

Lake Macquarie

# *Development Control Guidelines*

## Construction Waste Management



## 9 Construction Waste Management

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## 9.1 Construction Waste Management Plan

Where the development involves demolition works, a Construction Waste Management Plan (WMP) must be completed and submitted with a Development Application in accordance with the relevant controls for each Zone and land use in DCP and guidance in the WMG.

Completing the relevant sections of this Plan will assist in identifying the type of waste that will be generated and in advising Council how you intend to reuse, recycle or dispose of the waste.

The information provided through this form and development proposal plans will be assessed against the objectives and controls within the DCP and WMG, which aim to reduce the amount of construction waste to landfill and promote waste avoidance, reuse and recycling.

### 9.1.1 How to prepare the construction waste management plan

1. Complete the WMP checklist in section 9.1.2 as thoroughly as possible.
2. Complete the WMP form in section 9.1.3 as thoroughly as possible.
3. The WMP checklist and WMP form can be modified to include additional information if necessary.
4. Prepare design and/or landscape drawings that confirm the dwelling's compliance with the controls in the DCP and guidance in the WMG, as prompted by the WMP checklist and form.
5. After designing the waste management system, prepare a summary document to provide contractors that explains what the intended WMP is for the construction site (e.g. where waste and skips should be stored and collected).
6. Compile all of the above documentation into one Waste Management Plan PDF file (other than the Landscape and Floor Plans which can be separate) and lodge it as an attachment to your Development Application.

Three types of WMPs are required for many developments. These are Demolition WMP, Construction WMP and Operational WMP. See Section 8.1 for more information on preparing a Demolition WMP and Sections 2.1-7.1 for information on Operational WMPs by property type.

Where approval for all stages of a development proposal will be sought at the same time, then all WMPs should be collated into one comprehensive WMP document and lodged as an attachment to the Development Application.

**Tips for Preparing the Construction Waste Management Plan**

1. List and estimate construction waste types and volumes
2. Design and identify:
  - ways to use second-hand and recycled-content materials in construction and sources for those second-hand and recycled-content materials
  - ways to avoid, reuse and recycle construction wastes
3. Identify:
  - waste management equipment, bin sizes and collection frequency
  - product suppliers that take back offcuts and unused product
  - contractors and subcontractors that use unneeded offcuts and unused product for use on other jobs
  - waste collection service providers
  - destination scrapyards, recyclers, composters and landfills
4. Design:
  - waste storage areas for each construction stage
  - routes between demolition work spaces and waste storage areas
  - bin collection points, if waste collection is not direct from the storage area
  - routes between waste storage and collection points if relevant
5. Collate construction waste management plan information to be provided to the construction team, contractors and subcontractors.

## 9.1.2 Construction waste management checklist (all development types)

<b>Checklist – Construction Waste Management</b>	
<b>Site Address and Lot/Plan(s):</b>	
<b>Applicant Information</b>	
<b>Applicant's Name:</b>	
<b>Applicant's Address:</b>	
<b>Applicant's Phone / Mobile:</b>	
<b>Applicant's Email:</b>	
<b>Applicant's Authorisation:</b>	
<p>Diversion of any construction waste to reuse, recycling or composting is maximised.</p> <p>Plans showing construction stages waste storage areas, waste collection points and waste collection vehicle access are provided in this application and will be provided to all stakeholders in the construction process.</p> <p>The checklist has been completed accurately and in full.</p> <p>The details provided on this form represent the applicant's genuine intentions for managing wastes related specifically to this project.</p>	
<b>Signature of Applicant or Authorised Agent:</b>	<b>Date:</b>

<b>Construction proposal – outline</b>
<p><b>Number and scale of Buildings/Structures to be constructed</b>(fill in figures for all applicable):</p> <p>___ 1 bedroom dwelling(s) ___ 2 bedroom dwelling(s) ___ 3 bedroom dwelling(s) ___ 4+ bedroom dwellings ___ garage/shed(s) ___ carport/veranda(s) ___ m fencing ___ m<sup>2</sup> paving/driveway ___ m<sup>3</sup> trees ___ conduit/piping Other: _____</p>

<b>Construction checklist</b>	YES	NOT YET	NO	N/A
<b>Waste Types</b>				
All types of wastes to be generated are listed, including from installation of floors, walls, roofing, structures, fencing, paving, doors and windows, internal fit out, fittings, conduit and wiring, landscaping and any other structures or infrastructure.				

