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Summary

The objectives of the Guidelines include to maximise reuse and recycling of building/construction materials and to limit household and industrial/commercial waste.

Based on "Waste Not" – A Model DCP and Local Approvals Policy, developed by the Combined Sydney Regional Organisation of Councils

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Revision History

Rev. No.	Date Changed	Modified By	Details/Comments
Master	22/03/04	LMC2 Consulting Group	Master Document - adopted by Council on 22 March 2004
1	2012	Integrated Planning	Guideline changed to DCP 2013 format. All references to Council's Development Control Plan 2004 changed to reflect the new DCP 2013. References to a Waste Management Plan changed to Site Waste Minimisation and Management Plan in line with DCP controls. References to EPA changed to Office of Environment and Heritage (OEH).

1 INTRODUCTION

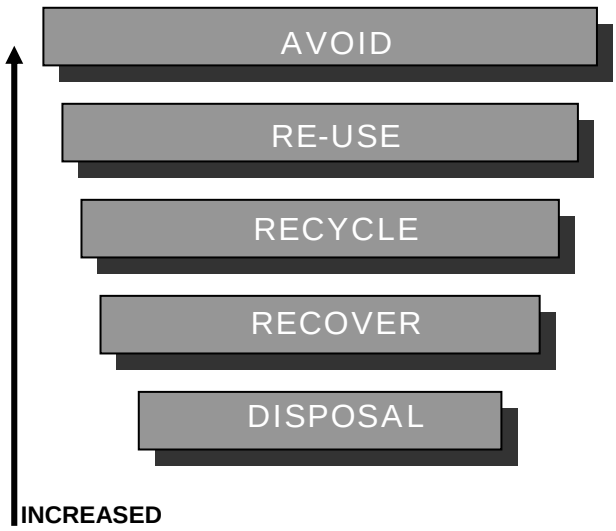
1.1 MINIMISING WASTE

Australians are, by world standards, large producers of waste. Sydney alone dumps three million tonnes of waste into landfill annually.

In recognition of international trends towards waste reduction, all Australian Governments have the aim of reducing waste in landfill. In 1996, Lake Macquarie City Council identified a waste landfill reduction of 60 percent as its highest waste management priority. This can only be achieved with the co-operation of all sectors of the Lake Macquarie Community.

The solutions to the waste problem are summarised in the Waste Minimisation Hierarchy, illustrated below. The Hierarchy shows that waste avoidance, re-use and recycling are more important than reprocessing (recovery). Waste disposal should be viewed as a last resort after all other options have been exhausted.

Waste Minimisation Hierarchy



All waste streams contain many resources that may be useful products for our communities. Recovering, recycling and using these as secondary resources is a key element in working towards ecologically sustainable development.

A large proportion of waste can be reduced at its source. A further high percentage can be re-used and recycled if we take the time to source-separate, promote local markets and arrange for transportation.

1.2 GOVERNMENT RESPONSE

All levels of government are concerned about the growing waste problem.

The NSW Government has adopted a policy of diverting a minimum of 66% of domestic waste from landfill by 2014. There are also diversion targets for Commercial and Industrial Waste of 63% and Construction and Demolition Waste of 76% by 2014. The Waste Avoidance & Resource Recovery Act 2001 promotes waste avoidance and resource recovery by developing waste avoidance and resource recovery strategies and programs, such as the extended producer responsibility scheme for industry.

Local government has a key role to play. Firstly, as a service provider – arranging for the collection of recyclable material and waste. Lake Macquarie residents are familiar with the range of services

provided, including recycling, composting equipment, worm farms and general advice on waste reduction. Secondly, as a regulator of building and land development activity.

These Guidelines are produced with the strong belief that waste can be reduced by local government action when an application is made for development.

1.3 USEFUL WASTE MINIMISATION RESOURCES

Council has a range of resources on waste management and recycling which are available at www.lakemac.nsw.gov.au

The Master Builders Association (MBA) Information Service offers advice on options for waste minimisation and recycling of building materials. Contact the Master Builders Association on 1300 780 095 for more information.

FICTION:

Waste is an inevitable part of being in business.

FACT:

Putting waste minimisation into practice means less waste and more profit.

1.4 PURPOSE AND FEATURES OF THE GUIDELINES

The Guidelines are designed to build on the Waste Management provisions contained within Council's Development Control Plan (DCP). The Guidelines provide further useful advice on how to minimise waste and how to improve existing facilities. Based on this purpose, the Guidelines have four key features:

- Information and advice on Site Waste Minimisation and Management Plans (SWMMPs) and how these are completed.
- General advice for applicants on matters such as source-separation, demolition, construction, design and siting of waste storage and recycling facilities.
- Specific advice for particular uses/activities, including residential, commercial, retail and industry.
- Detailed advice on calculating waste generation rates, facility design, Council services, and list of contacts.

1.5 AIMS AND OBJECTIVES

The aim of the Guidelines is to reduce the disposal of waste to landfill by promoting waste avoidance, reuse and recycling.

