program. It can also be conducted while collecting the sample for the audit program.**

Calculating presentation rates for MUDs, if they are included in the sample, could be difficult due to the varying types of systems they may have. Some MUDs may have a residual waste and recyclable container allocated to each unit, others may have shared systems.

To calculate presentation rates for MUDs, the recommendation is where any one residual waste and recyclable container has been placed out at kerbside for servicing, this is to be considered as a “presentation” and recorded as such.



### STEP 1

A minimum of 100 premises are to be considered for determining presentation rates. If this exercise is being conducted at the same time as the audit, then the same sample can be used. If it is being conducted at a different time then a random sample must be selected – refer to Section 5 for sample determination procedures.

### STEP 2

If doing this as part of the audit, then during the collection of the samples, mark on the run sheet if the selected households/MUDs placed their bin out for collection. This is done for each waste stream serviced (i.e. recycling; residual waste; organics).

If doing this exercise separately from the audit, then arrange for a person to drive past each of the selected households/MUDs as close as possible to the normal collection time. If this exercise is carried out several hours before the normal collection time, or the night before, the information may be inaccurate as households that may be late in putting their bins out will be incorrectly recorded as not presenting their bins for collection, hence reducing the real presentation rate.

Count how many of the selected premises have put out bins for collection in the street(s). Check that at least 100 premises have been surveyed. Ensure that the households selected are serviced on the day audited. For example, some recycling services are fortnightly, so certain streets in the area would be excluded from the sample.

### STEP 3

Reporting to DEC will be via an online survey as detailed in Section 8.8.2.

You will arrive at a percentage for each stream. For example, if 80 households placed their residual waste bin out and 75 placed their recycling bin out, then given a sample size of 100, the presentation rates would be:

- Residual waste - 80%
- Recycling stream - 75%

The methodology for determining presentation rates as outlined in this manual applies to SUDs only. Determining presentation rates for MUDs is a far more complex process. For the purposes of this project, where the percentage of MUDs in the local government area is less than 20%, the presentation rate as determined for households will be applied to MUDs. Where the percentage of MUDs is greater than 20% an alternative methodology is to be discussed with DEC.



## 5. Sample collection procedures

This section provides the detailed and required methodology to be used for:

- sample selection
- sample collection procedures
- procedures for bins not present at selected tenements
- inclusion/exclusion of commercial premises

**It is essential for accurate extrapolation of data collected through the audits, that this methodology be followed precisely.**

**This methodology refers to SUDs, but if you are required to collect from other tenements such as MUDs (refer to Section 4.3), then this should be factored into the interpretation of the following.**

If there is any doubt over the validity of the sample, then it is important that you cease collection and re-start the process once the issues have been resolved.

### 5.1 Sample selection

Kerbside audits have demonstrated that different socio-economic profiles within a LGA result in the generation of different types and quantities of waste materials. There can also be differing adherence to segregation requirements for these materials.

The following details provide the methodology to be followed in determining your sample and ensuring a safe audit.

#### 5.1.1 Step 1

Determine the different socio-demographic regions within each local government collection area. This can be ascertained using the following criteria as a guide:

- tenement size and structure (e.g. average number of people living in houses)
- home ownership
- type of dwelling
- tenement income
- block size and vegetation cover (pertinent for the green organics audit)
- rates valuations

This information may be accessed from areas within the local government where resident profiles have been developed for annual reporting purposes or development of social programs, or from data available through the Australian Bureau of Statistics.

Your waste contractor may also be able to provide some input to this process as they will be aware of areas where recycling works well and areas where contamination is high.



Three to five demographic regions would be the average number identified within anyone LGA. The purpose of defining the different areas is to ensure that any aspects of an area that may impact on the type or quantity of waste generated is identified and included in the sample.

### 5.1.2 Step 2

Determine the appropriate percentage of tenements within each defined demographic region that receive the service to be audited. Where different bin sizes are offered for the one service (such as where residents have a choice of either a 120 litre or 240 litre MGB for recycling), each bin size should also be proportionally represented within your sample.

### 5.1.3 Step 3

Determine the percentage composition for each demographic region and for each bin type. For example, the following table may illustrate your analysis:

Demographic	% of population
Demographic A	15%
Demographic B	35%
Demographic C	50%
Bin types	% of total services
240 MGB (domestic)	100%
240 MGB recycling	80%
120 MGB recycling	20%

Based on the data in the table, to collect a statistically valid sample, you would need to ensure the following for both the residual waste and recycling streams:

- 15 tenements collected from Demographic A
- 35 tenements collected from Demographic B
- 50 tenements collected from Demographic C.

In addition, there would be a need to ensure that:

- 80 of the selected tenements use the 240 MGB for recycling
- 20 of the selected tenements use the 120 MGB for recycling.

The selection of these different sized MGBs would be spread across the demographic that use them. Refer to Sections 5.1.5 and 5.2 for instructions on the actual sample collection procedures.

If MUDs are over 5 per cent of the tenements, then they are to be included in the sample collection. If some of these are serviced by bulk bins such as 3m<sup>3</sup> front-lift containers, and others by 240 MGBs then there is a need to ensure that the relative percentage of each system is factored into the MUD selection process.



#### 5.1.4 Step 4

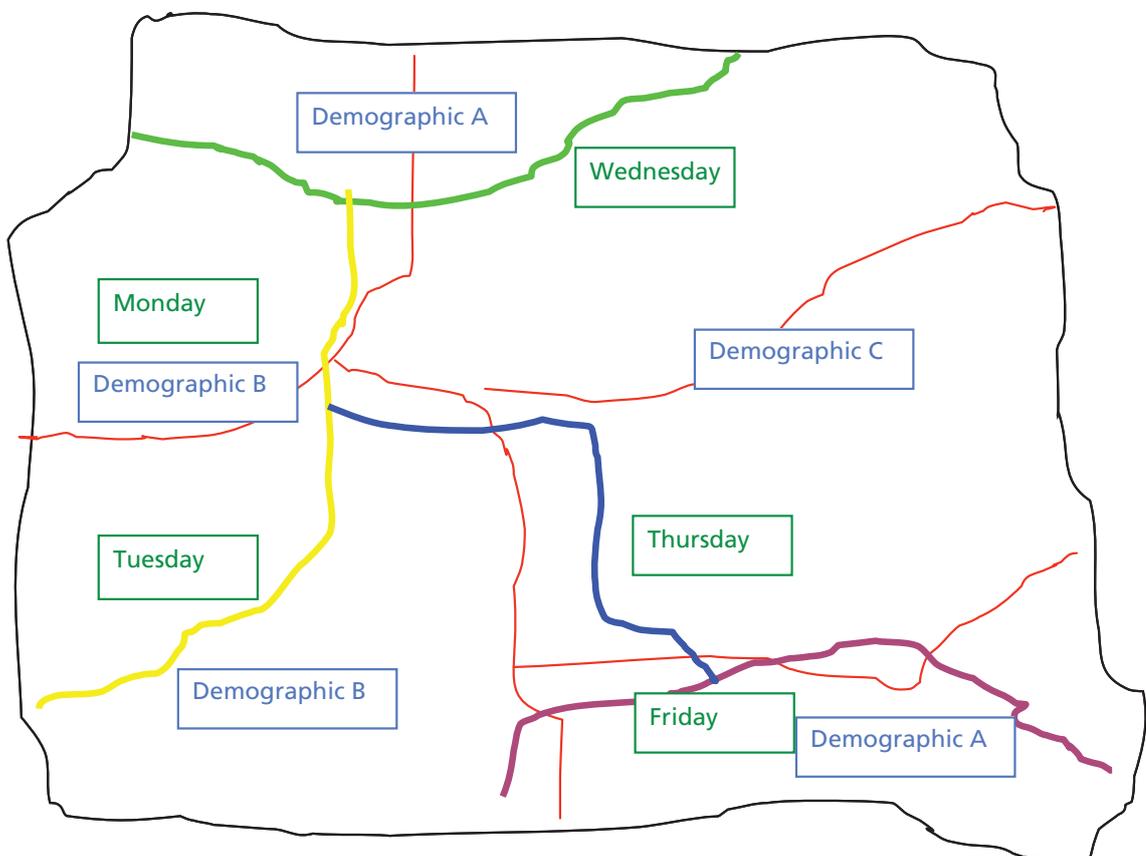
Map the demographic regions (i.e. those represented in the table in Step 3) over the existing contractors collection map. See an example of this mapping process in Section 5.1.6 (Demonstration LGA map).

