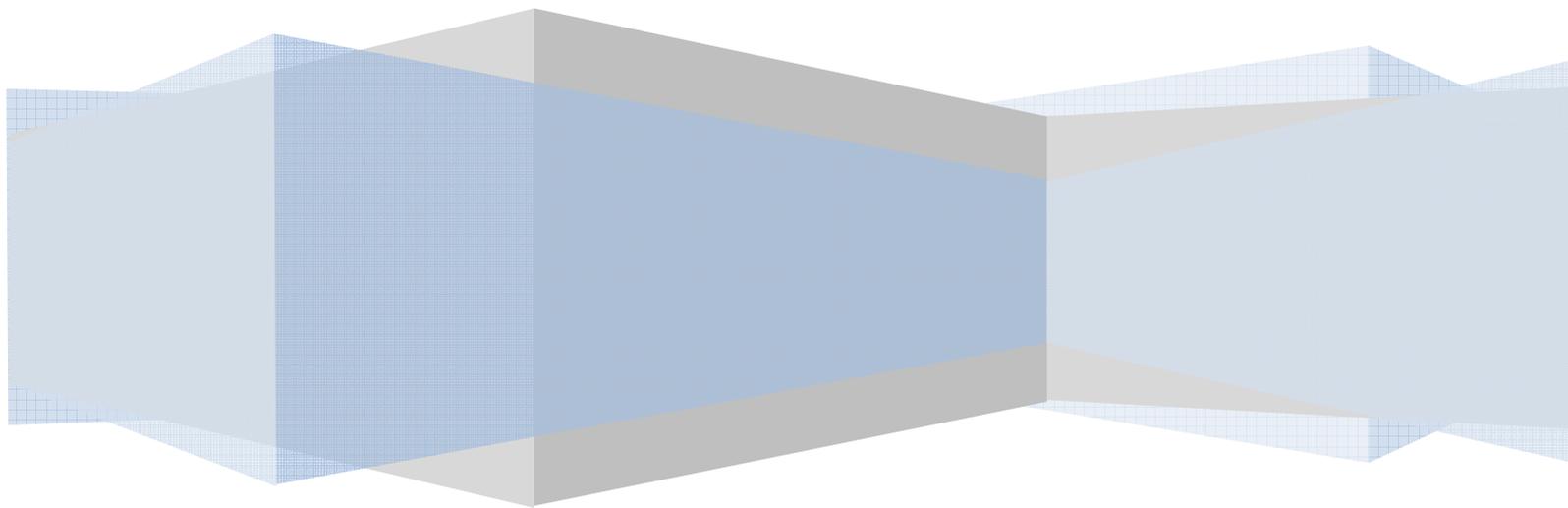


Construction Waste Management Plan Guidelines

A resource for Western Australian Local
Government, Developers, Property Owners and
Builders



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Acknowledgement

These Guidelines have been developed by the WA Local Government Association, with funding from the Waste Authority through the Waste Avoidance and Resource Recovery Account. The Association would like to acknowledge the contribution of a range of stakeholders from Local Government and the recycling and development industries in the development of these Guidelines.

1 Introduction

Why was this Guideline developed?

This Guideline has been developed for two primary reasons, to provide consistent guidance on waste management in relation to construction activities 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 construction activities. 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 Construction and Demolition (C&D) waste from landfill; 60% diversion of material presented for collection by 30 June 2015 and 75% diversion from landfill by 30 June 2020. Given the 2009/10 diversion rate for C&D was 29% a concerted and coordinated effort will be needed to achieve these targets.

This Guideline is part of a project funded by the Western Australian Waste Authority and developed through the WA Local Government Association. This Guideline will be supported by Local Government requirements, as part of the planning approval process. This Guideline is intended as a consistent reference for property owners, builders, developers and Local Government officers.

How should this Guideline be used?

This Guideline should be used as a resource by property owners, builders and developers to assist in assessing likely waste generation from construction projects and identifying ways to divert any waste generated from landfill. While these Guidelines can be used on any scale of project, the main focus is those projects which require Local Government Planning Approval. Appendix 1 includes a template waste management plan which provides a framework for developers to consider waste management issues in a way which meets Local Government requirements.

This Guideline should be used by Local Governments Officers as a resource when requesting or assessing waste management plans for certain developments. Appendix 3 provides a checklist for assessing waste management plans.

These Guidelines are applicable to any construction project and will assist in establishing efficient and cost-effective operations.

2 Project Planning

In planning a construction project, it is important to understand what excess materials are likely to be generated and then focus on how the generation of those excess materials can either be avoided or the material can be diverted from landfill. One approach is to develop a construction waste management plan. The key objectives of any construction 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; and
3. Minimise the amount of material sent to landfill.

When developing and implementing a construction 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. **Services:** select an appropriately qualified waste management contractor who will provide services for the waste streams generated and data on waste/recycling generation;
4. **On site:** understand how the waste management system will work onsite, including bin placement and access;
5. **Clearly assign and communicate responsibilities:** ensure that those involved in the construction are aware of their responsibilities in relation to the construction waste management plan;
6. **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;
7. **Monitor:** to ensure the plan is being implemented, monitor on site; and
8. **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 Construction Waste Management

3.1 Pre-Construction

The pre-construction stage of the development is the time to put in place a construction waste management plan. A template is provided in **Appendix 1**. Another tool that can be used to develop a construction waste management plan, is the Master Builders Association Master Builders Waste Reduction Guide 2014. This Guide will be available from their Website in April 2014.

