

Lake Macquarie

Development Control Guidelines

Appendices



APPENDIX 1 – Dictionary

In the Waste Management Guideline, the following words have the meaning specified.

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

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

Deconstruction means systematically pulling apart a construction to retrieve resources for reuse or recycling with minimal loss of quality and minimal contamination.

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 waste material that is acceptable in the Lake Macquarie City Council kerbside garbage collection service, other than compostable material (green waste) or recyclable material.

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

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

Mobile Garbage Bin (MGB) means a wheeled bin, with Council-approved design, that can be emptied by waste collection vehicles. Typical sizes of MGBs in the Lake Macquarie City Council area are 140, 240, 360, 660, 1100 litres.

Operational Use means ongoing use of the property following completion of demolition or construction activities.

Problem waste means a waste that has particular management requirements. These can include batteries, light globes, paint, chemicals, gas bottles, electronic waste, mattresses, sharps, asbestos.

Recyclable means capable of being reprocessed into useable material or reused.

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.

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 solid (or contained liquid) substance that may be discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment,
- 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 Management Plan means the submission required with some development applications showing the volume and type of waste to be generated, how it will be stored on site, whether any waste will be treated on site and how waste will be removed from site and whether this will be for processing, recycling, or disposal.

APPENDIX 2 – Waste collection vehicle dimensions and clearance distances

In order to be able to collect waste on site, turning circles and overhead clearances for any on-site roads or driveways on which waste collection vehicles may travel must allow for the following vehicle specifications that cover Council and Council's contractors' waste collection vehicle fleets. In addition:

- ideally, the waste collection vehicle will be able to enter the site in a forward direction and leave the site in a forward direction, without reversing on the site;
- vehicles should not be required to make a three point turn to turn corners;
- the longitudinal road gradient must be less than 1:7 (15 per cent) and the turning heads must be maximum gradient of 1:10 (10 per cent);
- if there is to be kerbside collection in an outside turn on a corner or in a cul-de-sac, then a minimum kerb radius of 10 metres is required;
- the pavement needs to be industrial-strength, designed for a maximum wheel loading of 7 tonnes per axle. For an industrial driveway entry on public land, this requires 150mm thick 20MPa concrete with F82 mesh, but the specifications should be checked with a qualified engineer; and
- minimum pavement width is 5.0m (or 6.5m if more than 24 vehicles park along the road, unless suitable passing bays are provided).

To enter building basements and beneath building overhangs, the following requirements must be met:

- ramp access gradient must be no more than 1:8;
- the height clearance over all areas traversed by waste collection vehicles must be sufficient for the waste collection vehicles to be used to enter, which will be at least 3.8 metres height clearance;
- a turn area with turn circle clearance clear of all obstructions and not used for car parking so that the vehicle can exit the site in a forward direction, or (better) an exit continuing in the forward direction from the entrance; and
- the ramp and floor pavement needs to be industrial-strength, designed for a maximum wheel loading of 7 tonnes per axle. For an industrial driveway entry on public land, this requires 150mm thick 20MPa concrete with F82 mesh, but the specifications should be checked with a qualified engineer.

Whenever a facility is designed to have waste collection vehicles reverse, potential disturbance to people in the vicinity from the reversing warning beepers noise needs to be mitigated and potential collisions need to be prevented in the reversing path. Designs that avoid or minimise reversing are preferred as this reduces traffic risks and noise levels.

Turning circle templates are published by AustRoads at <http://www.austroads.com.au/road-construction/road-design/turning-path-templates> for 8.8 metre length rigid truck/bus and 12.5 metre rigid truck/bus at various turning speeds up to 30 km/hour.

Lake Macquarie City Council provides Standard Drawing EGSD-701 for a cul-de-sac sufficient for 12.5 metre length heavy rigid vehicles.

Lake Macquarie City Council Waste Collection Vehicles

The current waste collection vehicle fleet size for Lake Macquarie City Council and its contractors fall between 8.8 metre and 12.5 metres.

For more information about traffic and access issues, please also refer to the Lake Macquarie City Council *Traffic Impact Statement and Vehicle Access Guideline*.

Typical Waste Collection Vehicles used in the Lake Macquarie City Council area

The three most common types of waste collection vehicles used around the Lake Macquarie area by both Council and private waste collection service providers for collecting waste contained in mobile garbage bins are as follows:

- **Side lift waste collection vehicles** lift smaller 140 litre, 240 litre and 360 litre bin sizes by pulling alongside the kerb, with bin to the left of the vehicle and with a side arm levered out towards the bin. Grippers extend from the arm, grabbing around middle and sides of the bin, then lift the bin in an arc above the truck hopper. As the bin turns upside down, the lid hangs open and the waste drops into the truck's hopper. The driver lowers the bin down to the ground, then moves on to the next bin.
- **Rear lift waste collection vehicles** usually lift larger mobile bins 660 – 1100 litres in size. They can lift smaller bins as well, such as public place bins located in parks and along high streets. Rear-lift vehicles reverse up to the bin or someone manually moves the bin to the rear of the vehicle. Bins are hooked onto a lifter comb mounted on the rear of the vehicle and hydraulically lifted to tip the bin upside down allowing the bin's contents to fall into the rear hopper before being lowered back down. The hopper opening is lower on the vehicle than other vehicles allowing them to require less overhead clearance when operating.
- **Front lift waste collection vehicles** drive directly up to large mobile and fixed position skip bins and insert forked lifting hooks to lock onto the sides of the bins. The bins are lifted up over the front of the truck to the hopper located at the front of the truck body behind the driver's cab. The waste tips into the hopper and the bin is lowered back down.
- **Pantech waste collection vehicles** are used for transporting bins and containers to specialised waste disposal, such as medical wastes, quarantine wastes, wastes requiring refrigeration and confidential material. The bins are placed on the vertical lifter and secured inside the Pantech container, which may be refrigerated for some medical wastes.