#### 5.1.5 Step 5

Using a random number generator program obtain a set of random numbers. The total should be set at the total number of tenements in the collection zone.

These numbers should then be applied to a separate table of tenements (rates database) for each type (house and MUD) to identify the starting sample tenements. You will need to ensure that the selected tenements are within your demographic region and fall on the designated collection day. Continue sampling until you have the required number of tenements within each demographic profile and on the required days. If a random number falls outside the required area it is discarded and the next number is used. Additional tenements should be selected in case a sample needs to be made void (for example, when the sample collection truck arrives and the collection has already been finished in the street).

#### 5.1.6 Demonstration LGA map





A mock LGA map is provided as an example. The red lines show the weekly collection route and cycle for domestic waste. The LGA is split into five collection days. Transposed over this are the demographic region boundaries. There are three main demographic profiles within the LGA. From the map, you can see the following:

- Demographic A sample could be collected on Monday; Wednesday or Friday
- Demographic B sample could be collected on Monday, Tuesday or limited area on Thursday
- Demographic C sample could be collected on Wednesday or Thursday

To ensure a good coverage of the whole LGA, as well as to be efficient in regards to the sample collection, you would probably collect the required samples as follows:

- Monday – Demographic A and B
- Tuesday – Demographic B
- Wednesday – Demographic C
- Thursday – Demographic C
- Friday – Demographic A.

Each demographic area sample is collected in proportion to their percentage representation in the total population.

It is also important to include in the collection schedule planning, the necessity to collect from MUDs or to consider those tenements that have different sized containers.

To add another layer to this map, you will also need to include the recycling collection schedule. In many areas, recycling is only collected on a fortnightly basis, so that in any given week only half the LGA has a recycling collection. This will need to be mapped to ensure that each of your demographic profiles is covered in the recycling week selected.

## 5.2 Sample collection procedures

### 5.2.1 Sample collection

The audit samples are to be collected as follows, starting with the first randomly generated tenement as per Section 5.1.5:

1. Where the street selected is in excess of 50 houses, every 5th house is to be collected to a maximum of 10 houses per street.
2. Where the street is less than 50 houses, every 2nd house is to be collected to a maximum of 10 houses per street.
3. Houses should only be selected from the one side of the street. This assists in the safety of the sample collection personnel.

- 
4. When a selected house does not place out a domestic waste or recycling container (i.e. no bin is placed out for collection), then the next house is to be sampled and the progression started again from this new sampled house. As the sample requires 100 houses, it is critical that a full sample is collected and that **the sampling process is accurate in regards to the tenements that are collected**. The presentation rate will be calculated separately and used to extrapolate the sample (refer to Section 4.5)
  5. When a house places out only one container then that container is collected. The missing container is collected from the next house and the progression started again from this house. That is, it would be the next 5th or 2nd house depending on the number of houses within the street as indicated above. The rationale is to ensure that issues such as “non-use” of a specific container are noted and the data used in the calculations. If the house presenting only one type of container was ignored and the next house selected, then the assumption would be that all houses presented all containers for collection, when this is not the case.
  6. Details of “no show” or missing containers are to be recorded on the audit sample collection sheet. This information will also be recorded on the presentation audit sheet as outlined in the methodology.
  7. No commercial sites are to be included in the audit.
  8. For MUDs, the selection of the containers for sampling is undertaken by seeking where possible to avoid selecting bins from either end of the bin sequence. Where there is only one or two bins placed out for collection this may be unavoidable and these should be counted (if selected as part of the sample collection) but where possible it is suggested that where there are four or more bins, that the 4th container (for both the residual and recycling containers) from the direction the sampling process is being conducted for the street is sampled. This would be the 4th container from the lowest numbered tenement in the street. If there are more than 10 containers, then sample every 5th container to a maximum of 10 containers per block of MUDs.
  9. **A selected tenement is not to be missed or replaced by another one on the basis of the characteristics of their waste (e.g. an over-full bin; heavy bin). The only time a selected tenement is to be missed and therefore replaced by another is if it is clearly a commercial site.**

Appendix M contains a sample of a “run sheet”. This sheet should be completed once all designated streets and tenements have been determined as per the methodology described for the sample selection. This sheet should then be provided to the person in charge of the audit sample collection process.



### Example of selection protocol

Hill Street has more than 50 houses. House 42 Hill Street is the house that corresponds to the randomly selected number where the collection is to commence. Note, if the household selected is at the end of the street you can work backwards in terms of house numbers. Following is an example of the selection protocol that should be undertaken in the circumstances outlined.

Street		House Number	Bins Presented	Action
Hill		42	 	Collect garbage and recycling bins
		52	No Bins Presented	Re-commence collection from next house (i.e., house no. 54)
		54		Collect garbage bin Go to 56 for Recycling bins.
		56		Collect Recycling Bin. Then re-commence collection at Household 66
		66	 	Collect garbage and recycling bins
		76	 	Collect garbage and recycling bins



### 5.2.2 Protocols

1. It is necessary that the sample is collected ahead of the normal service. However, this should be done as close as possible to normal collection times. Collecting the sample too early may result in many of the selected tenements not having their bins out for collection, and hence the need to alter the collection plan.
2. As a minimum, the samples must be **separated by stream**. While DEC only requires total audit data for the whole sample, you should consider whether separating certain sectors may be of value to you in terms of developing education programs or comparing systems. For example by segregating MUDs and SUDs you may find that the average recycling rates and contamination levels for these two sectors is quite different, hence education programs may be developed to target relevant sectors. Similarly you may find that residents utilising smaller domestic waste bins have different contamination rates. This should be discussed with the auditor managing the program as there is likely to be additional cost involved in increasing the number of categories audited and analysed.
3. The samples are to be collected by mechanical means only. It is recommended that the samples be collected by the normal vehicles servicing these runs. In this way manual handling of bins at kerbside is avoided. In addition, the use of the normal collection vehicle attracts less attention from residents and is less likely to raise concerns such as privacy. It is important to ensure that there is no waste/recyclables in the vehicle at the commencement of the sample collection process. It is also important that the vehicle driver is asked that waste and recyclables are not compacted during the collection process.
4. As each sample is collected, the tenement is recorded on the collection sheet. Where a change is made to the designated tenement (due to no waste or recycling bins being presented), the new tenement number is to be recorded and the reason for the change documented (Refer sample run sheet – Appendix M).
5. The collection supervisor is to be instructed to bypass any resident raising an objection to the process.
6. The collection supervisor is to have a letter authorising them to undertake the process, to provide to residents as required.
7. The collection supervisor is to be instructed to contact the lead auditor immediately if any issues arise in relation to sample collection.



## 6. Staff training

The training provided to all personnel participating in the program will form an integral part of the health and safety program as well as ensuring that the audit process is conducted efficiently.

There are three levels of training required:

1. DEC Kerbside Waste and Recycling Audit Course – This course has been specifically developed for this audit program. All local governments participating in this audit program, plus all lead auditors from consultancies wishing to conduct the audits must attend this course.
2. Auditor training – it is the responsibility of the trained lead auditor to ensure that all those participating in the actual audit and sample collection have received specific auditing training. This training is to cover all the OHS requirements as well as material classification and specific requirements of the DEC audits. All local governments should request written evidence of this training prior to commencement of the audit program.
3. Daily refresher training – during the actual audit, daily sessions should be held to remind auditors of the process to be followed, and importantly the OHS issues. (Refer Appendices G and H).