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

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;
- Amount of material expected: some guidance on how to estimate this is provided in Appendix 2;
- Condition of materials: cleaner material is easier to recycle and may affect the contractor price for recycling; and
- 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:

- Building for deconstruction: choose materials that will be easy to modify in future and demolition works can be undertaken with a minimum of waste;
- Use of modular components: prefabrication of construction components off-site can significantly reduce wastage on-site; providing that the modules have been correctly sized;
- Procurement/purchasing policy: avoid waste by specifying exact requirements and minimise packaging and ask suppliers to take back packaging and unused materials, such as pallets and spare bricks; and
- Appropriate storage and management of materials onsite will minimise damage from weather or machinery, eliminating the need for the purchase of replacement materials and waste generation.

3. **Services:** select an appropriately qualified waste management contractor who will provide services for the waste streams generated and data on waste/recycling generation.

To maximise the recovery of material – one approach is to use the ‘Recycling Works’ Toolkit for the commercial construction industry in Western Australia – available from <http://www.encycle.com.au/kit.php> This Toolkit provides a different approach to working through the construction process.

4. **On site:** understand how the waste management system will work onsite, including bin placement and access.

- Determine storage requirements (separate bins or co-mingled), things to consider include:

- Ease of use: Ensure that containers are easily accessible by workers;
- Safety: Ensure that the containers and storage can be managed safely, including limiting public access to the site;
- Aesthetics: Ensure that the site appears orderly and will not raise concern 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 waste contractors for waste and recyclable materials generated on-site.

Asbestos

Houses built in Western Australia between mid-1980s and 1990 are likely to contain asbestos-containing products and houses built in WA before the mid-1980s are highly likely to contain asbestos-containing products.

Therefore care should be taken when undertaking renovations or constructing additions on existing structures. A licence is required in Western Australia for the removal of materials that contain asbestos. Only a licence holder or an employee of a licence holder may carry out this type of work.

For more information on the handling and disposal of asbestos containing materials, please visit:

http://www.commerce.wa.gov.au/worksafe/content/Services/Certification_registration_and/Asbestos_removal_licence_No_3.html and

<http://www.der.wa.gov.au/your-environment/contaminated-sites/59-asbestos>

3.2 During Construction

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

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

6. 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.

7. Monitor: to ensure the plan is being implemented, monitor on site; and

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.

3.4 Post Construction

8. **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 onsite? From this evaluation, issues can be avoided in future developments.

4 References

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Sustainability Victoria (2013) *How to Minimise Construction & Demolition Waste*. Available online: <http://www.sustainability.vic.gov.au/en/Publications-and-Research/Knowledge-archive/How-to-Minimise-Construction-Waste>.

5 Appendices

Appendix 1- Construction Waste Management Plan Template

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 (Commercial, Residential, Single Family, Multi-Family, New Construction, Addition/Alteration, Repair):				
Estimated Start Date ____/____/____				
Estimated Completion Date ____/____/____				
The details provided in this form accurately describe the proposed waste management actions to be undertaken as part of this project				
Signature of applicant:				
Date :				
Waste and/or Recyclable Materials On-site		Destination		
		Reuse & Recycling		Disposal
	Estimated Volume (m ³) or Area (m ²) or weight (t) (refer to Appendix 2- Estimating)	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

	Quantities of Construction Waste)			
Timber (specify type)				
Wood waste (e.g. MDF, plywood)				
Cardboard				
Ferrous metals (e.g. iron, steel)				
Nonferrous metal (e.g. copper wiring)				
Concrete				
Roofing Tiles				
Ceramic Tiles				
Gravel				
Gypsum board (e.g. drywall)				
Plaster				
Paint				
Plumbing fixtures and fittings				
Carpet and underlay				
Stone				
Asphalt				
Glass				
Sand/fill				
Topsoil				
Green waste				
Asbestos (maybe present in older building undergoing renovation/extensions)				
Florescent Light Tubes				
Hazardous materials (e.g. excess paint, solvents)				
Plastics				
PVC				
Comingled recyclables (e.g. paper, cans, glass & plastic bottles, cardboard) from workers				

General waste (e.g. food waste, contaminated food packaging, non-recyclable plastics) from workers				
Mixed waste				
<p>How will materials be stored onsite for reuse and recycling? E.g. in skip bins.</p>				
<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>				
<p>How will this plan be evaluated, and who is responsible for the evaluation? E.g. feedback from staff collected by the site supervisor.</p>				

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Appendix 2- Estimating Quantities of Construction Waste

There are several simple techniques for estimating the volumes of construction and demolition waste. The information below can be used as a guide when completing the Waste Management Plan.

To estimate how much waste will be generated, first quantify the materials ordered or required to complete the project, then use the waste margins outlined in Table 1 as a guide to calculate the expected percentages of each material which will be wasted. The conversion rates outlined in Table 1: Waste margins

Table 2 may then be used to calculate the approximate weight of each waste material.

Material	Waste as a percentage of the total amount of material ordered
Timber	5-7%
Plasterboard	5-20%
Concrete	3-5%
Bricks	5-10%
Tiles	2-5%

Table 1: Waste margins

Material	Tonnes/ m2
Timber	0.5
Plasterboard	2.4
Concrete	1.0
Bricks	0.75
Tiles	2.4

Table 2: Converting volumes to tonnage.

Appendix 3- Local Government Officer Checklist

Section	Key element	Adequately	Comments /	Modification

		addressed in WMP (Yes/No)	Feedback	required?
Outline of project	Is all of the contact information and project outline completed?			
	Is the declaration of accuracy completed?			
Waste & Recycling material	Are estimates given for the approximate amounts of waste expected be generated?			
	Is it clear what the destination of these materials will be once they leave the site?			
Storage	Is it clear how materials will be stored on site?			
Site operations	Is it clear how waste will be managed on site?			
	Are the methods of communicating this waste management method identified?			
Evaluation	Is the approach and responsible party for evaluation identified?			