More specifically, the objectives of the Guidelines are to:

- Maximise avoidance, reuse and recycling of building/construction materials, household generated waste and industrial/commercial waste.
- Assist in achieving Federal and State Government waste minimisation targets.
- Minimise the overall environmental impacts of waste and foster the principles of Ecologically Sustainable Development.
- Provide advice on matters to be considered when assessing the waste implications of a variety of applications made under the *EP&A Act, 1979* and the Local Government Act, 1993.

- Outline source-separation and other design and location standards that complement waste collection and management services offered by council and private service providers.
- Provide advice to intending applicants on how to reduce and handle waste during demolition and construction phases.
- Outline building designs and construction techniques that minimise future waste generation.
- Provide on-going facilities and controls for waste handling and minimisation in existing premises.

CASE STUDY

COUNTRY DEMOLISHER RECYCLES 95%

An Orange demolition contractor, commissioned to demolish a 7,300m^2 site in the city's business centre, was able to recycle 95% of its waste with only 5% general waste going to landfill.

The following waste minimisation initiatives were used:

- Materials were separated and stock-piled on-site,
- Daily site meetings kept staff up to date with the process, generating enthusiasm and interest in recycling and reducing waste to landfill,
- Recycled hard material, such as concrete and bricks, was reused on site as the base for the new carpark, with a saving of $100,000 in tip and cartage fees,
- A large public sale was conducted on-site, reducing the need to cartage, recovering some of the cost of the demolition and allowing materials to be re-used.

In reducing the amount of waste going to landfill by 95%, the demolition contractor was able to save $80,000 in tip fees.

"This successful experience has increased people's attitude to recycling a thousand percent"

2 SITE WASTE MINIMISATION AND MANAGEMENT PLAN

2.1 WHAT IS A SITE WASTE MINIMISATION AND MANAGEMENT PLAN?

A Site Waste Minimisation and Management Plan is a plan prepared by, or on behalf of, applicants:

- For development approvals as a means of promoting improved design and project management,
- To encourage waste avoidance, source separation, reuse and recycling, and
- To ensure appropriate storage and collection of waste and recyclable material in order to reduce waste to landfill.

A Site Waste Minimisation and Management Plan provides Council with details of the following:

- The volume and type of waste to be generated,
- How waste is to be stored and treated on-site,
- How residual is to be disposed of, and
- How ongoing waste management will operate.

Preparation of the Plan will assist industry, commercial operators and site managers in planning necessary waste management procedures. The time spent considering and planning waste management could be a cost-saving measure for the developer. For example, considering the reuse of existing structures and materials and recycling on-site could save resources at the construction stage, as well as reducing transport and waste disposal costs.

The following information will assist in completing the Site Waste Minimisation and Management Plan:

- Parts 3 and 4 of these Guidelines.
- A blank Site Waste Minimisation and Management Plan, included as Appendix 2.
- The Reuse, Repair & Recycle Directory for the Lower Hunter Region (updated periodically).

2.2 ADDITIONAL OR DIFFERENT APPLICATIONS

Some waste related uses/activities require different or additional applications. These are summarised in Table 1 below.

Table 1 - Additional Applications

PROPOSED ACTIVITY	APPLICATION REQUIRED	COMMENT
Major Waste Management Facilities	Application to Office of Environment and Heritage (OEH) for registration.	
Controlled Waste Activity/ Facility	Application to OEH for licence.	
Transport of waste over or under a public place	Application to OEH for licence.	Transport-ation of certain types and quantities of hazardous waste and used tyres.
Placing waste in a public place (e.g. on the roadway) other than in accordance with Council's routine procedures	Application to Council.	For a special purpose or private garbage collection where you intend to use the public place
Placing waste on a State Road including Builders Waste Storage Container	Application to Road & Traffic Authority (RTA).	
Disposal of liquid trade waste into the sewer	Application to Hunter Water Corporation.	
Discharge into any water body	Application to OEH	

If any of the above activities is applicable, please contact the relevant authority.

3 SPECIFIC DEVELOPMENT TYPES

3.1 DEMOLITION OF BUILDINGS

This is the stage with the greatest potential for waste minimisation. The first thing that developers should consider is whether it is possible to re-use existing buildings, or parts thereof, for the proposed use. With careful on-site sorting and storage and by staging work programs it is possible to re-use many materials, either on or off-site. Builders should not simply trash a building and dispose of all waste materials to landfill. Instead, a number of colour-coded or clearly labeled bins on-site, or on an ordered retrieval program, should be used to reduce the need for waste disposal to landfill.

Council's Development Control Plan (DCP) outlines when Site Waste Minimisation and Management Plans must be prepared. To assist in the preparation of a Site Waste Minimisation and Management Plan, Table 2 below provides examples of avoiding landfill waste generation and recycling construction materials.

Where building materials cannot be avoided, recycled or reused on-site, there is a growing market for such products off-site. A list of local outlets, such as second hand building yards, is provided in the Reuse, Repair & Recycle Directory for the Lower Hunter Region (updated periodically).

There are financial benefits for separating waste to achieve a reduction in the amount of waste needing disposal. Owners, developers and builders can save money by not duplicating material needs and ordering/ delivery costs.