Personnel who have not participated in the relevant training sessions will at no time be allowed onto the waste audit site or participate in the collection of waste/recyclable samples as part of this the project. They may be allowed onsite as observers, but must be accompanied by the site supervisor at all times.

Records of training provided must be kept on file by the Safety Officer/Lead Auditor. Local governments should review training provided by lead auditors and assure themselves that it covers all key elements.



# 7. Occupational Health and Safety

## 7.1 Potential hazards

The sample collection and physical audit processes pose risks to personnel involved in these activities. The following are some possible hazards that may occur during the physical sorting of solid waste.

**Local governments should ensure that a full risk assessment is conducted for each audit. This assessment should be signed off by the relevant officer and used as the basis of the OHS plan.**

### 7.1.1 Sample collection process

- Effects of exposure to hazardous materials
- Back injury
- Slipping and falling
- Heat stress and fatigue
- Traffic
- Heavy equipment movement

### 7.1.2 Physical audit process

#### Physical hazards

- Cuts and punctures from sharp items in the sample (e.g. hypodermic needles, broken glass, razor blades).
- Effects of exposure to hazardous materials such as medical waste, aerosol cans, chemicals (powder and liquid), bottles of unknown/unlabelled substances, plastic bottles containing used syringes, and other hazardous materials.
- Back injury
- Slipping and falling
- Heat stress and fatigue
- Traffic or heavy equipment movement
- Noise exposure from operation of heavy equipment
- Animal and/or insect bites
- Airborne contaminants
- Dust from solid waste
- Fire

#### Chemical hazards

- Liquid spills from containers
- Household and hazardous chemicals

#### Biological hazards

- Household hazardous wastes
- Medical wastes and sharps
- Bloody rags or objects
- Hypodermic needles



## 7.2 Health and safety guidelines for undertaking waste audits

Due to the potentially hazardous nature of waste auditing, the preparation of a site-specific Occupational Health and Safety (OHS) Plan is considered by DEC to be an essential component of any waste auditing process. These protocols for Health and Safety have been developed with reference to previous audits undertaken.

A waste auditing exercise involves a number of activities that can potentially be hazardous to the participating personnel. It is therefore critically important that local governments and other relevant people prepare a site specific OHS plan to address these risks before starting an audit. Such a plan should address at least the following:

- Occupational Health and Safety policy
- Sample collection procedures
- Specific responsibilities - Safety Officer and Waste Auditors
- Medical monitoring
- Vaccinations required (minimum Hepatitis A and B and Tetanus)
- First-aid provision
- Training
- Specific audit site issues
- Audit site evacuation procedures
- Personal protective equipment – requirements, use and maintenance
- Risk identification management program
- Monitoring of ambient conditions

To assist in preparation of this plan, Appendix A contains a risk management matrix and forms that can be used for the development of the risk management strategy.

Appendices B and C summarise the more common hazards that may arise during both the audit sample collection process and the physical audit. Management strategies have also been included in these appendices as a guide.

Essentially a risk assessment should be conducted that enables all hazards for all aspects of the program to be identified and acceptable management strategies implemented.

The following information should be made available to all auditors. This will assist in timely resolution of any issues that may arise during the sample collection and/or waste audit process.



## Occupational Health and Safety Plan

### On-site contact

- Main point of contact and telephone number
- Facility manager and telephone number(s)

### Location of site resources

- Site map
- Toilet facilities
- Drinking water
- Telephone
- Emergency assembly area
- First-aid facility
- Designated smoking area (if required)
- Water and soap for washing

### Medical information

- Local emergency medical facility
- Telephone number

### Important telephone numbers

- Fire Department
- Police Department
- Local ambulance
- Local medical practitioner

Appendices G and H contain the safety induction checklists that are to be used for the audit processes. Appendix I contains a pro-forma statement that should be signed by audit project staff when receiving the project OHS plan.

## 7.3 Responsible personnel

The following section lists some of the duties and responsibilities of personnel who are supervising and conducting a physical sort of solid waste.

### Supervising Waste Auditor's/Project Manager's duties and responsibilities

- Delegate health and safety responsibilities to the Site Safety Officer.
- Ensure that qualified personnel implement proper procedures in a safe manner.
- Make available proper Personal Protective Equipment (PPE).
- Make available adequate time and budget.
- Ensure that all field personnel have read, understood and signed the master copy of the OHS plan.
- Check that all the auditors have received training on waste characterisation methods, recognising hazardous wastes, potential risks from handling hazardous materials, managing site traffic, controlling dust/airborne contaminants, and back injury prevention.
- Ensure that staff have a good understanding of incident/emergency procedures and assembly areas.



### Site Safety Officer's duties and responsibilities (may be the same person as above)

- Prepare a site specific OHS plan (including evacuation and assembly area procedures) prior to the start of any activity onsite.
- Ensure that the plan is approved by the local government officer responsible for managing the audit.
- Duty and authority to stop unsafe operations, supervise the delivery of appropriate first-aid, and decide when to contact emergency services.
- Ensure that the guidelines, rules and procedures in this document are followed for all site work.
- Be familiar with local emergency services and maintain a list of emergency phone numbers. Provide a map with the quickest route to a medical facility.
- Conduct health and safety meetings before each shift and a summary meeting at the end of each shift to discuss safety issues, possible solutions, and notify personnel of all changes associated with health, safety, and related protocols.
- Maintain and inspect PPE. Ensure proper use of PPE by all employees.
- Monitor onsite hazards and the early health warning signs of auditors (e.g. heat stress/stroke, dehydration or fatigue). It is recommended that in hot weather, outdoor sampling should be done during the cooler hours of the day.
- Has completed appropriate OHS training (including an appropriate waste auditing course and has a current Level II First Aid Certificate).

## 7.4 General Safety Procedures

Appendix D contains a summary of the general procedures that should be followed to ensure a safe audit program.

It is essential that a risk management process has been undertaken and an OHS plan prepared for all separate audits that are to be undertaken so any specific issues are identified and appropriate strategies implemented.

## 7.5 Personal Protective Equipment (PPE)

Appendix E contains a list of the recommended PPE, which is essential for the safe conduct of the audit program.

It is important that those conducting the audit recognise that the use of PPE does not replace the need to observe other aspects of safe handling procedures. PPE should be seen as an essential part of an overall safety plan.





## 7.6 Medical Monitoring

All staff must ensure that they are medically fit to perform any duties requested and that these duties will not aggravate any existing conditions. Should any issues be identified that may impact on the physical well-being of a staff member, the Safety Officer will discuss such issues with the individual staff member.

Contact numbers of local medical practitioners, the hospital and ambulance service must be provided to all auditors and site supervisors. The Safety Officer must be contactable by all site supervisors in order to provide prompt responses to any incident.



## 8. Audit Procedures

Appendix F summarises the issues that must be incorporated into the medical monitoring program.

This section summarises the procedures that need to be followed to ensure the audit is conducted in a safe manner and that data generated is valid and allows for accurate extrapolation.

Appendix J outlines the type of equipment necessary for the conduct of a safe audit.

### 8.1 Quality assurance/quality control

The audit should be undertaken with appropriate quality assurance/quality control procedures, with particular emphasis on ensuring good practices relating to:

- Data recording and entering
- Data verification
- Data accuracy and appropriate statistical methods
- Sample integrity
- Sample handling and disposal
- Document control

### 8.2 Confidentiality

All information contained in audit reports and obtained during the audit process should be considered confidential. All personnel employed in the kerbside audit project must be made aware of the need for confidentiality and should sign a specific agreement to support this conduct prior to commencing activities for the audit.

In the case of kerbside audits, confidentiality is a particularly sensitive issue. The auditor must detail measures that will be taken to maintain confidentiality.

Examples of such measures include:-

- households are allocated a reference number. This number is used throughout the report and analysis
- the cross reference to the household is kept separate from the main data and audit report

Information contained in the audit reports (i.e. electronic or more detailed), can only be communicated to third parties with the express **written** permission of the local government. Where the client and the local government being audited are two separate entities (such as an audit commissioned by DEC of a local government's kerbside system), it is the responsibility of the client to obtain written approval from both parties before any audit information is made available to a wider audience.