The following dimensions in Table 26 are the largest dimensions between various side lift waste collection vehicles in the fleet.

Table 26 - Dimensions of side-lift collection vehicles (for servicing 140 litre to 360 litre bins)

Side-Lift Collection Vehicles (for 140 litre to 360 litre mobile bins)	
(metres)	Waste collection vehicles (maximum dimension)
Vehicle length overall	9.64 m
Vehicle width overall	2.5 m
Front overhang	1.51 m
Wheelbase	5.34 m
Rear overhang	2.91 m
Turning circle kerb to kerb	18.7 m
Tuning circle wall to wall	19.2 m
Front of vehicle to side arm	3.3 m
Maximum reach of side arm	1.37 m
Travel height	3.98 m
Clearance height for loading	4.2 m
Maximum bin lift weight for lift arms	80kg

Side lift waste collection vehicles typically have rear double axles with a 4.650m wheelbase from front axle to the forward of the rear axles. However, the trucks' rear overhang, which impacts the swept path, is measured from the mid-point of the rear axle pair and is 5.335m.

Table 26 lists the largest dimensions of the council and contractor's fleets of rear lift vehicles. These are used for 660 litre or 1100 litre bin sizes, or sometimes for "blue dot" garbage services (that assist people who are unable to put their bins out to the kerb).

Table 27 - Dimensions of rear-lift collection vehicles (for 660 litre or larger bins)

Rear-Lift Collection Vehicles (for 660 litre and larger bins)	
(metres)	Waste collection vehicles (maximum dimension)
Vehicle length overall	8 m
Vehicle width overall	2.5 m
Turning circle	25 m
Travel height	4.3 m
Clearance height for loading	4.3 m
Gross weight (vehicle plus maximum payload)	22.5 Tonnes

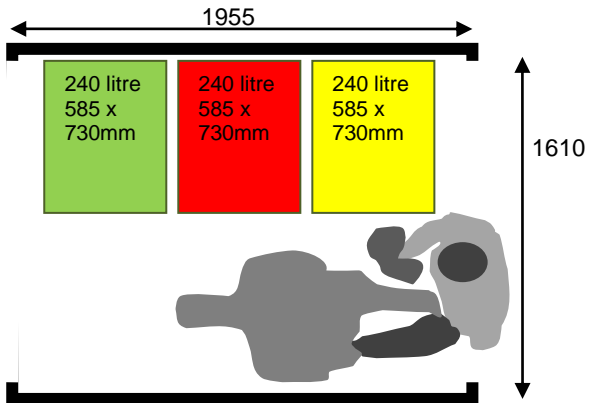
Table 28 lists the dimensions of some contractor's fleets of front lift vehicles. These are used for 1.5 cubic metre and three cubic metre bin sizes.

Table 28 - Dimensions of front-lift collection vehicles (for large skip bins)

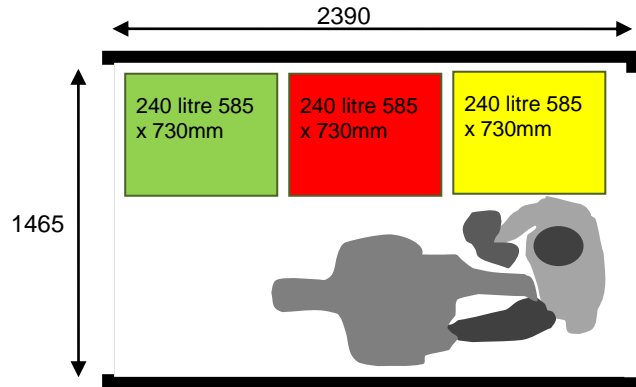
Front-Lift Collection Vehicles (for larger bins)	
(metres)	Waste collection vehicles (maximum dimension)
Vehicle length overall	9.9 m
Vehicle width overall	2.5 m
Front overhang	1.42 m
Wheelbase	5.84 m
Rear overhang	2.64 m
Turning circle kerb to kerb	22.1 m
Tuning circle wall to wall	23.6 m
Travel height	3.64 m
Clearance height for loading	6.1 m

Front-lift vehicles must drive forward up to the bin and reverse away after replacing bin, unless bins can be moved from their storage location to the front of the vehicle.