Table 2 - Avoidance Potential

MATERIALS ON-SITE	AVOIDANCE
Concrete	Retain existing driveways, paths, footings, slabs etc
Bricks	Retain existing walls, buildings and fences
Roof-tile	Retain existing roofs or colour treatments/cleaning
Hardwood beams	Re-use or recycling on site
Other timber	As above
Doors, windows, fittings	Design as an architectural feature of new development
Glass	As above
Synthetic and recycled rubber (e.g. under carpets)	Protect/cover and re-use
Significant trees	Design into new development
Greenwaste	As above
Overburden	Avoid excessive excavations

3.2 CONSTRUCTION OF BUILDINGS

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

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

- Steel,
- Non-ferrous metals,
- Glass,
- Paper,
- Concrete,
- Brick, and
- Cardboard packaging material.

It is important to note that waste separation may offer cost savings on the usual costs of disposing of mixed waste at landfill sites. Cost savings may also be achieved at the construction stage by purchasing reusable and recycled-content materials or reusing materials salvaged from the demolition stage of development.

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

- Ordering the right quantities of materials (Purchasing Policy),
- Prefabrication of materials,
- Re-using formwork,
- Modular construction and basic designs to reduce the need for off-cuts,
- Minimising site disturbance and limiting unnecessary excavation,
- Careful source-separation of off-cuts to facilitate re-use, resale or efficient recycling,
- Early consideration of the demolition of a building when its useable life has expired (e.g. can components be easily dismantled),
- Choice of landscaping to reduce green waste, and
- Co-ordination and sequencing of various trades.

Council's DCP outlines when a Site Waste Minimisation and Management Plan is required to be prepared.

Parts 4 and 5 provide further information on particular development types and design and location characteristics to assist in the preparation of a Site Waste Minimisation and Management Plan.

4 ONGOING WASTE MANAGEMENT FACILITIES

4.1 SINGLE DWELLINGS

Waste Cupboard

It is widely recognised that the best way to ensure good management is to separate garbage, recyclable and reprocessable materials at the source.

As the source of most waste in the household is the kitchen, it is appropriate for facilities to be available for the source separation of garbage, recyclable and compostable materials. This may take the form of a waste cupboard. The waste cupboard, or other storage area within the dwelling (most likely located in the kitchen), should be of sufficient size to hold a single day's waste. This cupboard may be located in the space below the kitchen sink.

Waste Storage and Recycling Area

Additional to the provision of a waste cupboard, each dwelling should be provided with an area capable of accommodating:

- Council's standard garbage and recycling containers (refer to Section 5.5 for details), and
- A personal composting bin/worm farm.

The area should have unobstructed access to Council's usual Collection Point and where possible be located within the rear yard to avoid visual clutter from the street.

Where this is impractical and/or inaccessible, waste containers should be stored behind suitable screening or within the garage or carport, with composting and worm farm facilities in a separate location that will not impact on adjoining premises.

Special Waste

Where special waste material is generated (such as medical wastes and household hazardous waste), special arrangements are required. These arrangements should be discussed with Council and the Environment Protection Authority.

"There was a great sense of satisfaction in achieving the savings and also making a contribution to the environment"

4.2 MULTIPLE DWELLING HOUSING & APARTMENT BUILDINGS

4.2.1 INDIVIDUAL UNITS

Waste Cupboards

Every dwelling should have a waste cupboard or alternative temporary storage area of sufficient size to hold a single day's waste and to enable source separation of garbage, recyclables and compostable material. This may be located in the space below the kitchen sink.

In some circumstances waste management responsibility can be internalised, with each dwelling having its own garbage and recycling bins and individual unit holders taking responsibility for on street placement. This would be the case for most small-scale multiple dwelling housing developments and dual occupancies.

In these circumstances each unit should have a waste storage and recycling area, preferably at the rear and easily accessible to the collection point.

4.2.2 COMMUNAL FACILITIES

Waste Storage and Recycling Areas/Rooms

In the following circumstances a communal on-site waste storage and recycling area or room should be provided as part of the development:

- Apartment buildings,
- Single level developments where the number of bins would not fit comfortably on the street frontage or would detrimentally affect residential amenity,
- Where the status of the roadway (heavy traffic) requires on-site access,
- Where site characteristics make access to the street difficult for individual unit holders, for example steep sites, and
- Where such arrangements suit collection services.

The communal area should be capable of accommodating Council's required number of standard waste containers for each individual dwelling and for the development as a whole.

Where such an area is proposed, additional space for the storage of bulky waste, such as clean-up materials awaiting removal, or recycling, should be provided.

On difficult or steep sites, sites with particular natural features such as watercourses, or sites with two street frontages, it may be appropriate to have a number of waste storage and recycling areas/rooms to minimise distances, prevent site pollution and facilitate easy collection.

For large-scale proposals there may be a number of garbage and recycling rooms, operating in conjunction with a main collection area located adjacent to the designated collection point. At appropriate times, waste is transported from the garbage and recycling rooms to the main collection area for collection. Refer to Section 4.0 for location and access requirements.

In each case the onus is upon the body corporate to ensure on-street placement where possible. Where this is not possible and Council or private vehicles must enter the site, a separate collection area should form part of the development and legal access agreements obtained.

Communal Composting Areas

An area within the development site should be nominated for on-site communal composting.