<b>Avoidance, Reuse and Recycling</b>				
All wastes that can be reused or recycled are identified.				
Plan maximises beneficial reuse of infrastructure, buildings and materials on site.				
Plan maximises diversion of any construction waste to reuse/recycling/composting.				
Second-hand and recycled content resources will be used for construction where possible and where this visually integrates with the natural landscape character and dwelling form. (A detailed control only required in Environment Protection Zones (zones E2, E3 and E4)s but encouraged in other zones.)				
Proposals for offsite reuse meet NSW Resource Recovery Orders and Exemptions.				
The name of a licenced facility (to which the respective construction waste could be sent for reuse, recycling or disposal) is included in the plan.				
Any recycling and green waste bins on site prior to construction are noted in the construction plan to be returned to Council's contractors (Council contacted)				

<b>Construction checklist</b>	YES	NOT YET	NO	N/A
<b>Waste Storage Areas</b>				
Reusable resources and waste can be appropriately and effectively stored.				
Reusable resources and waste can be appropriately, effectively and safely removed from site without adverse impacts on local amenity.				
The waste storage area(s) for construction waste are shown on the construction plans.				
Waste management plan(s) demonstrate that sufficient area is allocated for separate storage and collection of site occupants' wastes and construction wastes.				
Waste can be placed in the bins without moving bins around.				
Sufficient area is allocated for separate storage and collection of problem wastes (such as light bulbs, batteries, gas bottles, oils, cooking oils and paint).				
For staged constructions, waste management for each stage is shown in plans and described in the construction waste management plan.				
All waste management plans show the appropriately located, sized and suitably screened waste storage locations related to the construction sequencing of the development. Waste will be contained within the construction site in a suitably screened area of least 3.5m <sup>2</sup> and 1.2 metres high.				
The waste storage area is located conveniently for construction work team to use it.				
The routes for movement of waste between work site and waste storage area are obstruction-free.				

Waste Collection and Removal				
The routes for movement of bins and waste between storage and collection points, are obstruction-free (if waste is moved between the waste storage area(s) and collection point(s)).				
Waste bin collection point(s) are provided that are accessible for waste collection vehicles. There are no obstructions to turning or reversing, pulling up vehicles and lifting bins.				
All waste management plans show access and turning space provisions for waste collection vehicles through each construction stage.				
Access will not be compromised by construction-related activities vehicles or other consequences of construction staging.				
All waste not being reused on site will be removed during, or at the completion of, the construction stage.				
No waste will be left on site unless it is part of valid reuse on site, which is integral to and in place in the design, or is a few spares for use in future maintenance repairs, or has valid reuse for another authorised use of the property.				
In order to manage noise levels, collection of waste from the construction site will only occur during hours approved for construction work.				

Waste Management Information for Stakeholders				
All Waste Management Plans will be provided to any relevant person involved in the construction, including project managers, builders, contractors, sub-contractors and architects.				

Construction checklist	YES	NOT YET	NO	N/A
<b>Construction Waste Management Plan Completion</b>				
Comments regarding any deviation from the waste management controls and guidance:				
Waste Management Plan Checklist and coversheet has been completed and signed				

<b>List of Items for Reuse</b>
<p>The following buildings, building components and infrastructure will be reused from other sites (avoiding waste) – <i>Examples provided in pre-filled text, remove what does not apply and/or add others that do apply:</i></p> <p><i>fill (VENM, ENM), aggregates</i></p> <p><i>roofing</i></p> <p><i>timber</i></p> <p><i>bricks, pavers</i></p> <p><i>windows, doors</i></p> <p><i>pipes and conduit</i></p> <p><i>water tanks</i></p> <p><i>fencing and gates</i></p>
<p>The following construction wastes will be reused on site for integration into the design or retained for future maintenance repairs, or other valid reuse on the property:</p> <p><i>fill (VENM, ENM), aggregates</i></p> <p><i>roofing</i></p> <p><i>timber</i></p> <p><i>bricks, pavers</i></p> <p><i>windows, doors</i></p> <p><i>pipes and conduit</i></p> <p><i>water tanks</i></p> <p><i>fencing and gates</i></p>



