



WALGA

WORKING FOR LOCAL GOVERNMENT

Subdivision Waste Management **Plan Guidelines**

A RESOURCE FOR WESTERN AUSTRALIAN LOCAL GOVERNMENT,
DEVELOPERS, PROPERTY OWNERS AND BUILDERS





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Acknowledgement

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1. Introduction

WHY WAS THIS GUIDELINE DEVELOPED?

This Guideline has been developed for two primary reasons, to provide consistent guidance on waste management in the approval and development of subdivisions and to encourage increased diversion of waste from landfill.

In Western Australia there is limited consistent guidance on, and consideration of, waste management issues in the development of subdivisions. In the absence of this consistent guidance, a range of different approaches are being taken by Local Government and the private sector in this area, potentially increasing the costs of development.

The WA State Government has developed a State Waste Strategy 'Creating the Right Environment' which sets ambitious targets for diversion of inert waste (commonly referred to as Construction and Demolition (C&D) waste) from landfill; 60% by 30 June 2015 and 75% by 30 June 2020. Given the 2012/13 diversion rate for C&D was 38% a concerted and coordinated effort will be needed to achieve these targets. The State Government also uses economic instruments to encourage diversion of C&D waste from landfill. Table 1 provides information on the recently announced increases to the *Waste Avoidance and Resource Recovery Levy* (announced May 2014). These substantial increases, will begin to influence the cost of carrying out 'business as usual' waste management activities.

Period	Putrescible Rate/Tonne	Inert Rate/m ³	~Inert rate per tonne*
2013/14	\$28	\$12	\$8
1 January 2015 to 30 June 2016	\$55	\$60	\$40
1 July 2016 to 30 June 2017	\$60	\$75	\$50
1 July 2017 to 30 June 2018	\$65	\$90	\$60
1 July 2018 to 30 June 2019	\$70	\$105	\$70
1 July 2019 on wards	\$70	\$105	\$70

Table 1. Schedule of Levy Increases.

*One cubic meter of inert waste in-situ within the landfill is treated as equivalent to 1.5 tonnes.

This Guideline is part of a project funded by the Waste Authority and developed through WALGA. This Guideline is intended as a consistent reference for developers and Local Government officers.

HOW SHOULD THIS GUIDELINE BE USED?

This Guideline should be used as a resource by developers to assist in assessing likely waste generation during construction of new subdivisions, and identifying ways to divert waste from landfill. The Guidelines will also assist in establishing efficient and cost effective waste management for completed subdivisions throughout their functional life, as well as potentially improving the rates of reuse and recycling in subdivision construction. While these Guidelines can be used on any scale of project, the main focus is the subdivisions which require Western Australian Planning Commission (WAPC) approval. The WAPC determines the approvals for all freehold, vacant and survey strata subdivisions in Western Australia, except built strata subdivisions which are generally determined by Local Government. For information on how to incorporate waste management planning into the approval of all other types of subdivisions, Local Government officers, developers, building managers and owners should refer to the *WALGA Construction, Demolition, or Multiple Dwelling Development Waste Management Plan Guidelines*.

Appendix 1 includes a template waste management plan which provides a framework for developers to consider waste management issues in construction of subdivisions.

2. Project Planning

In planning the construction of a subdivision, it is important to understand the flow of materials during all stages of the life of a development. Only then, can the waste management needs of each different stage be catered for.

The approach suggested in this Guideline, is to identify what excess materials are likely to be generated and then focus on how the generation of those excess materials can be avoided or diverted from landfill. One approach is to develop a waste management plan. The key objectives of any waste management plan should be to:

1. Minimise the amount of waste generated as part of the project
2. Maximise the amount of material which is sent for reuse, recycling or reprocessing
3. Minimise the amount of material sent to landfill.

When developing and implementing a waste management plan the following key elements should be considered:

1. **Waste streams:** identify which waste streams are likely to be generated and estimate the approximate amounts of material
2. **Focus on waste avoidance:** instead of managing the waste once it has been generated, look at ways to avoid the generation of that waste in the first place
3. **On-site:** understand how the waste management system will work on-site, incorporating reuse, and the purchase of recycled materials for construction activities
4. **Clearly assign and communicate responsibilities:** ensure that those involved in the construction are aware of their responsibilities in relation to the waste management plan
5. **Engage and educate personnel:** be clear about how the various elements of the waste management plan will be implemented and ensure personnel have an opportunity to provide feedback on what is / isn't working
6. **Monitor:** to ensure the plan is implemented, monitor on-site
7. **Evaluate:** once the project is complete, evaluate your estimates in the plan against the actual data for waste generated and consider feedback from personnel.