Whilst the operation of such a facility will depend upon the attitudes of unit holders and their management, the potential should exist. It is appropriate for this area to be incorporated in the landscaping plans for the development.

If a communal composting area is proposed, the following should be taken into consideration:

Odour – Location should consider proximity to individual units/dwellings, including adjoining development, and location of the site drainage system,

The facility should be purpose-built. There are a variety of techniques available and advice on this and public health considerations can be obtained from Council's Development Assessment and Compliance Division,

The facility should be carefully signposted and be the responsibility of the body corporate or managing agent.

Volume Reduction Equipment

Where it is considered necessary, compaction and/or other volume reduction equipment may be provided in the garbage and recycling room. Such equipment could save space on site, where difficult design constraints occur.

Waste reduction equipment should be considered for all buildings greater than 25 metres high. Volume reduction equipment should not be used on recyclable materials. Removing contaminants from compacted recyclables is almost impossible and markets will reject compacted loads containing any contaminants.

A reduction in room area requirements would not necessarily result where such equipment is proposed. It is considered that area requirements should allow for possible future changes in on-site waste management arrangements.

4.3 COMMERCIAL & RETAIL PREMISES

Waste Storage and Recycling Area

Buildings should be provided with a waste storage and recycling area designed and constructed in accordance with requirements of Section 4.2 and should be flexible in size and layout to cater for future changes of use.

The size should be calculated on the basis of waste generation rates (refer to Appendix 1 for advice on anticipated waste generation rates) and proposed bin sizes.

Calculation of waste generation rates should be based on industry standards and discussed with collection service providers (refer to the Reuse, Repair & Recycle Directory for the Lower Hunter Region for contacts). In all cases, source-separation, such as for recyclables, is paramount.

In calculating generation rates and area requirements, the operation of staff kitchen facilities should be included.

Where possible, access should be from the rear of the property. In all cases, access to normal collection points should be unimpeded. For large developments a communal collection area should be included within the design.

Special Waste

Where special waste material is to be generated, such as chemicals and other products passed their expiry date, special arrangements are required. Contact should be made with Council and the OEH.

When To Have Communal Facilities

Where multiple occupancy, such as a series of shops or an office complex, is proposed, communal waste management facilities may be appropriate. For instance:

- Where the design makes it difficult for all units to have ready access to a collection point, and/or
- Where site characteristics restrict entry of vehicles.

The communal waste management facilities should be designed to enable each separately tenanted or separately occupied area within the building or complex to be provided with a designated and clearly identified space for the housing of sufficient containers to accommodate the quantity of waste and recyclable material generated.

The use of volume reduction equipment may be appropriate where space is a problem.

A building containing more than three storeys should be provided with an acceptable method for transporting waste from each level to a waste storage and recycling room. This could be a goods lift, a chute system, or some other means of providing direct and convenient internal access.

Where such facilities are utilised, space should be provided on each floor for temporary storage of waste material and recyclables.

Ongoing management is a significant issue and should be reflected in preparation of a Site Waste Minimisation and Management Plan.

Paper and Cardboard

For offices and commercial premises, particular attention should be paid to paper and cardboard recycling, with source-separation at the waste storage and recycling area or room. Details should be included in the Site Waste Minimisation and Management Plan.

Education of staff and regular collection services is also important.

Food Shops, Restaurants and Refrigerated Garbage Rooms

Special attention should be paid to food scrap generation. Specialised containment should be provided and a regular collection service arranged to ensure that no impacts result from the activity.

Refrigerated garbage rooms should be provided when large volumes, perishables such as seafood, and infrequent collections are anticipated.

Grease Arrestors

Hunter Water Corporation regulates trade waste requirements for the installation of grease arrestors and liquid waste. Advice on trade and liquid waste can be gained by contacting Hunter Water Corporation Trade Waste Division on (02) 4979 9590.

4.4 INDUSTRY

4.4.1 SINGLE USE OPERATIONS

Buildings should be provided with a waste storage and recycling room designed and constructed in accordance with the requirements of Section 5.0, capable of providing source-separation of paper, metal, plastics, putrescible and liquid waste and flexible in size and layout to cater for a range of uses.

The size should be calculated on the basis of waste generation rates (refer to Appendix 1 for advice on anticipated waste generation rates) and proposed bin sizes.

Calculation of waste generation rates should be based on industry standards and discussed with collection service providers (refer to the Reuse, Repair & Recycle Directory for the Lower Hunter Region for contacts). In all cases, source-separation, such as for recyclables, is paramount.

In calculating generation rates and area requirements, the operation of staff kitchen facilities should be included.

Where possible, access should be from the rear of the property. In all cases, access to normal collection points should be unimpeded. For large developments a communal collection area should be included within the design.

4.4.2 FACTORY UNITS

Factory-unit developments are less predictable than single-use operations. A number of basic, up-front decisions and assumptions should be made:

- Individual or communal facilities?
- The degree of source-separation, and
- How to estimate generation rates, and therefore area requirements.

In some circumstances waste management responsibility can be internalised, with each unit having its own garbage and recycling bins and individual unit holders taking responsibility for putting them out for collection.