9.1.3 Construction waste management plan (all development types)

**CONSTRUCTION WASTE MANAGEMENT PLAN**

Waste Type:	Waste amounts (m <sup>3</sup> or Tonnes)	Reuse on site Specify proposed on site reuse methods and waste volume.	Reuse or recycling offsite Specify recycling collection service provider and recycling facility destination	Disposal to licenced landfill Specify waste collection service provider and landfill destination
Concrete				
Bricks, blocks and pavers				
Tiles				
Asphalt				
Timber/pallets untreated				
Timber – treated/painted				
Timber –composite				
Pallets (if not with timber)				
Plasterboard and plaster				
Metal tins/packaging				
Metals (please specify)				
Plate glass				
Plastic wrap/film				
Plastic – rigid packaging				
Plastic conduit/pipe				
Plastic (please specify)				
Cardboard boxes/paper				
Food waste				
Furnishings and equipment				
Glues/solvents/chemicals				
Other (please specify)				

## 9.2 Waste Aspects of the Development Control Plan for Construction

The Lake Macquarie City Council Development Control Plan (DCP) sets out broad objectives and controls for Construction. These occur in the DCP in DCP Parts 2 (Rural zones), 3 (Residential zones), 4 (Business zones), 5 (Industrial, Business Park and Infrastructure zones), 6 (Recreation and Tourist zones) and 7 (Environment Protection Zones). The broad objectives and controls relevant to construction are summarised below in 9.2.1 (objectives) and 9.2.2 (controls).

The controls specified in the DCP require that all construction waste management be in accordance with this Section 9 of the Waste Management Guidelines. In order for the construction waste management to be in accordance with these guidelines, some guidance should be met.

The guidance required to be met are outlined in:

- 3.1.3 for all zones
- 3.1.4 for Environment Protection Zones (zones E2, E3 and E4) for which there is an additional detailed control

### 9.2.1 General objectives for construction

The source of the information applicable to this section is highlighted in the chart below:

Document	Controls By Zone	Subdivisions	Specific Land Uses	Events
DCP	<b>Objectives and controls</b> by zone – see DCP Parts 2-7	Aims and Controls - see DCP Part 8	Objectives and controls for specific land uses (additional to controls by zone) - see DCP Parts 9.1-9.19	DCP Parts 2 - 7
WMG	<b>Guidance</b> by zones – see WMG (all Sections 2-7)	Guidance - see WMG Section 7	Guidance for specific land uses, such as Aged Care, not covered in DCP Part 9	Guidance - see WMG Section 6

The waste management objectives defined in the DCP for construction are:

- To reduce construction waste by maximising beneficial reuse of infrastructure, buildings and materials on site.*
- To avoid creating construction waste wherever possible.*
- To enable maximum diversion of construction waste to reuse, recycling or composting.*
- To ensure that waste management is planned across all construction stages so that reusable resources and waste can be appropriately and effectively stored and removed safely from site without adverse impacts on local amenity*

### 9.2.2 Controls for construction

The source of the information applicable to this section is highlighted in the chart below:

Document	Controls By Zone	Subdivisions	Specific Land Uses	Events
DCP	<b>Objectives and controls</b> by zone – see DCP Parts 2-7	Aims and Controls - see DCP Part 8	Objectives and controls for specific land uses (additional to controls by zone) - see DCP Parts 9.1-9.19	DCP Parts 2 - 7
WMG	<b>Guidance</b> by zones – see WMG (all Sections 2-7)	Guidance - see WMG Section 7	Guidance for specific land uses, such as Aged Care, not covered in DCP Part 9	Guidance - see WMG Section 6

The waste management controls defined in the DCP for construction are:

1. Applications must provide a completed Construction Waste Management Plan (WMP) for construction (for all construction works) in accordance with Section 9 of the Lake Macquarie City Council Waste Management Guidelines. This applies unless the development is one of the following types:

- permitted without consent in this zone;
- drainage;
- earthworks;
- roads;
- signs;
- stormwater management facilities; or
- utility installations.