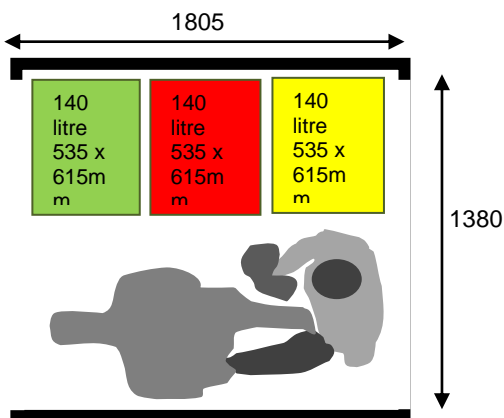
APPENDIX 3 – Example shared bin storage areas



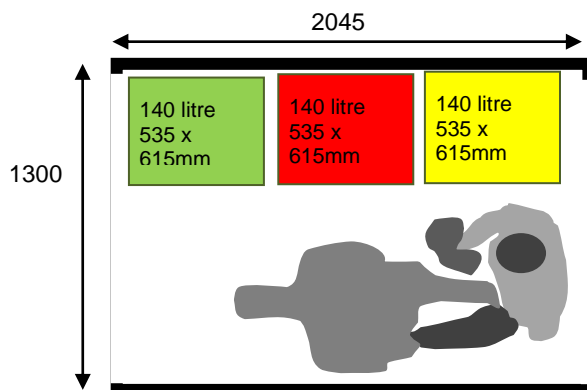
**Storage for 1 set of 240 litre bins:
1955 x 1610 mm internal dimensions
Services 1 house or 1 - 2 units**



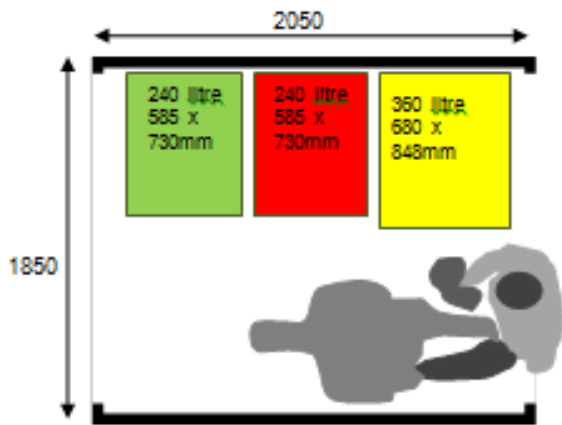
**Storage for 1 set of 240 litre bins (sideways):
2390 x 1465 mm internal dimensions
Services 1 house or 1 - 2 units**



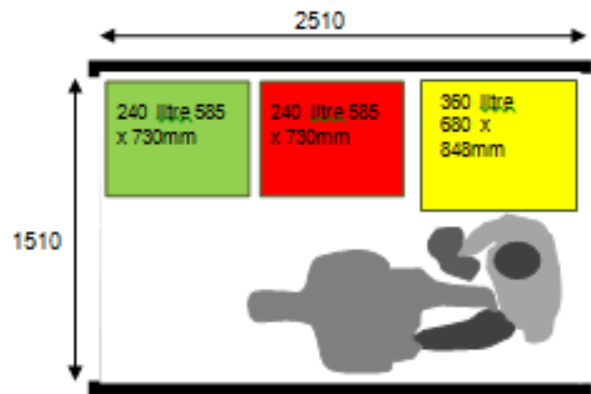
**Storage for 1 set of 140 litre bins:
1805 x 1380 mm internal dimensions
Services 1 unit (downsize strata package)**



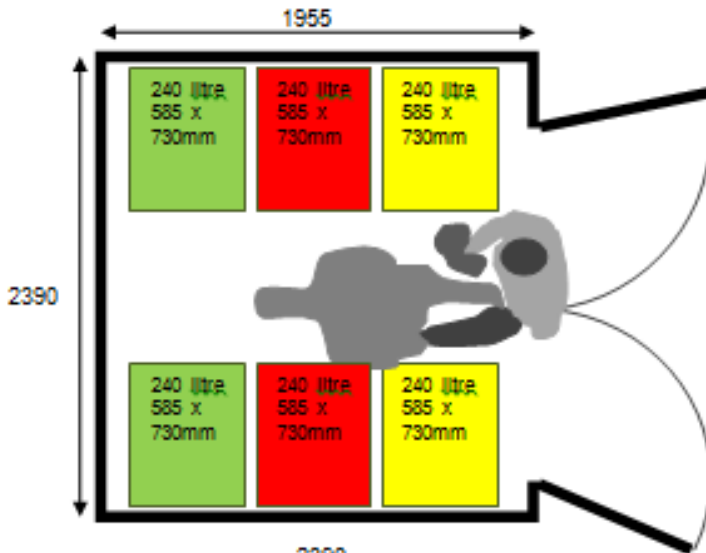
**Storage for 1 set of 140 litre bins
(sideways):
2045 x 1300 mm internal dimensions
Services 1 unit (downsize strata package)**