Waste Generation Rates

Waste generation rates vary over time. Site Waste Minimisation and Management Plans should include the proposed use of volume reduction equipment, which may be appropriate where space is a problem. Volume reduction equipment should only be utilised if recyclable material proposed for compaction is appropriately separated and does not contain contaminants.

Special Waste

Production, storage and disposal of hazardous wastes, such as contaminated or toxic materials or products, require particular attention. Contact should be made with the OEH.

4.4.3 COMMUNAL FACILITIES

In the following circumstances, a communal waste storage and recycling area/room should be provided:

- Where the design makes it difficult for all units to have ready access to a collection point, and
- Where site characteristics restrict entry of vehicles.

The communal waste management facilities should be designed to enable each separately tenanted or separately occupied area within the building or complex to be provided with a designated and clearly identified space for the housing of sufficient containers to accommodate the quantity of waste and recyclable material generated.

The area(s) should be flexible in design so as to allow for future changes of use of the units.

"Forward planning and preparation of the site have resulted in optimum recycling rates both cost and resource savings.

The tendering advantage gained by incorporating lower disposal costs through recycling is a major factor in the company's success"

5 LOCATION AND DESIGN OF WASTE MANAGEMENT FACILITIES

5.1 WASTE MANAGEMENT FACILITIES

Waste management facilities can be classed as one of the following:

- Waste storage and recycling areas, where waste and recyclable material are stored in the open and properly screened.
- Waste storage and recycling rooms, within buildings, for holding waste and recyclable material. Compaction equipment may be provided and rooms could be refrigerated.
- Collection areas, separate from storage areas, where waste is located immediately before collection.

These facilities can be used in combination. The facilities that are used will depend upon the nature and size of the proposed development.

All waste management facilities should:

- Be conveniently located to enable easy access for on-site movement and collection,
- Relate to other loading/unloading facilities,
- Have sufficient space for the quantity of waste generated and careful source separation of materials, such as recyclables,
- Have sufficient space to comfortably contain any on-site treatment facilities, such as compaction equipment,
- Have adequate weather protection and, where appropriate, be enclosed or undercover,
- Be secure and lockable,
- Be well-ventilated and drained to the sewer,
- Be attractive, adding to the scene, not detracting from it, and
- Be clearly signposted to ensure appropriate use.

5.2 PLACING A WASTE STORAGE/RECYCLING CONTAINER IN A PUBLIC PLACE

5.2.1 SAFETY

The following matters that relate to safety should be considered:

- Location should not interfere with sight lines of drivers entering or leaving premises.
- Skips should:
    - Be clearly visible,
    - Be located in well lit areas,
    - Be lightly coloured,
    - Have rear marking plates, complying with requirements for heavy vehicles/ trailers,
    - Have reflective tape,
    - Enable secure storage of all materials.

5.2.2 NUMBERS AND TYPES OF CONTAINERS

While it is normal practice for single skips to be provided for large-scale operations where a variety of distinct materials will be stored and transported, consideration should be given to planning the operation so that materials can be handled separately. This would assist in maximising re-use/recycling and minimising disposal at landfill.

Developers should source separate materials of value, such as doors and windows, where possible. The Reuse, Repair & Recycle Directory for the Lower Hunter Region (updated periodically) should be of assistance in locating appropriate contacts for the recycling of valuable materials.

The size of the container should be appropriate to the nature of waste generated and the location. In general, the following dimensions are the acceptable ranges:

- Length: 2.0 - 5.5m,
- Width: 1.5 - 2.2m,
- Height: 1.0 - 1.5m.

5.2.3 LOCATION OF CONTAINERS

Waste storage and recycling containers should not:

- Be located where there is insufficient space for placement within the user's premises,
- Front adjoining properties without neighbour's approval,
- Be placed on roadside locations where kerb side parking restrictions apply, such as no stopping, one hour parking,
- Be placed on footpath locations at an intersection or within 6 metres of a corner, where there are large volumes of pedestrian traffic or where obstruction to vehicle access, sight lines or service facilities is likely,
- Be used to store putrescible, inflammable or explosive material. Contact should be made with the OEH regarding disposal of these materials,
- Be placed on roadside locations where parking, stopping and standing of motor vehicles is prohibited. These locations are often not signposted and include the following:
    - At an intersection or within 6 metres of the property line, whether controlled by traffic signals or not,
    - Within 9 metres of the approach side and 3 metres on the departure side of a pedestrian crossing,
    - Within 18 metres of the approach side and 9 metres on the departure side of a children's school crossing,
    - Within 18 metres of the approach side and 9 metres of the departure side of a bus stop,
    - On a hill or curve where the view is not clear for at least 50 metres,
    - Within 3 metres from any separation lines, and
    - On a median strip or traffic island.

Additionally, in relation to disturbance of traffic flows and stormwater drainage, waste storage and recycling containers should not be placed in the following locations:

- On arterial/sub-arterial roads,
- In narrow streets,

- Where driveways will be blocked,
- Where it would require pedestrians to use the roadway,
- Where stormwater drainage will be impeded.

5.2.4 WASTE MANAGEMENT IN PUBLIC PLACES

Recycling at home has been a part of everyday life for more than ten years. In addition, recycling is not just an accepted but an expected practice for all workplaces. People now also expect to be able to recycle in other places they visit including public places.