In addition, the applicant does not need to provide a construction WMP if the development is within the following zones and one of the following uses:

<p>In a <b>Rural Zone</b> (Zones RU2 (Rural landscape), RU3 (Forestry), RU4 (Primary production small lots) or RU6 (Transition) and is:</p> <ul style="list-style-type: none"> <li>• Agriculture (other than intensive agriculture and aquaculture)</li> <li>• Roadside stalls</li> </ul>	<p>In an <b>Industrial, Business Park or Infrastructure Zone</b> (Zones IN1 (General Industrial), IN2 (Light Industrial, IN4 (Working Waterfront), B7 (Business Park), SP1 (Special Activities) or SP2 (Infrastructure) and is:</p> <ul style="list-style-type: none"> <li>• Agriculture (other than intensive agriculture and aquaculture)</li> <li>• Rail lines</li> </ul>		
<p>In a <b>Business Zone</b> (Zones B1 (Neighbourhood centre), B2 (Local centre), B3 (Commercial Core), or B4 (Mixed Use) and is:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <ul style="list-style-type: none"> <li>• Advertising structures</li> <li>• Building or business identification signs</li> <li>• Environmental protection works</li> </ul> </td> <td style="width: 50%; border: none;"> <ul style="list-style-type: none"> <li>• Waterbodies (artificial or natural)</li> <li>• Watercourses</li> <li>• Wetland</li> </ul> </td> </tr> </table>		<ul style="list-style-type: none"> <li>• Advertising structures</li> <li>• Building or business identification signs</li> <li>• Environmental protection works</li> </ul>	<ul style="list-style-type: none"> <li>• Waterbodies (artificial or natural)</li> <li>• Watercourses</li> <li>• Wetland</li> </ul>
<ul style="list-style-type: none"> <li>• Advertising structures</li> <li>• Building or business identification signs</li> <li>• Environmental protection works</li> </ul>	<ul style="list-style-type: none"> <li>• Waterbodies (artificial or natural)</li> <li>• Watercourses</li> <li>• Wetland</li> </ul>		

*These plans must be provided to any relevant person involved in the construction, including project managers, builders, contractors, sub-contractors and architects.*

2. Construction Waste Management Plans must describe how the proposal avoids creating waste and how it maximises the reuse and recycling of demolition and construction materials.

3. The following must be shown on scaled plans to be submitted with the development application for demolition and construction stages:

- a. waste storage area(s) with bins and equipment shown to scale;
- b. waste collection area(s) with bins shown to scale (if different from storage areas);
- c. waste carting route(s) from buildings to waste storage area(s);
- d. bin carting route(s) from waste storage to collection point(s) (if different from storage areas); and
- e. the waste collection vehicle route, swept path and clearances (only for developments proposing on-site collection).

## 9.2.3 Guidance for construction – all zones

The source of the information applicable to this section is highlighted in the chart below:

Document	Controls By Zone	Subdivisions	Specific Land Uses	Events
DCP	<b>Objectives and controls</b> by zone – see DCP Parts 2-7	Aims and Controls - see DCP Part 8	Objectives and controls for specific land uses (additional to controls by zone) - see DCP Parts 9.1-9.19	DCP Parts 2 - 7
<b>WMG</b>	<b>Guidance</b> by zones – see WMG (all Sections 2-7)	Guidance - see WMG Section 7	Guidance for specific land uses, such as Aged Care, not covered in DCP Part 9	Guidance - see WMG Section 6

Applicants that must provide a completed Construction Waste Management Plan (WMP) should provide a WMP that is in accordance with the following guidance:

1. The WMP must demonstrate that sufficient area is allocated for separate storage and collection of site occupants' wastes and construction wastes, including wastes requiring separation for special management (such as light bulbs). For staged constructions, this must clearly show waste management for each stage. All WMP must show:
  - a. the appropriately located, sized and suitably screened waste storage locations related to the construction sequencing of the development. The screened area must be at least 3.5m<sup>3</sup> and 1.2 metres high;
  - b. all waste not being reused on site must be removed during, or at the completion of, the construction stage;
  - c. unobstructed access paths for waste carting routes if waste must be moved between the waste storage area(s) and collection point(s); and
  - d. access and turning space provisions for waste collection vehicles through each construction stage, ensuring that access will not be compromised by construction-related activities vehicles or other consequences of construction staging.
2. Waste should be contained within the construction site in a suitably screened area of at least 3.5m<sup>2</sup> and 1.2 metres high for removal during, or at the completion of, the construction stage. All demolition and construction stage waste storage areas must be shown on a demolition and construction waste site plan.
3. No waste should be left on site unless it:
  - i. can genuinely be reused on site, in which case the materials to be reused should be included in the design;
  - ii. will be used as replacement or spare parts for future maintenance; or
  - iii. can be reused on another authorised part of the property.
4. In order to manage noise levels, collection of waste from the construction site must only occur during hours approved for construction work.
5. The Demolition WMP should be provided to and adhered to by any relevant person involved in the demolition, including project managers, builders, contractors, sub-contractors and architects.

## 9.2.4 Environment Protection Zones – guidance for construction

The source of the information applicable to this section is highlighted in the chart below:

Document	Controls By Zone	Subdivisions	Specific Land Uses	Events
DCP	<b>Objectives and controls</b> by zone – see DCP Parts 2-7	Aims and Controls - see DCP Part 8	Objectives and controls for specific land uses (additional to controls by zone) - see DCP Parts 9.1-9.19	DCP Parts 2 - 7
WMG	<b>Guidance</b> by zones – see WMG (all Sections 2-7)	Guidance - see WMG Section 7	Guidance for specific land uses, such as Aged Care, not covered in DCP Part 9	Guidance - see WMG Section 6

In addition to that applicable in all zones, in Environment Protection Zones (zones E2, E3 and E4)s applicants that must provide a completed Construction Waste Management Plan should provide a construction waste management plan that is in accordance with the following guidance:

**Objective** (from the DCP in addition to objectives a to d in 9.2.1)

- e. To appropriately manage the retention of existing vegetation and vegetation to be removed.*

### Controls

1. All native vegetation proposed for demolition shall be integrated with landscaping, reused and retained on site for chipping and spreading as mulch, with timber structures used as log piles or perches to house reptiles, mammals, insects and birds.
2. Second-hand and recycled content resources should be used for construction where possible and where this visually integrates with the natural landscape character and dwelling form.

## 9.2.5 Tourist and visitor accommodation – guidance for construction

The source of the information applicable to this section is highlighted in the chart below:

Document	Controls By Zone	Subdivisions	Specific Land Uses	Events
DCP	<b>Objectives and controls</b> by zone – see DCP Parts 2-7	Aims and Controls - see DCP Part 8	Objectives and controls for specific land uses (additional to controls by zone) - see DCP Parts 9.1-9.19	DCP Parts 2 - 7
WMG	<b>Guidance</b> by zones – see WMG (all Sections 2-7)	Guidance - see WMG Section 7	Guidance for specific land uses, such as Aged Care, not covered in DCP Part 9	Guidance - see WMG Section 6

As per DCP Part 9.18 Tourist and Visitor Accommodation, the following are additional requirements. Where there is a conflict with the zone requirements, these land use requirements apply:

**Objectives** (only those from the DCP relevant to waste)

- c. To ensure that tourist accommodation and resorts are designed and constructed on the basis of sustainable waste avoidance, resource reuse and recycling.*
- d. To appropriately manage the retention of existing vegetation and vegetation to be removed.*

**Controls** (only those from the DCP relevant to waste)

5. All native vegetation proposed for demolition shall be integrated with landscaping, reused and retained on site for chipping and spreading as mulch, with timber structures used as log piles or perches to house reptiles, mammals, insects and birds.

6. Second-hand and recycled content resources from demolition should be used for construction where possible and where this visually integrates with the natural landscape character and dwelling form.