In addition, to avoid households' objecting during or after the audit, many local governments now issue a public notice that a waste audit is to be undertaken (refer Section 1.5 and Appendix L). This can be done through the local paper as a stand-alone advertisement. Residents should be given the opportunity to not participate in the audit by registering their details. It is important that such a notice is made at least six weeks before the audit is scheduled, and that no specific date is given in the advertisement. This should avoid any temporary focus on waste by residents and subsequent changes in practices.

### 8.3 Audit site set up

Undertake sorting in a dedicated shed or a marquee. The sorting area should be dry, ventilated and well protected from natural elements. Place traffic cones or high visibility warning tape around the active sorting area.

Include waste storage areas for pre-sorted waste and post-sorted waste to be kept separate and away from main traffic areas and the sorting table.

Place plastic sheeting or tarp over the surface where the solid waste is to be sorted. Tape the edges of the cover down with duct tape or safely weigh it down. The cover will protect the surface from stains.

Each site supervisor is responsible for the monitoring of ambient conditions (e.g. air quality, temperature, humidity) before starting the working day and at regular times during the day. If the ambient conditions are found to be causing discomfort to the auditors, then the site supervisor should direct appropriate changes to auditing and sample collection procedures to ensure the health and safety of all personnel.

### 8.4 Physical waste auditing

The sorting of the material and handling of the waste bags is the most hazardous aspect of the process. It is critical that a full risk assessment is conducted and that a clear work process has been determined.

**Specified occupational health and safety protocols must be followed at all times.**

Once the samples are collected, the load should be carefully emptied onto a tarp or into a holding bin. Each stream must be stored in a clearly separated area. Using rakes or other suitable equipment, bags should be separated to enable them to be safely placed on the audit table for emptying and sorting. Larger items and loose material should be separated to allow safe removal and sorting.

Bags of waste must never be supported by hands or other body parts, regardless of the PPE being worn.

Fine materials not able to be accurately sorted should be collected using hand brooms, "dust pans" or shovels. A visual estimate of the composition of this material should be made (based on weight and volume) and recorded as such, (e.g. 50 per cent glass less than 5mm; 5 per cent paper fines; 45 per cent dust/soil).



The sorting table should be positioned in a way to ensure that the auditing personnel are able to carry out their tasks in a safe manner. The table should not obstruct movement of the personnel and should provide adequate room to undertake auditing tasks. It is recommended that the buckets/tubs be placed around the table so that the buckets that will receive the most material are nearest to the table. To reduce reaching distances, all buckets within a broad material category (i.e. paper) should be positioned close together.

A recommended minimum of between three to five persons should conduct each sort - one to record data and supervise, and the remainder to characterise the solid waste.

The following summarises the actual steps to be undertaken:

- Carefully place bags of waste on the audit table. Carefully tear open garbage bags with hand rake or other suitable equipment and visually inspect for potential hazards. If hazardous or medical wastes are detected, the sort will be halted and the Site Safety Officer must be notified.
- If no hazardous materials are obvious, carefully begin the sort by removing and characterising the largest, bulkiest elements. Sort the remaining items into the categories and material types shown on the sample sheet.
- When sorting glass, remove and sort the larger pieces that are on top first. Never use your hands to dig down through the waste. Use a rake or small shovel to pull/push the material to the side and continue sorting.
- When a sorter has a question regarding the material category or type into which an element should be placed, the lead auditor should be consulted.
- If a bucket/tub becomes full, the full bucket is weighed, the data recorded on the data sheet, and the bucket is emptied and reused. Weigh and record the total mass (contents + bucket) on the data sheet, and also the total volume. Then weigh and record the empty weight of the bucket/tub. This will allow the net weight of the material to be calculated.
- Return all sorted materials to the bin it was collected from or into the bins for disposal.
- At the end of each shift, disposable clothing should be removed and disposed properly. Reusable equipment should be cleaned and sanitised with an antibacterial agent after use. All sorters must shower at the end of each shift.

## 8.5 Material classification(s) – determining correct streams for different materials

Appendix K is a sample of the data recording form which specifies the categories that waste materials must be sorted into.

**Advice must be obtained from the recycling contractor that services your LGA as to what they do actually recycle. This should also be compared with the information provided to residents as to what they are allowed to deposit into the kerbside recycling system.**



It is important to ensure that specific contaminants or any other issues identified during the audit process are recorded in the “comments” section of the kerbside audit reporting form.

Unidentifiable materials as well as material outside the auditing parameters should be put into the “other” category. Notes should be made in the “comments” section of the spreadsheet reporting form on the nature of these contaminants.

## 8.6 Data Recording

### 8.6.1 Data recording

All waste quantity measurements should be conducted in weight (mass) units (to 100g) using standard metric units. All waste volume estimates should be recorded in litres (to 100mls).

### 8.6.2 Data collection sheet

Data collection sheets are designed to be photocopied and used to record weights and volumes during the auditing process. A blank data collection sheet is provided as Appendix K to this document to assist you in classifying your sample in accordance with the reporting format provided by DEC. Copies of this sheet should be made to allow for recording of data during the audit.

Some extra lines are provided to allow you to enter items that are not covered in the list but are particularly relevant for your sample.

**All contaminants in the recycling stream should be individually identified and have their weight and volume recorded. Use the comments section of the report form to assist in further describing the type and condition of these contaminants.**

### 8.6.3 Composition tables

Tables are provided within the kerbside reporting form to allow for the direct entry of weights, volumes, participation rates, etc. These tables will assist you by self-calculating key results such as annual yields and contamination rates.

## 8.7 Audit validation

You may wish to check your data against previous audit reports (if available) and other state and national waste indicators. You may also wish to extrapolate the audit data and compare it to the information on total tonnages provided by your contractor.

## 8.8 Report

### 8.8.1 Draft report

There are many stakeholders who may want to read the report. These include; local government staff, waste contractors, DEC officers and any others with an interest in waste management. There may be differences in why they may want to read the report, but essentially they will be looking for compositional data and records of any issues that may have arisen during the audit process which may offer opportunities in regards to improving kerbside waste management or future audit exercises.



The primary objective of the waste audit report is to ensure that all data is presented in a manner that makes it meaningful to any person who may need to access it for analysis purposes or for benchmarking performance.

### **8.8.2 Reporting to DEC via annual local government waste and recycling survey**

DEC conducts an annual online survey of local government waste and recycling activities as part of the Zero Waste Plan Development Scheme. Part of that survey requests kerbside waste and recycling audit data. Audit data collected in accordance with this manual will be in the correct format for reporting in the annual online survey.

Reporting of local government kerbside waste and recycling audits to DEC will be via the online survey. The online survey will be active for 3 months following the cessation of each financial year. Local governments will be informed of the reporting procedure before 1 July each year. The survey and necessary auditing forms can be accessed via the Zero Waste WA Website ([www.zerowastewa.com.au](http://www.zerowastewa.com.au)).

There is no requirement to audit the hard waste collection. However, to complete the reporting requirements as per Section 5 of the kerbside report, data on the total tonnages and cubic metres collected and the percentage of both weight and volume diverted from landfill (i.e. recycled) will need to be obtained from the hard waste contractor. Details on costings for the hard waste collection service should be obtained from your local government.



# Audit FAQs

The following are some of the issues that may be experienced during a kerbside waste and recycling audit.

**A bag of recyclables has been deposited into the residual waste bin, how do I classify this?**

Carefully empty the contents of the bag and classify contents as per the normal process. If small items are tightly wrapped in paper or other material refer to the lead auditor. If considered unsafe to open, (i.e. would require manually handling), then classify as “residual”.

**A bag of recyclables has been deposited into the recycling bin, how do I classify this?**

This would normally be classified as “contamination”. While some MRFs will open plastic bags and recover the recyclables, typically local government education sheets and signage would show this as a contaminant. This type of contamination should be separately recorded as “bagged recyclables” as it is different from normal contamination.