Public places are where there is none or limited control over who has access. Some public places are accessible all the time, such as most parks. Others form part of larger facilities that can be closed when not in use, such as shopping centres.

In some cases, public places are areas where people are expected or encouraged to gather, such as shopping centres and BBQ areas.

How public places are used varies day-by-day as well as with the seasons. Generally summer is the busiest time, especially for open-air public places. The following organisations and individuals are generally responsible for waste management and recycling in public places:

- Local council officers,
- Shopping centre managers or operations managers,
- Managers of sporting facilities,
- Rangers and managers or parks and gardens,
- Waste and recycling contractors,
- Building managers.

The type of waste management/recycling system used in public places depends on the use, operation times and types of waste generated, for example, a shopping centre will generate quite different types of waste than a sporting field. Some examples of different systems are:

- Litter bins with recycling bins for comingled materials, that is several different recyclables collected mixed together,
- Litter bins with recycling bins for only one type of material, for example only aluminium cans,

Litter bins with a recycling bin and a bin for food and paper, both of which can be composted.

Overhead signs are a key part of the success of a public waste management/recycling system. Signs that are visible from a distance tell people where the recycling station is located and then they are more likely to use it. How visible the sign should be from a distance will depend on the size and type of public place in which the stations are located.

Table 3 lists recyclable materials and the colour of the bin for their collection.

Table 3 - Colour Coded Waste Containers

Recyclable Material	Bin Colour
Mixed Glass (bottles & jars)	Red
Aluminium Cans	Yellow
PET Plastic Bottles	Orange
Comingled Recyclables*	Green with yellow lid
Compostables	Maroon
Garbage	Black

*Recyclables collected mixed together for later separation at a Materials Recovery Facility.

Examples of standard recycling container signs are contained in Figure 1.

Figure 1 - Standard Recycling Container Signage

Recycling bins should be placed where items are likely to be thrown away rather than where they are bought or consumed.

Bins should be as easy to get as possible so that patrons do not have to go out of their way to use them. They need to be placed where patrons will pass close-by. The following locations provide for the most effective use of recycling bins:

- Near entrances and exits – patrons will see them on the way in and use them on the way out,
- Near toilets – this is a necessary trip and often used to dispose of rubbish. The bins will be seen by everyone who uses the toilets,
- Known eating areas near tables or popular picnic locations,
- Between eating/shopping areas and car parks – people will pass them on the way to and from their cars,
- Either end of pedestrian corridors – consider the 'unofficial' pedestrian walkways.

5.3 DESIGN OF WASTE STORAGE AND RECYCLING AREAS/ ROOMS

In some cases, a waste storage and recycling area could simply be a nominated area of the site, well drained and easily accessible from the collection point.

For instance, single dwellings or multiple dwelling housing, where each dwelling is responsible for their own waste. In other cases, such as where a communal area is required, a more detailed design is required.

The first step in designing areas and rooms is to calculate floor area requirements. Once area requirements are considered, more detailed design can proceed.

It may be appropriate in larger-scale residential and commercial developments to provide a waste storage and recycling room within the building. Waste storage and recycling rooms should reflect the design of the main building, including building materials and finishes.

The following should be considered in the design of waste storage and recycling rooms:

- Adequate dimensions to accommodate garbage and recyclables,
- Aesthetically pleasing,
- Clean and healthy: free from dust, litter, odour and noise. Safe for collectors,
- Appropriate ceiling height to type of service,
- Sufficient door width for installation and maintenance, wider for containers,
- Materials, design and landscaping complement the building and streetscape,
- Accessible for occupants and collection service operators,

- Storage and drainage racks are of durable, impervious, non-corrosive material and separated from walls to allow easy access,
- Adequate mechanical and natural ventilation,
- Adequate water supply, including hot water for commercial uses,
- The room is well drained to a floor waste connected to the sewer,
- Impervious floor, wall and ceiling material – steel trowel finished concrete floor (minimum 75mm thick) and cement rendered walls,
- Entry of vermin is prevented,
- Adequate separation from walls where containers are used is provided,
- Durable and smooth ceilings,
- Self-close and close fitting doors,
- Durable doors, openable from inside and outside,
- Bump rail 50mm clear of walls,
- Adequate lighting, controllable from inside and outside.

5.4 LOCATION AND ACCESS

Perhaps the most obvious matter to consider for waste collection services is accessibility.

If the collection point is on the street, the maneuverability of collection vehicles through the street is important. Generally, this is a large-scale subdivision matter. Most development applications will relate to an existing street system.

The first decision is whether access onto the site is required. This would depend on the following:

- The size of the development – whether travel distances for occupants require on-site storage and collection, and
- The volume of waste – whether the number of bins is too great for the width of street frontage.

The location of on-site storage and recycling areas should reflect consideration of the following:

- Accessibility to the usual or arranged on or off-site collection point,
- Access for individual occupants, and
- Proximity to site occupants and adjacent properties in terms of noise and odour control.