**9.2.6 Rural construction site waste management requirements under the Rural Housing Code**

The source of the information applicable to this section is highlighted in the chart below:

Document	Controls By Zone	Subdivisions	Specific Land Uses	Events
DCP	<b>Objectives and controls</b> by zone – see DCP Parts 2-7	Aims and Controls - see DCP Part 8	Objectives and controls for specific land uses (additional to controls by zone) - see DCP Parts 9.1-9.19	DCP Parts 2 - 7
WMG	<b>Guidance</b> by zones – see WMG (all Sections 2-7)	Guidance - see WMG Section 7	Guidance for specific land uses, such as Aged Care, not covered in DCP Part 9	Guidance - see WMG Section 6
SEPP	<b>SEPP (Exempt and Complying Development Codes) 2008 - Part 3A Rural Housing Code / Schedule 6</b>			

Note that dwelling houses in Rural Zones (zones RU2, RU4 and RU6) also may come under *State Environment Planning Policies (SEPP) for the Rural Housing Code* and Schedule 6 “Garbage receptacle” and “Maintenance of site” and other components of *SEPP (Exempt and Complying Development Codes) 2008*.

*SEPP (Exempt and Complying Development Codes) 2008 – Schedule 6*

Note: For a helpful reference, the following has been extracted from SEPP (Exempt and Complying Development Codes) 2008. Check that the text is current by referring to the SEPP document original.

*State Environment Planning Policies (SEPP) Exempt and Complying Development Codes 2008* under Schedule 6 requires the following handling of waste:

*Part 1 Conditions applying before works commence*

*3. Garbage receptacle*

*(1) A garbage receptacle must be provided at the work site before works begin and must be maintained until the works are completed.*

*(2) The garbage receptacle must have a tight fitting lid and be suitable for the reception of food scraps and papers.*

*Part 2 Conditions applying during the works*

*Note. The [Protection of the Environment Operations Act 1997](#) and the [Protection of the Environment Operations \(Noise Control\) Regulation 2008](#) contain provisions relating to noise.*

*7. Hours for construction*

*Construction may only be carried out between 7.00 am and 5.00 pm on Monday to Saturday and no construction is to be carried out at any time on a Sunday or a public holiday.*

### 9. Maintenance of site

(2) *Waste materials (including excavation, demolition and construction waste materials) must be managed on the site and then disposed of at a waste management facility.*

(4) *During construction:*

(a) *all vehicles entering or leaving the site must have their loads covered and*

(b) *all vehicles, before leaving the site, must be cleaned of dirt, sand and other materials, to avoid tracking these materials onto public roads.*

(5) *At the completion of the works, the work site must be left clear of waste and debris.*

## 9.3 Construction Waste Management – Information to Assist with Planning

### 9.3.1 Construction waste types and volumes

Wastes generated during construction are mainly from four sources:

- packaging of materials for construction;
- offcuts, mistakes and over-supply, leftovers and spares of the materials used in construction;
- wastes from workers occupying the site, such as lunch packaging and food waste; and
- damaged or worn out tools, parts, tool and equipment consumables.

Cardboard packaging can make up to 12 per cent of a project's construction waste stream according to National Institute of Building Sciences (in "Whole Building Design Guide"). While protecting new materials is necessary, the Contractor can direct their subcontractors and suppliers to reduce extraneous packaging. Protection for materials can be achieved in many cases through reusable padding and careful packing.

Plastic film wrap is also prevalent as is plastic strapping.

All packaging generated on site should be captured for reuse or recycling wherever possible.

Overseas studies show that up to 10 per cent of timber delivered for residential construction is wasted, while a recent Australian pilot project suggests that up to 30 per cent of plasterboard is wasted on certain projects.

Items pre-manufactured offsite such as prefabricated wall frames, staircases and kitchens substantially reduces on-site waste from offcuts.

Capture and recycle metals and electronic wastes where possible.

### 9.3.2 Avoid, reuse and recycle construction wastes

#### **Avoiding construction waste**

The following measures may save money and resources while minimising waste at the construction stage of development and should be considered:

- ordering the right quantities of materials (Purchasing Policy);
- prefabrication of materials;
- reusing formwork;
- modular construction and basic designs to reduce the need for offcuts;
- minimising site disturbance and limiting unnecessary excavation;
- source-separation of offcuts to facilitate reuse, resale or efficient recycling;
- purchase materials in bulk where possible. Avoid individual packaging for volume purchases.
- use returnable containers and packing materials;
- limit preparation of materials to quantities that can be installed within their expiration times (i.e. materials that are heated, mixed, exposed to environmental conditions, or otherwise subject to spoilage). Working in smaller batches will reduce the necessity to throw out expired or spoiled materials. Ensure volatile materials and materials that degrade when exposed to heat, cold, or moisture are protected from spoilage and are not wasted;
- planning ahead for the deconstruction of a building and infrastructure when its useable life has expired (e.g. can components be easily dismantled and separated for reuse or recycling);
- choice of landscaping to reduce ongoing maintenance and generation of garden waste; and
- co-ordination and sequencing of various trades to avoid having to demolish and redo work.