**There is half a pizza in a cardboard pizza box in the residual waste stream.**

If the food is easily separated then separate and classify the two accordingly, (ie the box could have been easily recycled). If the box is heavily stained and would not be accepted in the recycling stream then classify as “residual”. Be careful in these situations that it is clear that the contamination is due to the contents of the box and not to the fact that it has been lying in domestic waste within the bin, (i.e. was it contaminated before disposal or after).

**A needle has been found on the sorting table.**

All sorters are to immediately stop sorting waste. The lead auditor is to be notified and will safely remove the needle and deposit it into a sharps container. Notes of the incident are to be recorded in the “comments” section of the audit report. The needle should be recorded as 0.01 kg so that it is included as part of the audit data and report. Procedures for managing this type of incident, and any others involving hazardous materials must be addressed in the OHS plan.

**A soft drink bottle has about 1/3 liquid in it and is deposited in the recycling stream.**

Firstly never empty the liquid contents of a bottle or container, as you do not know what this material may be. Reference should be made to the MRF acceptance criteria and local government signage. In most instances this would be classified as a contaminant, as MRFs do not accept containers containing liquids.

**There is some material that should have been deposited into the residual waste bin, in a recycling bin.**

This is to be classified as a contaminant.



**A tenement that has been designated as one that I should collect the residual waste from has not placed their bin out for collection. What should I do?**

Refer to Section 5.2. There are requirements as to what to do to maintain the statistical validity of the audit process.

**A sorter has arrived for work to replace another that is off ill, but cannot demonstrate that they have had the necessary vaccinations.**

If a sorter cannot demonstrate that they have been appropriately vaccinated and that these vaccinations are current, then they should not be allowed to participate in the audit program. If their vaccinations are up to date they must undertake the audit training before they can start work (refer Section 6).

**Staff have come back to the waste audit site with the samples they have collected. They indicate that they had some problems as some bins had not been placed out for collection and others had already been emptied. They do not appear to be confident in explaining the methodology they adopted.**

This is where the integrity of the sample may be compromised. If this is the case, then the audit must be postponed and the sample collected again.

**Sample collection staff have been instructed to collect the residual waste and recycling samples from a designated premise. When they go to collect the material, there is a sign out front indicating that the premise is used for a home based business.**

Sample collectors should be instructed as to what to do before starting their tasks. In addition, nominated tenements should be cross-referenced against known commercial premises so they can be excluded. If this tenement is clearly a commercial premise (or used for these activities), then the sample should not be collected and the methodology outlined in Section 5.2 should be followed.

**The recycling contractor that the local government uses has informed me that they sometimes open plastic bags to take out any recyclables, however this depends on how busy they are. Should I do the same when auditing?**

Materials that are placed into plastic bags and then deposited into the recycling bin should be classified as contamination and separately listed as "bagged recyclables". The "comments" section of the report should be used to explain this.

**How should batteries be classified?**

Generally all batteries are classified as hazardous. Some jurisdictions make allowances depending on the volume in the load (e.g. a few batteries in a cubic metre of waste would not be classified as hazardous in regards to the total load). However, there needs to be a determination so that auditors are not having to consider either numbers or types of batteries - therefore they should be classified as hazardous, and a comment included in the report to that effect. Note the type and number of batteries found.

There may be other hazardous materials in the waste/recycling streams. This includes items such as compact fluorescent lamps (CFLs). These contain mercury. If found they should be recorded as a hazardous waste. In addition, comments should be recorded as to the specific types of hazardous waste in the streams being audited.



**Plastic film is something that can be found in kerbside waste. How would this be classified?**

There are many different types of plastic film. Discussions with your recycling contractor will help you to determine how they are classified (i.e. is it a recyclable or contaminant?). Most recycling contractors would classify this as “Other Packaging” if it is able to be recycled.

**There are a number of semi-detached residential (units) located within my local government area. How do I consider these within the sample selection process?**

Any household that has their own waste/recycling container and is responsible for this container, is to be classified as a Serviced Tenement for the purposes of the kerbside audit program. The unit number would equate to a household number, so that 1/5 Smith Street, would be a household, and 2/5 Smith Street would be the second household. The sampling procedures as detailed in this manual would apply (Sections 5.1 and 5.2).

To be considered as a Single Unit Dwelling, the waste/recycling container should be marked as to the unit number or placed outside the unit. If it is not clear that the container is NOT being shared, then the dwelling is to be considered a Multi Unit Dwelling.

Any block where multi households share waste/recycling containers and do not effectively control their own waste/recycling container, is to be counted as a Multi Unit Dwelling for the purposes of the kerbside audit program. It is important to ensure that the sampling procedures incorporate the relative percentages of Single Unit and Multi Unit Dwellings so that the demographics of the LGA are accurately represented (as described in the Manual).

**Can the presentation rate calculations be conducted at the same time as the sample collection process?**

It is probably best to do the presentation rate survey at the same time as the sample collection process, as the rate will then directly relate to the sample collected. It is important to ensure the two activities are clearly managed though, because while you may select an alternative house for your sample due to non-presentation, this house would of course still form part of the survey for your presentation rate calculation.

**Can I count more than 100 households in the participation rate calculations?**

There is no problem in sampling more than 100 households. It is always important to compare your results with contractor records to identify any significant variance. Contractor only data should not be relied on for the participation rate calculations.

**In some areas, other waste/material categories could be important in regards to information to assist Local Government improve landfill diversion. Can I include additional categories in the data sheet?**

When conducting the audit, it is possible to use as many categories as deemed important. The important point is to ensure that these additional categories are then re-categorised according to DEC’s requirements for the reporting obligations



of the kerbside audit program. In doing this, it is important to ensure that materials are correctly classified as a recyclable, contaminant or residual waste.

For example, a local government may seek to have an understanding of the total quantity of Old Newsprint that is being discarded in a particular stream. This can be sorted and recorded separately during the audit. However, for reporting to DEC, the data would then be re-categorised as “Paper Mixed”.

**There is a large rural area within my local government area. How should this be included within the sample selection process?**

If rural areas are a significant demographic of any area then it should be included in the audit sample as another demographic (as detailed in Section 5.1).

**How do we take into account areas within our LGA that are holiday accommodation areas? These are areas where tenements are let out during holiday periods to non-permanent residents?**

To gain an overall appreciation of the effectiveness of your kerbside recycling program it is important that these areas are also audited. It is important to ensure that you determine the objectives of auditing these areas. For example, is the audit being undertaken simply to ensure that the tenements are included in the overall kerbside audit program. Or, is it being undertaken to develop specific strategies to improve landfill diversion for this demographic?

The following are important points to consider:

- i. This group should be identified as a separate demographic and audited separately. It is likely that the recycling behaviour of holiday-makers is very different to permanent residents. It is important to identify this group’s results separately as a different approach will need to be developed to ensure that the audit approach for this group is valid (i.e. the extrapolation process may need adjusting as detailed below).
- ii. As with any other demographic, it needs to be identified in terms of the proportion of the total population that this group represents so that a relative sample can be determined.
- iii. The same rules apply to the percentage of Multi Unit Dwellings in relation to sampling.
- iv. The timing of the audit will be critical if you want to determine the impact this demographic has. For instance conducting an audit during the normal recommended times (i.e. not during holiday periods), would result in a poor representation from this group. As such specific holiday periods may need to be targeted when auditing this demographic.
- v. For this purpose, it is recommended that this demographic is audited at a different time than the rest of the population. Auditing permanent residents during holiday times is not recommended as it may not represent normal behaviour or participation levels.



- vi. Extrapolating the results of this group is also more complex. The results should be extrapolated based on the length of the holiday period that the area is active. For example it may simply be a summer destination, or a winter destination. On this basis the data should only be extrapolated for this holiday period.
- vii. To assist in the extrapolation it may be useful to canvas rental agents in the area and identify occupancy levels for rentals at different times of the year. This will assist in determining the relevant period.
- viii. Participation rates should be conducted as per the audit methodology. The difference being that you may need to conduct this exercise during different holiday periods to validate behaviour.