3. Designing Functional Subdivisions

In designing a residential subdivision, it is important to take into account how the waste management needs of the subdivision will be serviced by Local Governments when the lots are developed and occupied. The general move towards smaller block sizes in some areas is having an impact on the way that waste collection services are carried out. For example, the inadequate provision of space to park a car behind a property line, can result in cars parked on the street – effectively obstructing the safe and efficient servicing of households.

It is essential that developers liaise with Local Government officers as early as possible to discuss specific requirements and options for waste management and servicing.

The suite of waste collection services provided by Local Government can vary between areas, with some Local Governments providing an organics, co-mingled recycling and general waste collection service (with varying receptacle sizes), in addition to periodic hard waste and green waste collections. There are two main types of waste collection vehicles used by Local Government to service households, side arm lift and back lift.

The side arm lift collection vehicles that service 240L mobile garbage bins, lift and return bins to the ground in an outward arc movement which typically extends 2,270mm from the left-hand side of a collection vehicle. In designing a subdivision, sufficient clearance must be provided behind each prospective collection point to allow for this arc movement to occur, avoid any damage to property and/or bins, and remove or limit the need for manual handling of bins by drivers. The collection point should allow collection operations to occur on a level surface, away from vehicle ramps or steep gradients.

For back lift collection vehicles (where the bin will be collected from the kerb), there should be sufficient space on the street for bins to be lined up neatly in (preferably) a single row along the kerb. The collection point should not be located within the minimum road pavement width.



Figure 1: Inappropriate presentation of 240L MGBs on the road pavement.



Figure 2: Hardstand bin pad adjacent to public roadway, provides a good example of a presentation point.

The following points can be used to begin the process of implementing better practice design and siting for waste collection points. These include:

Contacting the waste management services unit of the Local Government: it is important to determine what type of collection system is used, as well as the technical specifications of collection vehicles (such as turning circles, and space restrictions).

Drive in, Drive out for collection vehicles: design to ensure that collection vehicles can drive in and drive out (without reversing) is particularly important in situations where a subdivision is partially completed and streets that require servicing are not fully connected to the road network. There have been instances where collection vehicles have had to reverse down streets to service households, at great risk of causing damage to people, property and / or bins. Installing temporary cul-de-sacs that allow vehicles to drive-in and drive-out in forward gear will alleviate these risks.

Ensuring collection points are easy to access: collection points should be situated away from bollards, hydrants, signs, narrow lane ways, ramps, round-a-bouts, pedestrian crossings, car parks or on busy roads / intersections.

Ensuring collection vehicles have sufficient overhead clearance: collection points must be located away from building awnings, overhead wires, tree canopies or other structures such as air-conditioning, service ducts and pipes, sprinklers, CCTV cameras, movement sensors, smoke detectors and other fixtures (especially if located in a laneway).

Providing appropriately engineered access-ways: access-ways must be rated for use by heavy vehicles. Collections should occur on a level surface, to reduce the risk of bins rolling down the street and damaging property / obstructing traffic.

4. Waste Management in Subdivision Construction

4.1 PRE-CONSTRUCTION

The pre-construction stage of a new subdivision is the time to develop a waste management plan. A template is provided in **Appendix 1**. Another tool that can be used to develop a waste management plan, is the Master Builders Association *Master Builders Smart Waste Guide 2014*. Although this Guide is aimed at commercial and residential builders and subcontractors, the broader principles are also applicable to the construction of subdivisions. This Guide is available from the Master Builders Western Australia website.

The following activities are suggested at this stage of the development:

1. **Waste streams:** identify which waste streams are likely to be generated and the approximate amounts of material.