### **Reuse and recycling**

Instead of purchasing expensive new materials, consider:

1. **Reusing on site the resources that are already on site.** This will save money from purchasing and transporting new goods and from saved waste disposal costs of the demolition wastes.
2. **Buying second-hand materials, or materials with recycled content.** This will save money while supporting a closed loop local market for resources that are generated from demolition and construction sites for reuse and recycling.

The NSW Office of Environment and Heritage advised that the following construction wastes should be close to 100 per cent recyclable if properly source-separated and kept uncontaminated:

- steel;
- non-ferrous metals;
- glass;
- paper;
- concrete;
- brick; and
- cardboard packaging material.

Ideas for reuse on site:

- excess concrete can be reused on site, by pouring into moulds to create pavers, or garden decorations;
- full tiles, bricks and pavers can be set aside as spares;
- residual paint may be able to be left for later occupants to conduct repairs with colour-matched paint;
- broken bricks and tiles can be used as drainage aggregate;
- timber frame and timber board offcuts can be used for small work and in forming up;
- some packaging can be reused as storage containers;
- reuse non-returnable containers on the jobsite to the maximum extent possible. Develop one-hundred-and-one-uses for plastic barrels, buckets and tubs;
- give away non-returnable materials and containers for reuse if appropriate. Check if donations of resources can be tax deductible;
- use scrap in lieu of cutting full new materials. Direct subcontractors and trades to collect and keep scrap at cutting and fabricating locations;
- collect paints and liquids from almost-empty containers; avoid disposing of useable materials simply because there is not enough in one container to finish a job;
- recycle damaged components, products and materials, or disassemble them into their constituent materials for recycling;
- establish a return or buy-back arrangement with suppliers. Alternatively, unused, or used but serviceable materials and products can be sold to architectural salvage or used materials retail outlets; and
- product suppliers, or pallet manufacturers, may take back the pallets.

Suppliers may also take back offcuts and any residual construction products such as plasterboard for use elsewhere or in pre-consumer recycling processes. Formal Industry Product Stewardship programs are listed on the Commonwealth Government environment website [www.environment.gov.au/topics/environment-protection/nwp/reporting/product-stewardship](http://www.environment.gov.au/topics/environment-protection/nwp/reporting/product-stewardship), including the Australian Packaging Covenant <http://www.packagingcovenant.org.au/> and there are also individual businesses that take back residual products. When purchasing products for the construction, include this product stewardship take back as a selection criterion.

If offcuts and residual product resources are sent offsite for recycling or reuse at another site or through a recycler to be on sold for reuse, then the qualities of any waste resource is to be used in the ground, on the ground surface or as retaining wall the waste resource must meet the requirements spelt out in the Resource Recovery Exemptions and Orders published on NSW Environment Protection Authority's (EPA) website at <http://www.epa.nsw.gov.au/wasteregulation/recovery-exemptions.htm>.

EPA currently lists the following Resource Recovery Exemptions and Orders that are relevant to demolition:

- cement fibre board; and
- plasterboard.

Application can also be made to EPA for a Resource Recovery Exemption and Order for other materials. The EPA has published guidelines to applying for a Resource Recovery Exemption – see <http://www.epa.nsw.gov.au/wasteregulation/apply-exemption.htm>

If the resource is reused on a structure, such as reusing windows or doors, or in temporary hoardings or formwork, then this is not application to land and does not need to meet such requirements. Reused components, as with new components, need to meet building quality and safety requirements.

Clean timber waste, pallets, sawdust and wood shavings can be recycled into broiler chicken bedding. Information on the specifications for this are available on NSW Environment Protection Authority website – Specification for the Supply of Recycled Urban Wood for Broiler Chicken Bedding 2012 and Quality Control Guidelines for Production of Broiler Bedding from Urban Wood Residue, prepared in partnership with the Timber Development Association (NSW) Ltd. "Urban wood" includes materials such as sawn timber offcuts, saw dust, wood shavings, packaging crates and pallets but does not include preservative treated or coated wood or engineered wood products.