# Appendices

## Appendix A – Risk Management Form

The following form is an example of a risk management process. There are many variations of this form.

### 1. IDENTIFY THE HAZARD (s)

(a) Describe the hazard (s):

### 2. ASSESS THE RISK

Risk assessment calculator indicates:

	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	High	High	Very High	Very High	Very High
Likely	Moderate	Moderate	High	Very High	Very High
Possible	Low	Moderate	High	High	Very High
Unlikely	Low	Low	Moderate	Moderate	High
Rare	Low	Low	Low	Low	Moderate

Identify the risk: .....

### 3. DETERMINE WHAT CONTROL MEASURES TO TAKE

(a) Short term/Immediate control measures:

.....

.....

.....

(b) Long term control measures:

.....

.....

.....



**4. REVIEW, APPLY AND MONITOR CONTROL MEASURES**

(a) Review the possible control measure:

(i) Will the control measure introduce a new hazard?

**YES/NO**

If no, continue  
If yes, undertake the risk management procedure again.

(ii) Is the revised control measure effective?

**YES/NO**

If yes, continue.  
If no, re-do step 3.

(b) Control measure finally applied: .....

(c) Monitor the control measure:

(i) Does the control measure continue to be effective?

**YES/NO**

If yes, continue to monitor  
If no, re-do the risk management procedure again.

**ORGANISATION DETAILS**

(a) Audit Project: .....

(b) Prepared by: .....

(b) Signature: .....

(b) Date: .....



## Appendix B – Risk Management Strategies (Sample Collection)

Risk	Management Strategy
Vehicle accident while in transit	<ul style="list-style-type: none"> <li>• All employees will be advised of this risk and reminded of the requirement to observe all traffic rules especially speed restraints when travelling to and from sites.</li> <li>• Only fully licensed personnel will be permitted to drive vehicles.</li> </ul>
Skin puncture due to contact with sharp object	<ul style="list-style-type: none"> <li>• Employees will be advised that no physical handling of waste is to occur.</li> <li>• Employees will wear covered safety shoes; long sleeve shirts and long pants to minimise any accidental contact.</li> <li>• First aid kits will be provided in case of accident.</li> </ul>
Odorous materials	<ul style="list-style-type: none"> <li>• Employees will be issued with facemask.</li> <li>• The site supervisor will monitor reactions during the audit when odorous samples are present to determine if any employee requires a break.</li> </ul>
Injury from slipping/fall	<ul style="list-style-type: none"> <li>• Employees will discuss sample collection procedures.</li> <li>• All employees will wear sturdy boots and be advised to exercise due care when moving in / through any location.</li> </ul>



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Knocked down/run over by vehicle	<ul style="list-style-type: none"><li>• All employees will be briefed of this risk.</li><li>• The use of mobile phones will be restricted to breaks when the employee is not in a traffic area.</li><li>• Get other trucks out of the path of auditors.</li><li>• Employees will be trained to ensure visual contact is made with any vehicle in the vicinity prior to moving off the kerbside or traversing driveways.</li><li>• Prior to moving around any corners the employee will make a visual and auditory inspection to determine if any vehicles are approaching – if yes, then the employee will position themselves to ensure that they will not be knocked down.</li><li>• Employees will wear highly visible safety vests.</li></ul>
Muscle injury from lifting waste	<ul style="list-style-type: none"><li>• All employees will be trained in safe lifting techniques.</li><li>• All employees will be required to ‘test’ each load prior to lifting to determine if assistance is required.</li></ul>
Skin burn due to contact with chemicals	<ul style="list-style-type: none"><li>• Employees are advised not to handle any waste or container without wearing gloves and other PPE.</li><li>• First aid kit and water will be available on each site.</li></ul>
Eye injury due to dust/chemical	<ul style="list-style-type: none"><li>• Employees will wear safety glasses at all times.</li><li>• The first aid kit should contain sterile eye wash liquid.</li></ul>
Breathing difficulties due to dust	<ul style="list-style-type: none"><li>• Employees will be provided with face masks.</li></ul>
Dehydration	<ul style="list-style-type: none"><li>• All employees are expected to have their own water bottle that must be filled and taken on site each day.</li><li>• Drinking water must be available throughout the day.</li><li>• Employees will be made aware of the risk and the early warning signs of dehydration.</li></ul>

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Fatigue from collection procedures

- Regular breaks will be scheduled during the collection processes.
- Staff will be encouraged to report to the site supervisor if they are feeling fatigued and be allowed to take breaks.
- Adequate food and water will be provided for employees to consume during breaks.

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Waste spill – water or land contamination

- Where waste is being bagged – the employee will work on a paved area or roadway wherever possible.
- Each truck will carry a cleanup kit. Any spills will immediately be cleaned up.
- Waste will not be bagged near to or over a storm water drain or other sensitive area.

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Sun/wind burn due to exposure to elements

- Employees will be required to wear broad brimmed hats if working outdoors.
- Sunscreen will be provided and is required to be worn and regularly re-applied during the day if working outdoors.
- Employees will be made aware of the risk and advised to monitor site conditions.



## Appendix C - Risk Management Strategies (Waste Audit)

<b>Risk</b>	<b>Management Strategy</b>
Skin puncture due to contact with sharp object	<ul style="list-style-type: none"><li>• Employees shall wear covered safety shoes; gloves; long sleeve shirts and long pants to minimise any accidental contact.</li><li>• Collection and site staff advised of correct handling procedure of waste and bags to avoid contact with body.</li><li>• Employees will be advised that no physical handling of waste is to occur. Tongs are to be used where appropriate.</li><li>• First aid kits will be provided in case of accident.</li></ul>
Odorous materials	<ul style="list-style-type: none"><li>• Audit sites will be located in areas where there is adequate ventilation.</li><li>• Employees will be issued with face mask.</li><li>• The site supervisor will monitor staff reactions during the audit when odorous samples are present to determine if any employee requires a break.</li></ul>
Illness due to contact with bacterial/infectious substances	<ul style="list-style-type: none"><li>• Employees will wear a facemask and gloves.</li><li>• Employees will be advised of correct hygiene - water and soap will be provided for cleaning.</li><li>• Employees will be advised to wash up at each break and at end of day.</li><li>• Employees will wear coveralls. They will also be advised to wash their clothes separately.</li></ul>
Muscle injury from lifting waste	<ul style="list-style-type: none"><li>• All employees will be trained in safe lifting techniques.</li><li>• All employees will be required to 'test' each load prior to lifting to determine if assistance is required.</li><li>• Tasks will be rotated so that lifting tasks are shared throughout the day.</li></ul>



Skin burn due to contact with chemicals	<ul style="list-style-type: none"> <li>• Employees are advised not to handle any waste or container brought onto the audit site.</li> <li>• First aid kit and water will be available on each site.</li> <li>• Employees will be advised to stand clear of any vehicle or person emptying a waste/recyclables container due to risk of splashes.</li> <li>• Employees will wear full clothing to ensure minimal skin is exposed.</li> </ul>
Eye injury due to dust/chemical contact	<ul style="list-style-type: none"> <li>• Employees will wear safety glasses on site at all times.</li> <li>• The first aid kit should contain sterile eye wash liquid.</li> </ul>
Breathing difficulties due to dust	<ul style="list-style-type: none"> <li>• Employees will be provided with face masks.</li> </ul>
Dehydration	<ul style="list-style-type: none"> <li>• All employees are expected to have their own water bottle that must be filled and taken on site each day.</li> <li>• Drinking water must be available throughout the day.</li> <li>• Employees will be made aware of the risk and the early warning signs of dehydration.</li> </ul>
Fatigue from auditing	<ul style="list-style-type: none"> <li>• Regular breaks will be scheduled during the audit processes.</li> <li>• Staff will be encouraged to report to the site supervisor if they are feeling fatigued and be allowed to take breaks.</li> <li>• Adequate food and water will be provided for employees to consume during breaks.</li> </ul>
Sun/wind burn due to exposure to elements	<ul style="list-style-type: none"> <li>• Employees will be required to wear broad brimmed hat if working outdoors.</li> <li>• Sunscreen will be provided and is required to be worn and regularly re-applied during the day if working outdoors.</li> <li>• Employees will be made aware of the risk and advised to monitor site conditions.</li> </ul>



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Hit by vehicle

- The audit site will be clearly defined
  - Employees will be given a site specific induction advising of presence of traffic and hazards.
  - No-go areas will be defined.
  - The site supervisor will be aware of this risk.
-



## Appendix D – General Safety Procedures

This section lists some of the general safety procedures recommended for a physical sort of solid waste.