If access onto the site is required and Council agrees to collect waste on the site or permits the on-site collection by a private contractor, the following matters should be considered:

- The convenient placement of waste storage and recycling areas and/or rooms,
- Location of the area away from living/working space in buildings,
- the area should be weather protected,
- Appropriate signposting, such as for recycling bins,
- Proposed truck sizes to be entering the site,
- Adequate driveway widths and height at entrance ways – minimum driveway width of 3.5 metres, maximum grade of 1:8, minimum vertical clearance 4.3 metres,
- Structural capability of driveway to carry fully loaded waste collection vehicles,
- On-site maneuverability – Turning circles or three point turn arrangements so that vehicles enter and leave the site moving in a forward direction, minimum turning circle 21.7 metres,

Legality of access – This could be by the creation of an easement. In some circumstances, private arrangements may be necessary for such on-site collection.

5.5 STANDARD BIN SIZES AND ACCESS REQUIREMENTS

Lake Macquarie City Council uses standard 240 litre mobile garbage bins in its weekly garbage collection. Council's current recycling contractor, Solo Waste Australia, uses standard 240 litre mobile recycling bins in its fortnightly kerb-side collection service.

Mobile garbage and recycling bins should be kept at the rear of the premises. If stored at the front, the bins should be appropriately screened.

In designing waste storage and recycling areas/rooms, the area/room should be large enough to house an appropriate number of garbage and recycling bins for the premises with ready access for residents.

CASE STUDY

SMALL BUILDER COMMITS TO WASTE MANAGEMENT

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

A Site Waste Minimisation and 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 foreman,

Space was made for on-site source separation in the early stages of the job.

An 80percent reduction in waste diverted to landfill was achieved on this project. The company chose to implement a Site Waste Minimisation and 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.

6 DICTIONARY

For the purposes of these Controls the following words have the meaning specified.

Class means the classification of a building as determined by the Building Code of Australia.

Collection point means the usual (or agreed) point on the footpath/roadway, or on-site, where garbage and recyclables are loaded onto vehicles.

Collection area means the location where garbage or recyclable material is transferred from a building's storage containers to a collection vehicle for removal from the site.

Compostable material means vegetative material capable of being converted to humus by a biological decay process.

Dwelling means a room or number of rooms occupied or used, or, so constructed or adapted as to be capable of being occupied or used, as a separate domicile.

Garbage means refuse or waste material other than trade waste, effluent, compostable material, green waste or recyclable material.

Garbage and recycling room means a room where garbage and recycling receptacles are stored, awaiting reuse or removal from the premises.

Green waste means vegetative matter including trees, branches, shrubs, cuttings, lawn clippings and untreated timber and wood products.

Hazardous waste means any waste that, because of its physically, biologically or chemically damaging properties, is capable of causing a danger to the life or health of any living thing if it is released into the environment.

Recyclable means capable of being reprocessed into useable material or re-used.

Site Waste Minimisation and Management Plan means a checklist showing the volume and type of waste to be generated, stored and treated on site, and how the residual is to be disposed of.

Special waste means a waste that posed or is likely to pose an immediate or long-term risk to human health or the environment. This includes hazardous waste, clinical waste and contaminated waste.

Special arrangements need to be made for the management of these wastes.

Storey means a habitable or occupied space within a building between one floor level and the next floor level above, or if there is no floor level above, the roof.

Trade waste means refuse or waste material arising from any trade or industry but excludes liquid waste, demolition waste, building waste, special waste, contaminated waste, green waste or recyclable waste.

Volume Reduction Equipment means devices, which reduce the volume of waste or recyclable material including compressing devices such as compactors and balers, and shredding, pulverising or crushing devices.

Waste includes:

- any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment, or
- any discarded, rejected, unwanted, surplus or abandoned substance, or
- any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or for recycling, reprocessing, recovery or purification by a separate operation from that which produced the substance.

Waste storage and recycling area means a designated area or a combination of designated areas upon the site of a building for the housing of approved containers to store all waste material (including recyclable material) likely to be generated by the buildings' occupants.

7 REFERENCES

- Combined Sydney Regional Organisation of Councils, “Waste Not” – A Model DCP and Local Approvals Policy.
- Commonwealth Department of the Environment and Heritage, 1998, Waste Wise Construction Program Handbook: Techniques for Reducing Construction Waste.
- Inner Sydney Waste Board, 1998, Waste Planning Guide for Development Applications.
- Inner Sydney Waste Board, 2000, Why Waste When Builders and Renovators Can Save on Waste.
- Lake Macquarie City Council, Development Control Plan.
- NSW Waste Boards, 1999, Public Place Waste Management Guidelines.
- Resource NSW, Update Periodically, Reuse, Repair & Recycle Directory for the Lower Hunter Region.
- TAFE (NSW), 1997, Minimising Construction and Demolition Waste: A Learning Resource Package for Industry Training and Vocational Education.