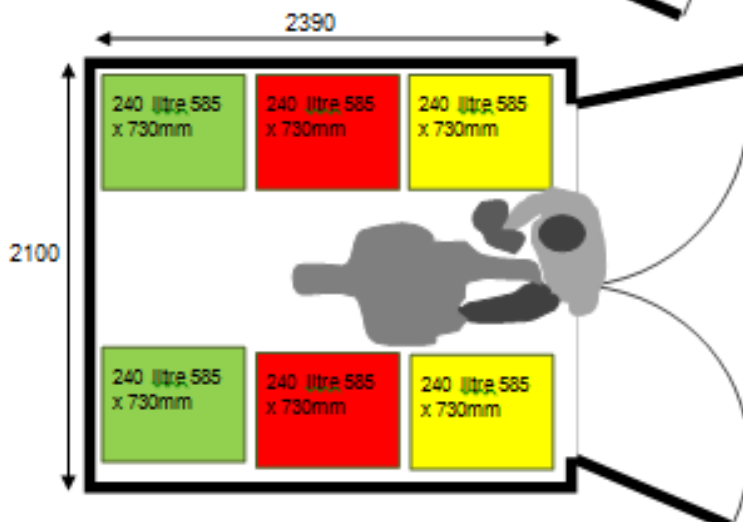
Storage for 1 set of 240 litre bins with 360 litre upsized recycling bin:
2050 x 1850 mm internal dimensions
Services 1 house or 1 - 2 units



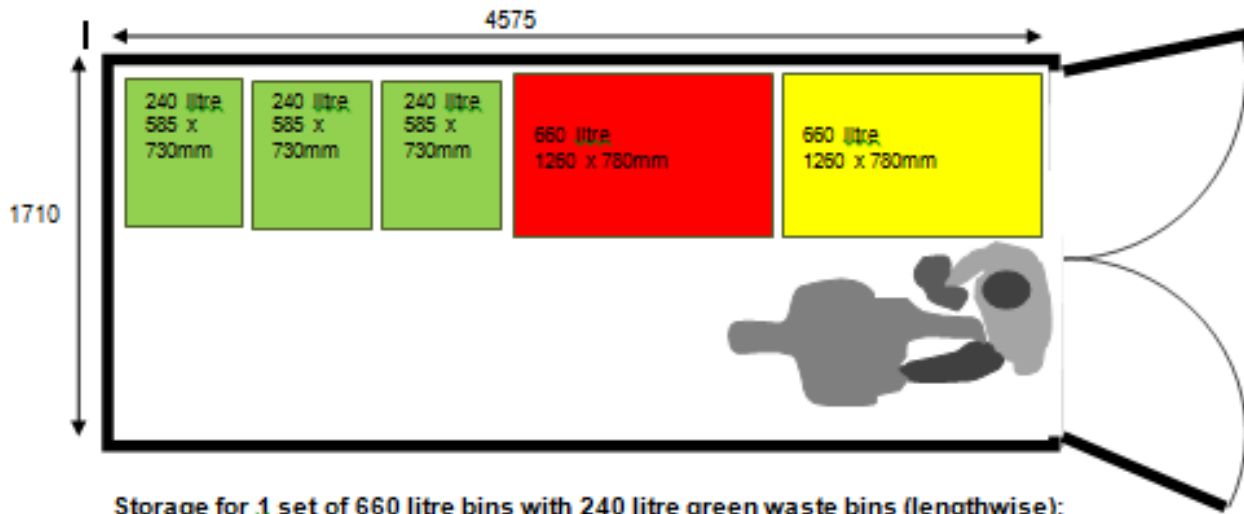
Storage for 1 set of 240 litre bins with 360 litre upsized recycling bin (sideways):
2510 x 1510 mm internal dimensions
Services 1 house or 1 - 2 units



Storage for 2 sets of 240 litre bins:
1955 x 2390 mm internal dimensions
Services 2 - 4 units



Storage for 2 sets of 240 litre bins:
2390 x 2100 mm internal dimensions
Services 2 - 4 units

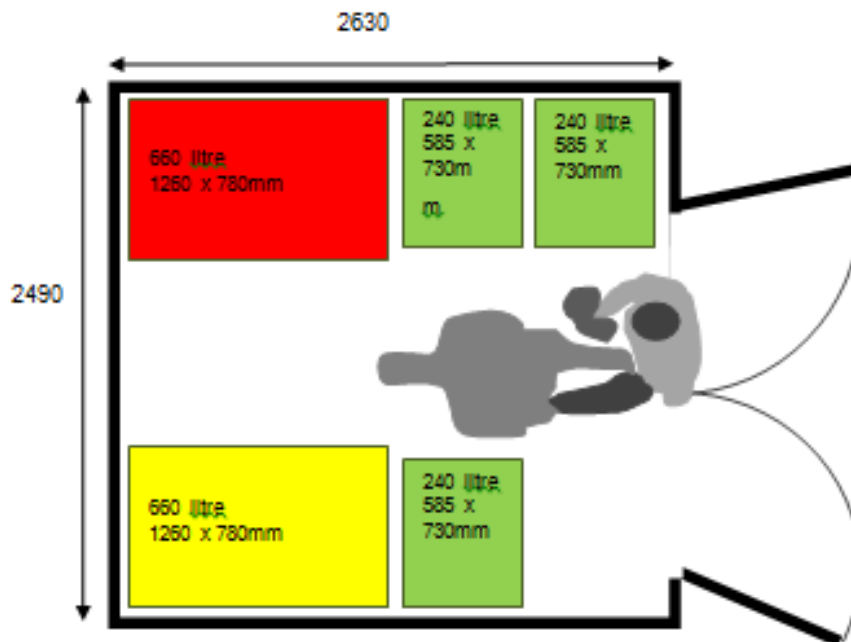


Storage for 1 set of 660 litre bins with 240 litre green waste bins (lengthwise):