- All waste sorting personnel should be in good physical condition, have had a recent medical examination, maintain a current tetanus booster, and Hepatitis A and B shots, not be sensitive to odours and dust, and be able to read warning signs/labels on waste containers.
- There should be absolutely no eating, smoking, or drinking during sorting activities. Food and liquids are to be kept away from the sorting area. Plenty of fluids (e.g. water, sports drinks, etc.) and single use, disposable cups must be available at all times. Hands and faces should be washed before eating, drinking or smoking. Consume drinks and rest frequently during hot days. Any smoking is to be done at a safe, approved location away from the main auditing area.
- The sorters should be grouped into pairs and each member should periodically assess the physical condition of his/her partner.
- Always wear the following before beginning the sorting procedure: both pairs of gloves (outer rubber and inner latex), chemical goggles or safety glasses with splash shields, a dust mask, and disposable overalls.
- Do not attempt to identify unknown chemical substances present in the waste stream: vials of chemicals, unlabelled pesticide/herbicide containers, and substances (e.g. chemicals, or needles) in unlabelled plastic/glass bottles/jugs.
- Household hazardous wastes are those wastes resulting from products purchased by the public for household use which because of their quantity, concentration, physical, or infectious, characteristics, may pose a substantial known or potential hazard to human or environmental health when improperly disposed.
- Empty containers of household hazardous wastes are generally not considered to be a hazardous waste. If hazardous wastes are detected, the Site Safety Officer should be notified.
- Hazardous materials and hazardous wastes should not be present in residential sources of municipal solid waste. If hazardous wastes are present in the municipal waste stream, from a commercial or industrial source, the material is not a household hazardous waste, it is a hazardous waste and the Site Safety Officer must be notified. Sorting activities are to cease immediately until the hazard has been removed.
- A potential hazard that can arise in waste sampling is the presence of medical wastes. Sorters must be on alert for the indicators of medical wastes: hypodermic needles, needle covers, medical tubing, articles contaminated with red (blood) coloured substances, and medical device packaging. If medical wastes are detected, the sort will be halted and the Site Safety Officer notified.
- When sorting glass, remove the large pieces first, and then remove the clear glass. Never use your hands to dig down through the waste. Use a rake or small shovel to pull/push the material to the side and continue sorting.



- At the end of each shift, remove all disposable clothing into a plastic garbage bag, and place the bag into a solid waste receptacle. All sorters must shower at the end of each shift.



## Appendix E – Recommended personal safety/protective equipment

Recommended personal safety/protective equipment (PPE) is used by individuals to prevent injuries, exposure or contact with hazardous substances or objects. The following section lists some of the personal safety/protective equipment recommended for a visual and physical sort of solid waste.

### Body protection

- Sun screen
- Broad brimmed hats
- Disposable coveralls
- Chemical resistant coveralls, if appropriate
- Hard bottomed, non-slip, steel capped boots
- A supply of outer rubber (cut and puncture resistant) gloves
- Chemical goggles or safety glasses with splash shields
- Dust masks
- A supply of inner (latex) gloves
- Insect repellent
- Hearing protection (e.g. ear plugs or ear muffs) if site has equipment or activities that generate loud noises.

### Other safety equipment

- Supply of water and soap for washing/flushing etc.
- Industrial first aid kit
- Field blanket
- Eye wash kit
- Moist, disposable towels/wipes (e.g. baby wipes)
- Mobile telephone
- Liquids to replenish fluids (water and cups for dehydration)
- Trolley

### Personnel required to collect the audit sample should be issued with (and required to wear):

- High visibility safety vests
- Overalls
- Safety foot wear
- Gloves
- Masks
- Safety glasses
- Broad brimmed hats if collecting during daylight areas



## Appendix F – Medical Monitoring

### Medical monitoring

All employees will be required to provide information to the Safety Officer of any conditions and/or medication programs that may be compromised during any phase of the project. For example, if an employee is prone to asthma attacks as a result of exposure to dust then this should be brought to the attention of the Safety Officer.

### Confidentiality

The confidentiality of all records and reports provided as a requirement of the medical monitoring program and/or medical treatment will be maintained by the Safety Officer. At no time should these records/reports be provided to any other person except with the express permission, in writing, of the person to whom the records/reports are referring.

### Vaccinations

All employees undertaking physical auditing will be required to show evidence that their immunity is at sufficient levels for Hepatitis A and B and that Tetanus immunisation is current. Contract staff will be requested to show similar evidence.

### First-aid precautions

First-aid kits will be present at all waste audit sites and within all waste/recyclables sample collection vehicles. All staff will be provided with appropriate training during the initial orientation to manage minor incidents.

The following basic first aid items should be available in the first-aid kit:

Adhesive bandages

Butterfly closures

Wound closure strips

Elastic wrap

Adhesive tape rolls

Knuckle bandages

Triangular bandage

Finger splints

Eye wash

First aid guide

Eye pad

Sterile sponge dressings

Sterile trauma pad

Gauze rolls

Comforming bandages

Safety pins

Splinter probe

Cotton tip applicators

Antibacterial ointment packets

Alcohol prep pads

Povidone iodine prep pads

Reusable hot and cold gel pack

Ice bags

Sting relief pads (for insect bites)

Arm splint

Insect repellent packets

Antiseptic towelettes

Scissors

CPR face shield

Metal tweezer

Examination gloves

Cold pack

Sterile examination gloves

Note pad and pencils

Cotton swabs

Acid burn – neutralising solution/aerosol can



## Appendix G – Safety induction checklist (sample collection)

The collection of waste containers from the kerbside is inherently hazardous. You are responsible to ensure that you conduct all activities in a safe manner and immediately alert your supervisor of any practice or situation you consider to be unsafe – for you or any other person. You must not undertake any activity that you consider to be unsafe.

The following safety procedures **MUST** be followed at all times:

- Personal protective equipment must be worn correctly at all times whenever working. This includes; safety vests, safety glasses, covered shoes, gloves, face masks and coveralls.
- Back braces should be provided and trolleys supplied if moving of heavy waste loads is required.
- All containers and/or individual bags of waste must never be carried near the body.
- Bags should never be supported by placing hands under the bag – bags must be held from the top.
- Always test the weight of the bag prior to lifting. Always ask for assistance if the bag is beyond your ability to lift it. Whenever lifting, bend the knees and lift from the legs – not the back.
- Always be aware of other traffic, and pay attention to other waste collectors and if they are placing themselves in any danger from the traffic. Be aware of traffic coming from driveways.
- NEVER enter or exit a vehicle that is moving – always wait until it has stopped and look for any traffic.
- Be aware of other hazards such as slippery surfaces, overhanging branches and other materials near the kerbside.
- Always ensure that all containers are physically secured prior to moving the vehicle.
- If a waste spill occurs, take immediate action to prevent the spill from spreading, use safe clean up practices and **INFORM** your supervisor **IMMEDIATELY**.
- Always confirm with your supervisor as to where waste should be deposited upon arriving at the waste audit site.
- When having a break **IMMEDIATELY** wash hands with disinfectant. Do not eat, drink or smoke or touch your face until hands have been thoroughly washed.
- Leave all personal items in the designated secure area and do not touch until you have thoroughly cleaned hands.
- Smoking, eating or drinking is not permitted in the immediate vicinity of any area where waste is located.
- Upon completion of the day, all PPE including overalls are to be deposited into the specific bags/containers provided. After depositing this equipment, **IMMEDIATELY** wash hands with disinfectant.