Undertake inventory of materials that can be reused, recycled or recovered from the construction-site:

- Specific types of materials: a full list of options is provided in **Appendix 1**
 - Condition of materials: cleaner material is easier to recycle and may affect the contractor price for recycling
 - Possible contamination by hazardous materials like asbestos or lead: these materials will limit reuse / recycling options and require special disposal.
-

2. **Focus on waste avoidance:** instead of managing the waste once it has been generated, look at ways to avoid the generation of that waste in the first place.

There are a number of approaches which can help to minimise the amount of waste generated by a project, including:

- Procurement / purchasing policy: avoid waste by specifying exact requirements and minimise packaging and ask suppliers to take back unused materials
 - Appropriate storage and management of materials on-site will minimise damage from weather or machinery, eliminating the need for the purchase of replacement materials and waste generation.
-

3. **On-site:** understand how the waste management system will work on-site, incorporating reuse, and the purchase of recycled materials for construction activities.

- Determine storage requirements for materials on-site, things to consider include:
 - Type of use: Consider setting aside land that can be used as a temporary storage area for materials generated in construction (that can be used at a later stage in the development). This approach could potentially reduce the amount of heavy vehicle movements on roads from a variety of sectors, and increase the potential to recover items for reuse or recycling

- Ease of use: Ensure that materials in the storage area are easily accessible by workers
- Safety: Ensure that the storage of materials can be managed safely, including limiting public access to the site
- Aesthetics: Ensure that the site appears orderly and will not raise concerns from local residents or businesses – for example screening for dust and litter containment and daily collection of wind-blown material.
- Establish a collection / delivery plan in collaboration with appointed contractors for managing waste and recyclable materials generated on-site (if applicable). This includes data capture for the generation of waste and reusable or recyclable materials
- Consider the practical logistics of how materials can be reused on-site (examples of innovative case studies are provided)
- Consider buying materials that contain recycled items, to avoid the production of material from raw resources.

OPPORTUNITIES FOR REUSE / RECYCLING

EXAMPLE 1: PERRY LAKES REDEVELOPMENT (LANDCORP)

Throughout the Perry Lakes Redevelopment, a number of reuse and recycling opportunities were pursued. The use of recycled Construction and Demolition materials in road base, and the reuse of materials such as old timber seating were used in public walkways and artwork. Structures linked to the historic significance of the site were retained (such as the scoreboard), and incorporated into the new design for the site.

More information is available from www.perrylakes.com.au

EXAMPLE 2: SUNRISE AT WELLARD ESTATE (AMEX CORPORATION)

Pieces of furniture were carved out of remnant trees which were originally located on the site of the development, by a renowned WA artist. The furniture included a picnic setting based on native flora and fauna from the region, as well as a three-seater button tufted couch complete with a teddy bear.

More information is available from www.amexcorp.com.au/pdf/sunrise_furniture_artwork.pdf

EXAMPLE 3: USE OF RECYCLED ORGANICS AT PUBLIC OPEN SPACE

There are many Western Australian companies that process organic wastes into products that can be used to improve the quality of soil within public open spaces. One of the many benefits in using fit for purpose recycled organics, includes an improvement in the water retention properties of the soil. This can result in financial savings when maintaining these areas at a later date.

4.2 DURING CONSTRUCTION

On-site activities during construction are critical in achieving the objectives of the waste management plan, these activities include:

4. **Clearly assign and communicate responsibilities:** Ensure that those involved in the construction are aware of their responsibilities in relation to the waste management plan.

5. **Engage and educate personnel:** be clear about how the various elements of the waste management plan will be implemented and ensure staff have an opportunity to provide feedback on what is / isn't working.

Whatever waste management system is in place, it is vital that all personnel using it understand how to use the system and who has responsibility for ensuring it is used correctly. Trying new approaches and systems can be difficult as changes to current behaviour will be required. By providing feedback mechanisms for personnel, you can build on experience.

6. **Monitor:** to ensure the plan is implemented, monitor on-site.

One aspect of monitoring the implementation of the plan is to ask personnel on-site how the system is working. Other options are to seek feedback from waste management contractors or undertake site inspections to see if the correct material is going into the bin and to understand what waste is being generated that was not expected.

4.3 POST CONSTRUCTION

7. **Evaluate:** once the project is complete evaluate your estimates in the Plan against actual waste generated and consider feedback from personnel.