4575 x 1710 mm internal dimensions

Services 3 – 5 units

Add bin washing tap and drain on clear side



Storage for 1 set of 660 litre bins (with 240 litre green waste bins):

2630 x 2490 mm internal dimensions

Services 3 – 5 units Add bin washing tap and drain in corner

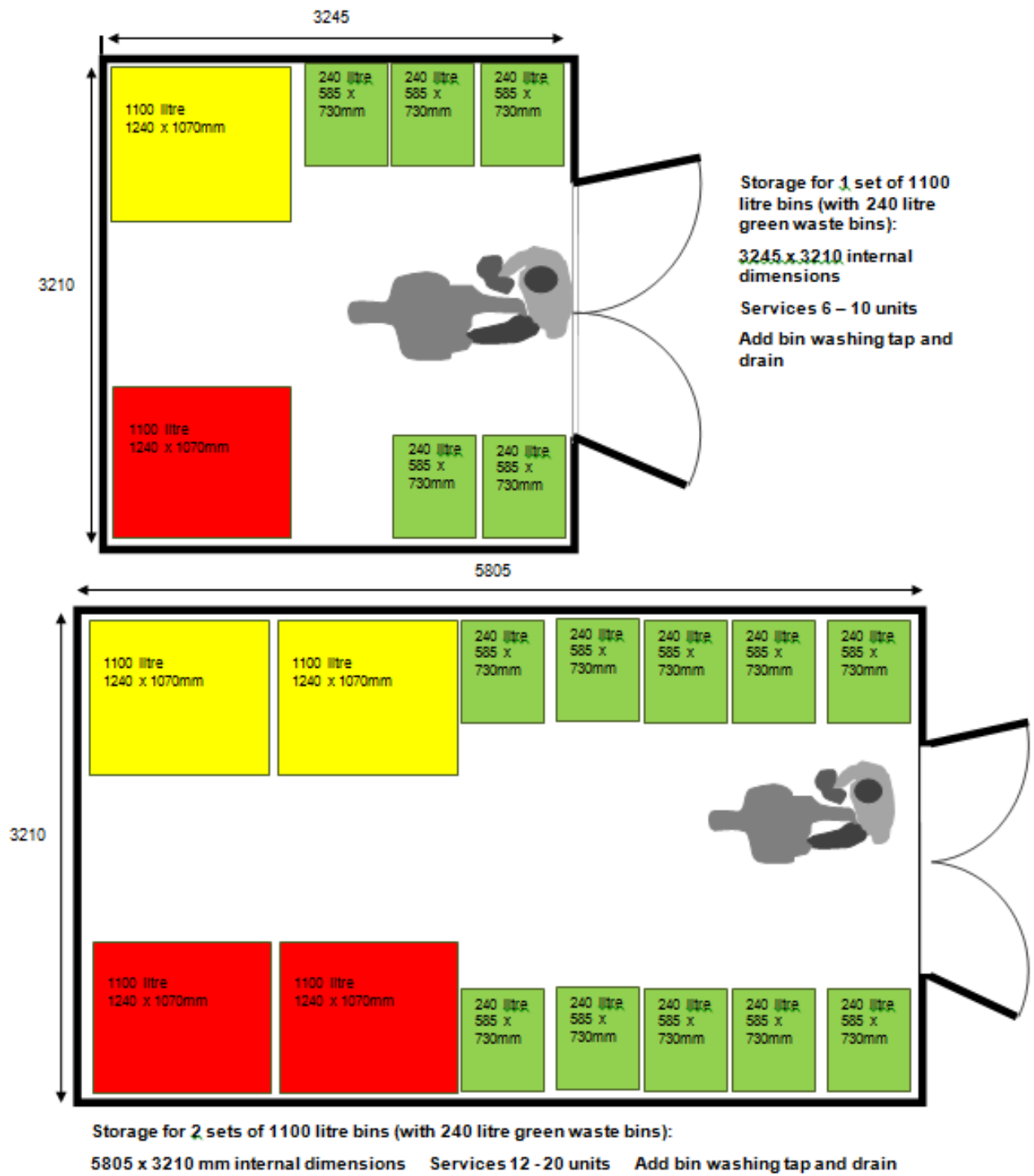
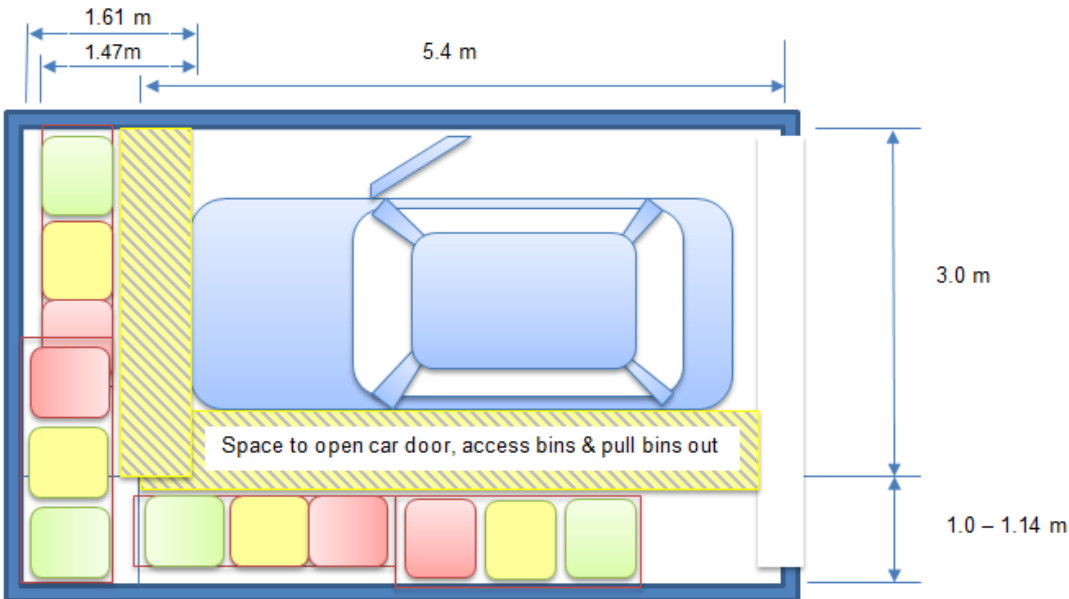