- Stop for breaks as you feel necessary. Ensure you have an adequate intake of fluids and nourishment.
- If you feel unwell report to the supervisor immediately.
- Report any injuries sustained immediately to your supervisor.
- If the waste collection is conducted in sunny weather, wear a sunhat and apply sunscreen on a regular basis.

I have read the procedures described above and been given a verbal occupational health and safety briefing on the hazards associated with the collection of the waste and my responsibilities.

Signed: ..... Date: .....



## Appendix H – Safety Induction Checklist (Audit Personnel)

The waste audit process is inherently hazardous. You are responsible to ensure that you conduct all activities in a safe manner and immediately alert your supervisor of any practice or situation you consider to be unsafe – for you or any other person. You must not undertake any activity that you consider to be unsafe.

The following safety procedures must be followed at all times:

- Personal protective equipment must be worn correctly at all times whenever working. This includes; safety glasses, covered shoes, gloves, face masks and overalls.
- Never place hands blindly into piles of waste. All waste must be spread on the table and be fully visible prior to sorting. Where this is not possible, instruments such as tongs should be used to spread waste.
- All bags of waste (sorted and unsorted), must never be carried near the body.
- Bags should never be supported by placing hands under the bag – bags must be held from the top.
- Always test the weight of the bag prior to lifting. Always ask for assistance if the bag is beyond your ability to lift it. Whenever lifting, bend the knees and lift from the legs – not the back.
- If a needle or any sharp item is identified in the waste, IMMEDIATELY cease sorting and alert all auditors and the supervisor. DO NOT attempt to pick up the sharp item under any circumstances.
- Do not place hands near face while sorting.
- When having a break IMMEDIATELY wash hands with disinfectant. Do not eat, drink or smoke or touch your face until hands have been thoroughly washed.
- Leave all personal items in the designated secure area and do not touch until you have thoroughly cleaned hands.
- Smoking, eating or drinking is not permitted in the immediate vicinity of any area where waste is located.
- Upon completion of the day, all PPE including overalls are to be deposited into the specific bags/containers provided. After depositing this equipment, IMMEDIATELY wash hands with disinfectant.
- Stop for breaks as you feel necessary. Ensure you have an adequate intake of fluids and nourishment.
- If you feel unwell report to the supervisor immediately.
- Report any injuries sustained immediately to your supervisor.
- If the audit is conducted in the open, wear a sunhat and apply sunscreen on a regular basis.



I have read the procedures described above and been given a verbal occupational health and safety briefing on the hazards associated with the conduct of the audit and my responsibilities.

Signed: ..... Date: .....



## Appendix I – Declaration

All site personnel (including auditors, visitors, and observers) should be handed a copy of the occupational health and safety plan. The following declaration should be signed and a copy maintained by the Safety officer.

I ..... (print name) have read and understand the occupational health and safety plan and will follow the procedures and protocols detailed in the plan for waste auditing at all designated sites.

Signed: ..... Date: .....



## Appendix J – Recommended auditing equipment

- Small rake.
- Stanley knife (with retractable blade)
- Small bins or buckets of known volume for weighing / containing sorted materials.
- Sorting table.
- A scale that is accurate to 100 grams. Depending upon the waste stream, if required to measure below 100 grams (i.e. for materials in small quantities such as syringes), a small but accurate set of kitchen scales would be a good alternative.
- Tongs.
- Permanent markers.
- Clipboard and data sheets.
- Calculator.
- Garbage bags.
- Rake with a long handle.
- Rake with a short handle.
- Shovel with a long handle.
- Broom
- Camera
- Duct tape
- Plastic sheeting (minimum of 10mm thick)



## Appendix K – Data Collection Sheet

Sheet No.    of

LGA: \_\_\_\_\_ Date: \_\_\_\_\_

Waste Stream: \_\_\_\_\_ Auditor: \_\_\_\_\_

Area Code/Demographic: \_\_\_\_\_ Household No./ Sample ID: \_\_\_\_\_

Material category	kg	L	Comments
• Paper – White office			
• Old news paper (ONP)			
• Paper – mixed			
• Cardboard			
• LPB			
<b>Total Paper</b>			
• Glass white			
• Glass green			
• Glass brown			
<b>Total Glass (mixed)</b>			
• PET (1)			
• HDPE (white/clear) (2)			
• HDPE (coloured / mixed)(2)			
• PVC (3)			
• Polyethylene (4)			
• Polypropylene (5)			
• Polystyrene (expanded / foam) (6)			
• Polystyrene (6)			
• Other plastics (eg. films)			
<b>Total Plastics</b>			
<input type="checkbox"/> Aluminium non-packaging			
<input type="checkbox"/> Aluminium (containers / packaging)			
<input type="checkbox"/> Steel non-packaging			
<input type="checkbox"/> Steel (containers / packaging)			
<input type="checkbox"/> Other metals			
<b>Total Metals</b>			



Material category	kg	L	Comments
• Food/kitchen waste			
• Lawn Clippings			
• Shrubs/Branches			
• Logs			
• Wood/timber off-cuts			
• Other Greenwaste			
<b>Total Recyclable Organics</b>			
• Textiles - scrap			
• Textiles – re-usable			
• Other Packaging			
• Glass Fines			
• Home healthcare			
• Disposable nappies			
• Hazardous (e.g., batteries, light globes)			
• Inert (e.g., bricks, rubble)			
• Ceramics			
• Rubber			
• Composite items (of mixed material types)			
• Residue			
<b>Total Other</b>			
<b>Total</b>			

Comments:

.....

Please note that it is not essential that you record entries in all of the above fields. Room is allowed for entry of additional fields that are particularly relevant to your sample. **All contaminants in the recycling stream should be described and have their weights recorded.**



## Appendix L – Sample newspaper advertisement

Below is an example of the type of advertisement that should be placed in local newspapers a minimum of six weeks before the audit. Note the following:

- do not use the term “audit”, rather refer to it as a waste survey
- do not give specific dates for the survey – be vague
- try and focus on positive outcomes rather than detail of the process
- ensure your customer service people are briefed so that they can answer questions and importantly refer any details to the audit team.

### **Waste Survey**

As part of the ongoing commitment to minimising the environmental impacts of waste management, <local government> has commenced a program to evaluate the success of kerbside waste collection programs. This evaluation will look at the materials currently being deposited into the residual waste, recycling and green organics collection systems.

The objective is to look at the overall analysis of waste generation within < local government > and measure our performance with standards across Western Australia.

A waste survey will be conducted early next year and will involve the random selection of waste and recycling from 100 households across the municipality. The wastes and recyclables generated by these households will be collected in the normal way and individual households waste will be mixed with other households. The survey will then look at what recycling is still in the domestic waste and whether or not the recycling is contaminated.

No individual household waste is identified. However, if you specifically do not wish to participate, please contact <name and details> by <date>.



## Appendix M – Sample run sheet

This street has less than 50 houses located in it.

<b>Run Sheet No:</b>					
<b>Date of Collection:</b>			<b>Area:</b>		
<b>Demographic:</b>			<b>Auditor:</b>		
Starting Address		Alternative Address	Tick bins collected		Comments re change or issues observed
Street	No.		G	R	
Hill	12		✓	✓	
	16		x	✓	
		18	✓		
	22		✓	✓	
	26		✓	✓	
	30		x	x	
		32	✓	✓	
	36		✓	✓	
	40		✓	✓	







*Towards*  
**ZERO WASTE**  
www.zerowastewa.com.au



**The Waste Management Branch**  
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Perth WA 6000  
Phone: (08) 6467 5000  
Fax: (08) 6467 5525



Department of  
Environment and Conservation

*Our environment, our future*