Once the project has been completed, it's time to evaluate how the plan went. Where the expected amounts of waste generated? How did the bin placement on-site work out? What feedback was there from personnel on-site? From this evaluation, issues can be avoided in future developments.

5. References

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Encycle Consulting (2010) *Recycling Works: A Toolkit for the commercial construction industry in Western Australia*.

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6. Appendix

APPENDIX 1A

SUBDIVISION WASTE MANAGEMENT PLAN TEMPLATE

This document provides a framework for developers to use in considering waste management issues in the construction of subdivisions. Appendix 1b and 1c relate to specific stages of the Project development. Appendix 1b is for the ground / site works stage, where there will be the potential for earthworks and land clearing. Appendix 1c relates to the stage of development where specific infrastructure is being put in place, such as drainage and utilities.

OUTLINE OF PROJECT

Site address:
Applicants name and mailing address:
Phone:
Fax:
Email:
Buildings and other structures currently on-site (if any):
Brief description of proposal:
Estimated Start Date: / /
Estimated Completion Date: / /

APPENDIX 1B

SUBDIVISION WASTE MANAGEMENT PLAN TEMPLATE

Ground works / site works: e.g. final site levels, delineation of lots, providing public open space and general landscaping etc.

OUTLINE OF PROJECT

Waste and/or Recyclable Materials On-site		Destination		
Possible Materials Generated	Estimated Volume (m ³) or Area (m ²) or weight (t)	Reuse and Recycling	Off-site	Disposal
		On-site (How will materials be reused/ recycled on-site?)	Off-site (Specify the contractor and recycling facility)	Specify the contractor and/or landfill site/transfer station
Sand/fill				
Stone				
Topsoil				
Green waste / Timber				
Limestone				
Asbestos				
Comingled recyclables (from workers)				
General waste (from workers)				
Other				

How will materials be stored on-site for reuse and recycling? e.g. in waste and recycling receptacles.

How will site operations be managed to ensure minimal waste creation and maximum reuse and recycling?

- Staff training
- Feedback from waste management service provider
- Ongoing checks by site supervisors
- Separate area set aside for sorted wastes
- Clear signage for waste areas
-

How will this plan be evaluated, and who is responsible for the evaluation? e.g. feedback from staff collected by the site supervisor.

APPENDIX 1C

SUBDIVISION WASTE MANAGEMENT PLAN TEMPLATE

Infrastructure and utilities: e.g. retaining walls, fencing, electricity, gas, water, waste water, phone, data, storm water, street lighting, roads, footpaths...

OUTLINE OF PROJECT

Waste and/or Recyclable Materials On-site		Destination		
Possible Materials Generated	Estimated Volume (m ³) or Area (m ²) or weight (t)	On-site (How will materials be reused/ recycled on-site?)	Off-site (Specify the contractor and recycling facility)	Disposal
Sand / fill				Specify the contractor and/or landfill site/transfer station
Limestone				
Gravel				
Blue metal				
Asphalt – bitumen				
Concrete and Cement				
Drainage aggregate				
Pavers				
Ferrous metals (e.g. iron, steel)				
Nonferrous metal (e.g. copper)				
Timber (indicate if it is treated)				
Plastics				
Comingled recyclables (from workers)				
General waste (from workers)				
Other				
How will materials be stored on-site for reuse and recycling? e.g. in skip bins, in waste and recycling receptacles.				
<p>How will site operations be managed to ensure minimal waste creation and maximum reuse and recycling? E.g. Staff training, feedback from waste management service provider, on-going checks by site supervisors, separate area set aside for sorted wastes, clear signage for waste areas etc.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Staff training <input type="checkbox"/> Feedback from waste management service provider <input type="checkbox"/> Ongoing checks by site supervisors <input type="checkbox"/> Separate area set aside for sorted wastes <input type="checkbox"/> Clear signage for waste areas <input type="checkbox"/> 				
How will this plan be evaluated, and who is responsible for the evaluation? E.g. feedback from staff collected by the site supervisor.				



WESTERN AUSTRALIAN LOCAL GOVERNMENT ASSOCIATION

ONE70, LV1, 170 Railway Parade, West Leederville, WA 6007

PO Box 1544, West Perth, WA 6872

T: (08) 9213 2000 F: (08) 9213 2077 info@walga.asn.au www.walga.asn.au



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