In preparing the Waste Management Plan (WMP), if the various construction contractors have not yet been selected, then job specifications to be given to the bidding contractors will need to require the contractors to maximise waste avoidance, diversion of waste to reuse and recycling and use of recycled content or second-hand materials. These specifications will need to be provided in the development application WMP, with the remaining WMP details to be provided prior to issuing of a construction certificate once the contractors are engaged.

### 9.3.3 Construction waste storage areas

Construction waste management can be easier to separate because successive trades each have their own unique waste type. Different wastes are generated at each stage, such as from formwork, concrete pour, timber or metal frames, roofing, external cladding, windows and doors, internal wall cladding, flooring and internal fit out. Volumes should be lower than from demolition.

As new resources are not degraded by age and weather, they are also likely to be more valuable for reuse and recycling.

Ask sub-contractors to sort and dispose of their own wastes, or provide them with on-site waste storage.

Covered storage areas for offcuts can be a shared site feature for sourcing smaller pieces of materials that avoids the need to cut up larger pieces.

The waste storage area should be a minimum of 3.5m<sup>2</sup> with a minimum screen height of 1.2 metres. A number of other bin locations may also be needed around the site depending on the construction stage, types and volumes of wastes being generated and location of work on the site.

### 9.3.4 Placing a waste storage or recycling container in a public place

Some sites with constrained space may require the lease of public space for waste bin storage. When considering this solution, factors to consider include public safety, numbers and types of containers and the location of containers. An application must be made under the Lake Macquarie City Council Local Approvals Policy – Management of Waste – Place a waste storage container on a road – available from <https://www.lakemac.com.au/development/local-approvals-policy> .

### 9.3.5 Construction waste collection points

As with demolition waste collection points:

- ensure all wastes have been considered in the planning stage, so that an additional bin or waste collection service is not unexpectedly required;
- identify where the workers, equipment and vehicles will enter and leave the site to ensure safety;
- ensure car parking does not conflict with waste storage or collection route planning;
- consider the weight of the waste collection vehicles if they can drive on the surfaces or will bog;
- ensure the waste collection vehicle will have enough room to turn around and if they can enter and leave the site in a forward direction;
- consider how much overhead space is allowed and whether this is sufficient for lifting that type of waste into the bin and lifting the bin contents into the waste collection vehicle;
- protect the waste storage locations from the weather and damp or dusty ground to ensure a quality product and from anyone that may steal valuable resources;
- ensure hazardous wastes are not stored where there may be a conflict with another activity on site, to avoid an incident. This includes keeping hazardous materials away from worker rest areas and collection points and swept path for other wastes;
- minimise the distance – and roughness of the terrain – over which the waste needs to be moved from the deconstruction site, as this saves time and therefore money, including planning sequential or multiple locations throughout the deconstruction stages; and
- ensure that the wastes do not have to be moved twice – do not place it in the way of the next stage of work if it will not be removed by then.

### 9.3.6 Waste management information guide for contractors

A waste system information guide should be provided to construction contractors. The guide should outline:

- the approved waste service system and how to use it;
- approved locations for bin storage; and
- options within the approval for alternative waste service solutions.

A property plan should show where the waste storage areas are located and if a particular collection point is necessary other than directly from the waste storage area, then also that collection point.

**CASE STUDY****SMALL BUILDER COMMITS TO WASTE MANAGEMENT**

A small building company was commissioned to build a duplex on a suburban residential site.

A Waste Management Plan was prepared as part the overall site management of the project and the following waste minimisation initiatives were used:

- Recyclables were placed in separate bins on-site
- Education of on-site personnel and continuous monitoring by site supervisor,
- Space was made for on-site source separation in the early stages of the job.

An 80 per cent reduction in waste diverted to landfill was achieved on this project. The company chose to implement a Waste Management Plan on the construction site even though cost savings were minimal.

**The company believes that the rising costs of waste disposal and the potential marketing advantages justified the effort.**