8 CONTACTS

Contact	Address	Phone	Internet Address
Lake Macquarie City Council	Box 1906, Hunter Region Mail Centre NSW 2310	(02) 49210 333	www.lakemac.com.au
Office of Environment and Heritage – Sustainability Programs	PO Box 488G Newcastle NSW 2300	02 4908 6800	http://www.environment.nsw.gov.au/
TAFE (NSW) Construction and Transport Division	Block E, Cnr Showground and Victoria Roads, Castle Hill NSW 2154	(02) 9204 4600	www.tafensw.edu.au

9 APPENDICES

9.1 APPENDIX 1 - TYPICAL WASTE GENERATION RATES

(For Commercial and Retail Operations)

TYPE OF PREMISES	WASTE GENERATION	RECYCLING GENERATION
Backpackers accommodation	40L/occupant/week	20 litres/occupant/week
Boarding house, Guest house	60L/occupant/week	20 litres/occupant/week
Food Premises:		
Butcher	80L/100m² floor area/day	Discretionary
Delicatessen	80L/100m² floor area/day	Discretionary
Fish Shop	80L/100m² floor area/day	Discretionary
Greengrocer	240L/100m²/day	120L/100m²/day
Hairdresser	60L/100m² floor area/day	Discretionary
Restaurants	10L/1.5m² floor area/day	2L/1.5m²/day dining
Supermarket	240L/100m² floor area/day	240L/100m²/day
Takeaway	80L/100m² floor area/day	Discretionary
Hotel	5L/bed/day 50L/100m²/bar area/day 10L/1.5m²/of dining area/day	50L/100m²/of bar and Dining areas/day
Licensed club	50L/100m²/bar area/day 10L/1.5m²/of dining area/day	50L/100m²/of bar and Dining areas/day
Motel (without public restaurant)	5L/bed/day 10L/1.5m²/of dining area/day	1L/bed/day
Offices	10L/100m²/day	10L/100m²/day
Retail (other than food sales):		
Shop less than 100m² floor area	50L/100m² floor area/day	25L/100m² floor area/day
Shop over 100m² floor area	50L/100m² floor area/day	50L/100m² floor area/day
Showrooms	20L/occupant/week	10L/100m² floor area/day

Source: Waverley Council – Code for the Storage and Handling of Waste.

9.2 APPENDIX 2 – SITE WASTE MINIMISATION AND MANAGEMENT PLAN – DEMOLITION, CONSTRUCTION & ON-GOING OPERATION OF PREMISES

To facilitate waste management and reduction Council requires on-site sorting and storage of waste products pending re-use or collection.

The applicable sections of this Site Waste Minimisation and Management Plan must be completed and submitted with a Development Application.

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 controls within Council's Development Control Plan which aim to reduce the amount of construction and demolition waste to landfill and promote waste avoidance, re-use and recycling.

This form can be copied to allow further information if space is insufficient in the provided table.

OUTLINE OF PROPOSAL

Site Address: _____

_____

Applicant's Name & Address: _____

_____

_____

Phone: _____ Fax: _____

Mobile: _____ E-mail: _____

Buildings and Other Current Structures on the Site: _____

_____

_____

Brief Description of Proposal: _____

_____

_____

_____

The details provided on this form are the intentions for managing waste relating to this project only.

Signature of Applicant: _____ Date: _____

DEMOLITION STAGE

MATERIALS ON-SITE		DESTINATION		
		REUSE AND RECYCLING		DISPOSAL
TYPE OF MATERIAL	ESTIMATED VOLUME (M^3) / Wt.(t)	ON-SITE *Specify proposed reuse or on-site recycling methods	OFF-SITE *Specify contractor and recycling outlet	*Specify contractor and landfill site
Excavation Material				
Green Waste				
Bricks				
Concrete				
Timber – Please specify				
Plasterboard				
Metals – Please specify				
Other – Please specify				
Other – Please specify				

Note: Details of site area to be used for on-site separation, treatment and storage (including weather protection) should be provided on the plan drawings accompanying a Development Application.

CONSTRUCTION STAGE

MATERIALS ON-SITE		DESTINATION		
		REUSE AND RECYCLING		DISPOSAL
TYPE OF MATERIAL	ESTIMATED VOLUME (M^3) / Wt.(t)	ON-SITE *Specify proposed reuse or on-site recycling methods	OFF-SITE *Specify contractor and recycling outlet	*Specify contractor and landfill site
Excavation Material				
Green Waste				
Bricks				
Concrete				
Timber – Please specify				
Plasterboard				
Metals – Please specify				
Other – Please specify				
Other – Please specify				

Note: Details of site area to be used for on-site separation, treatment and storage (including weather protection) should be provided on the plan drawings accompanying a Development Application.

USE OF PREMISES

TYPE OF WASTE TO BE GENERATED	EXPECTED VOLUME PER WEEK	PROPOSED ON-SITE STORAGE AND TREATMENT FACILITIES	DESTINATION
Please specify, for example: • Glass • Paper • Food waste • Off-cuts • Organic (trees, off-cuts, lawn clippings)	• Litres or m3 • See Appendix 1 for estimates relating to Commercial and Retail Uses	For example: • Waste storage and recycling area • On-site composting • Compaction equipment	• Recycling • Disposal • Please specify contractor

Note: Details of site area to be used for on-site separation, treatment and storage (including weather protection) should be provided on the plan drawings accompanying a Development Application.

ON-GOING MANAGEMENT

Describe how you intend to ensure on-going management of waste on-site (e.g. Lease conditions, on-site caretaker/manager).

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