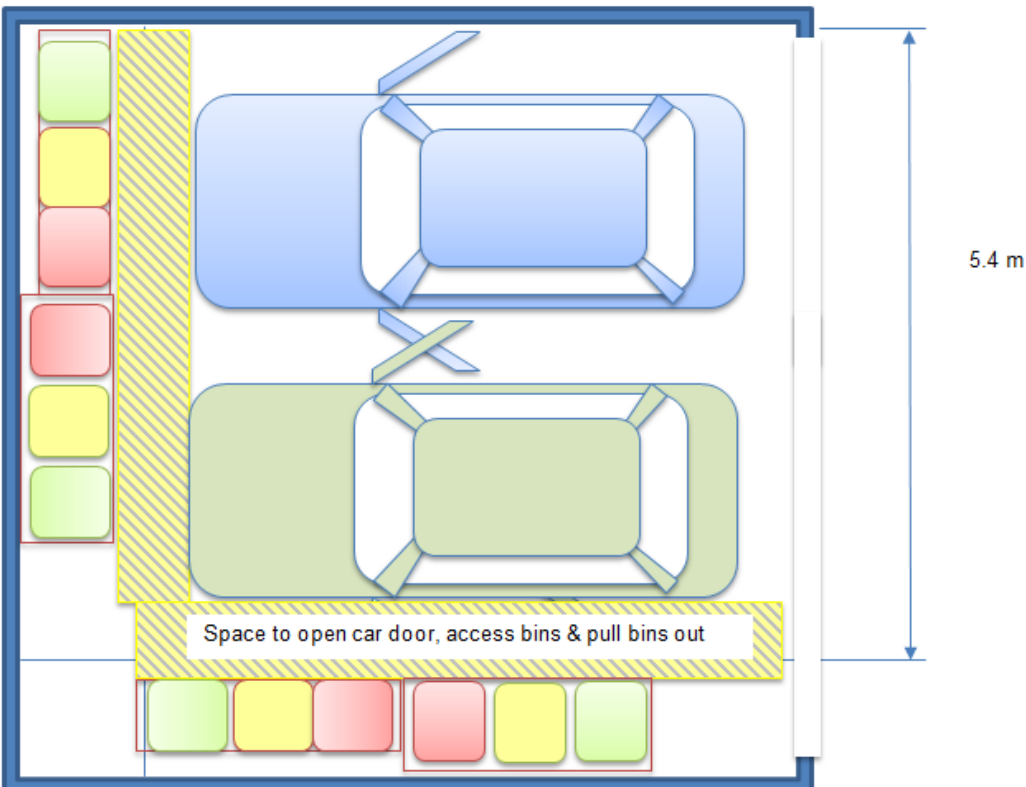
Figure 24 - Sample diagrams of communal bin storage areas

Garage storage of 240L bins

Example shows family car (4.73 x 1.84 m dimensions) with front doors open. Compares to 2-door city car (3.47 x 1.62 m) up to passenger van (5.4 x 1.95m).



Single garage – without bins: 3.0 x 5.4 m. **Bins at end:** 3.0 x 6.3 to 6.44. **Side bins:** 4.0 to 4.14 x 5.4 m
Bin area footprints including access space: 2300 x 1465 mm; or 1955 x 1610 mm



Double garage – without bins: 5.4 x 5.4 m. **Bins at end:** 5.4 x 6.3 to 6.44. **Side bins:** 6.4 to 6.54 x 5.4 m.

Figure 25 - Space required for garage storage of 240 litre bins

Storing bins under stairs:

Figure 26 - Space required under stairs for storage of 140 and 240 litre bins

In this example above, the design has 4400 mm horizontal space under the stairs and 2360 mm rise from one floor to the next with an additional 180 mm step down to garage, and is intending to store 3 x 240 litre bins width-wise under the stairs (which require a space 1955 mm long x 1800mm high). In this case, there is insufficient space to open lid of third bin. The occupant would be forced to pull the garbage bin out every time to open the lid to put waste in the bin. This is discouraged in all developments, and not allowable if in an accessible house.

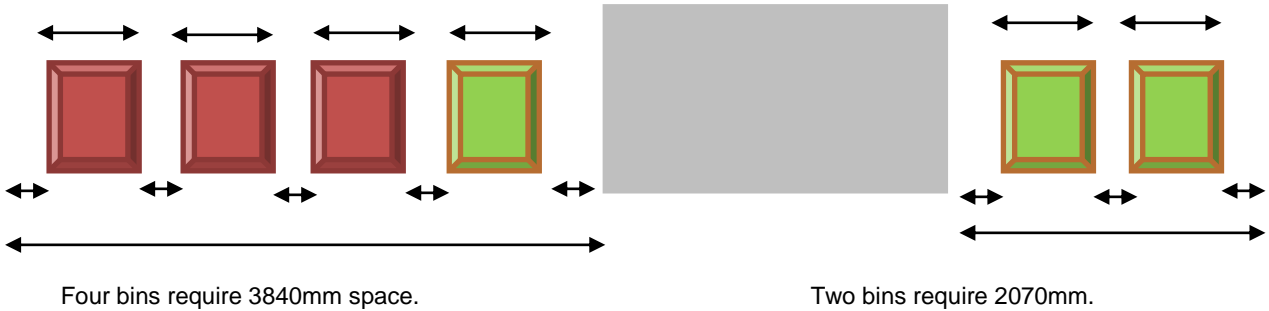
In this case, the design needs to:

- shift space for 240 litre bins to the right by 615mm,
- drop the floor of garage down by 400mm;
- if in a strata development, specify 140 litre bins (which require a space 1805 mm length x 1530mm height); or
- store the bins elsewhere.

APPENDIX 4 – Spacing of bins for kerbside collection

240 litre standard bins:

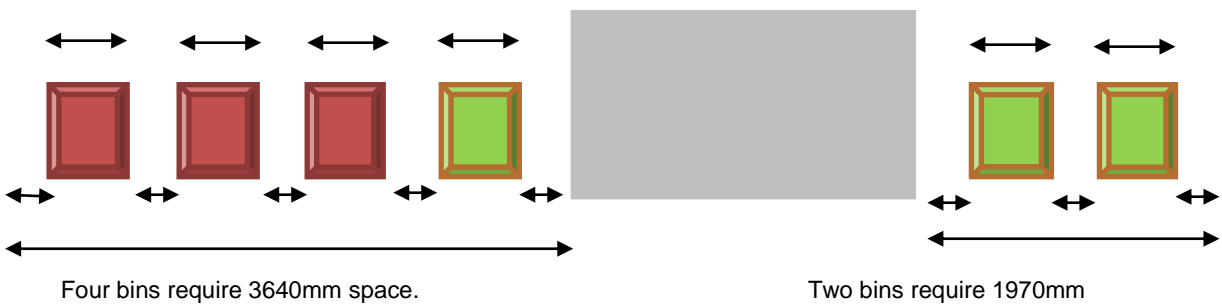
Bins must be spaced at least 300mm apart and 300mm away from driveways and other objects. 240L bins are 585mm wide.



Number of bins	Width required (without driveway/obstructions) (mm)
2	2070
4	3840
6	5610
8	7380
10	9150
12	10,920

140 litre downsized bins

Bins must be spaced at least 300mm apart and 300mm away from driveways and other objects. 140L bins are 535mm wide.



Number of bins	Width required (without driveway/obstructions) (mm)
2	1970
4	3640
6	5310
8	6980
10	8650
12	10,320

Figure 27 - Spacing of 140 litre and 240 litre bins for kerbside collection

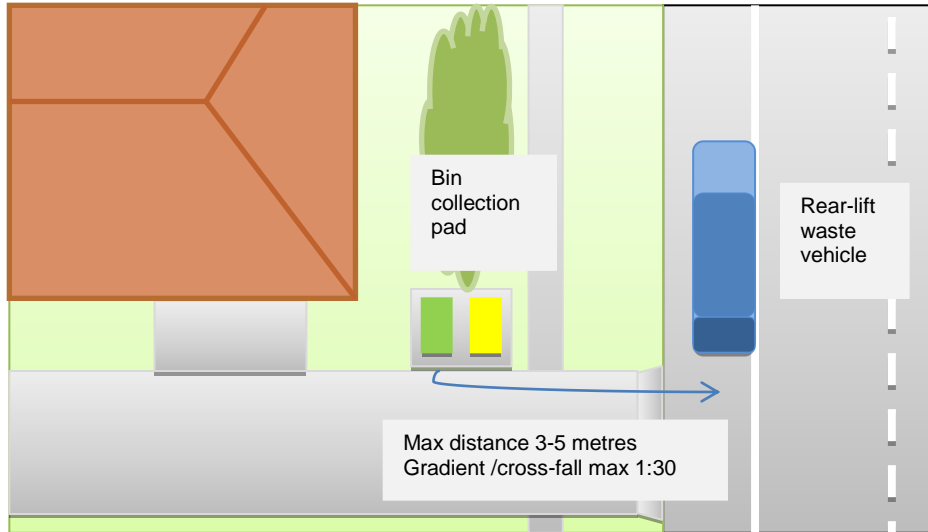


Figure 28 - 660 / 1100 litre bin collection pad for collection by rear-lift waste vehicle parked at the kerb

APPENDIX 5 – Waste chutes, compactors, balers and crushers

Waste Chutes

Chutes, service openings and inlet hoppers should be constructed of metal or other smooth-faced, durable, fire-resistant and impervious material of a non-corrosive nature, capable of being easily cleaned.

Chutes must be cylindrical in cross-section and the internal diameter must be a minimum 500 mm and adequate for material being deposited.

Chutes must be vertical without bends or “off-sets” and not reduce in diameter over the fall.

Inlet hoppers must be capable of delivering the waste to the chute without using force.

Chutes must terminate in the central waste and recycling storage area and discharge the waste directly into a storage container or waste compactor in a manner that avoids spillage and overflow.

A cut-off must be provided at or near the base of the chute to effectively close off the chute while the storage container or compacting device is withdrawn.

Inlet hoppers must:

- a. be designed to effectively close off the service opening in the chute when the device is opened for loading;
- b. automatically return to the closed position after use;
- c. permit free flow of waste into the chute;
- d. not project into the chute;
- e. permit easy cleaning of the device and connection between the service opening and the chute; and
- f. be not less than one metre (1 m) or more than one and one-half metres (1.5 m) above the floor level.

Chute rooms must:

- a. be provided in convenient, well-lit and ventilated positions;
- b. be provided with an inlet hopper in accordance with RC7;
- c. provide space for recycling containers for the intermediate storage of recyclables (allowing for at least one 240-litre MGB for each two (2) residences serviced by that chute room);
- d. provide access for all persons in accordance with Council's Access Policy. Chute rooms must allow for sufficient space to permit easy opening of the inlet hopper, opening of the chute-room door and the storage and manoeuvring of the recycling bin(s); and
- e. not be adjacent to a habitable room.

The floor below each charging device and service opening must be finished with a smooth impervious material with a minimum area of not less than one square metre (1 m²) situated centrally below the inlet hopper.

Chutes must be ventilated to ensure that air does not flow from the chute through any service opening.

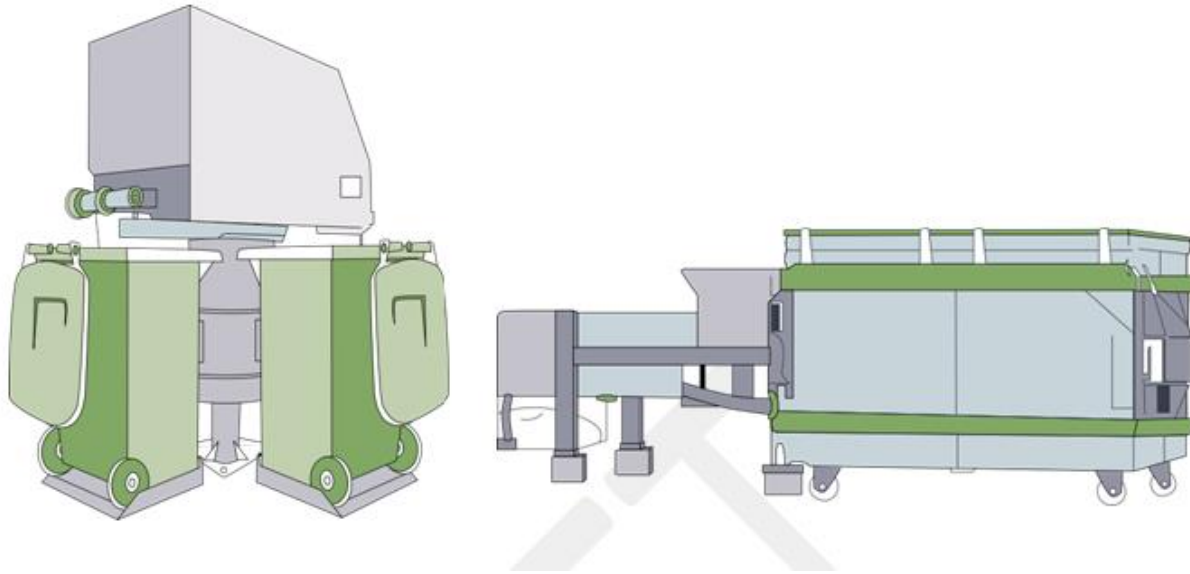


Figure 29 - Rotational MGB Carousel with compactor and bulk bin static compactor

Compactors

Lake Macquarie City does not encourage the use of compaction systems for residential garbage using 240 litre MGB systems, owing to issues related to weight, handling and the reduction of bin life. Compactors will only be permitted by Council as a development condition if other options to reduce waste storage issues, such as optimal bin sizes, have been thoroughly considered and have been proven unable to be used. Compactors are not to be used for recycling material with the exception of cardboard, as specially designed balers and crusher systems are more effective.

Compactors are used to compress waste into collection containers to reduce the volume of waste and are often used in conjunction with chute systems. The compaction ratio is typically set at around 2:1. Higher ratios are not used as they may result in excessively heavy bins, causing WHS problems, mechanical damage and breakage of recyclable materials.

Compactors must be fitted with optical or visual sensors to provide warning to a nominated caretaker that a bin must be replaced. A closed circuit camera may be used, providing it is frequently monitored, such as part of a building security system.

Compactors require regular ongoing maintenance. In particular, systems fed from a chute can be prone to blockages or failure of the “electronic eye”, which can result in waste overflowing or backing up the chute. They also require electricity for operation, which may not be an advantage in buildings seeking to reduce energy demand.

Balers

Balers compress bulky materials such as cardboard and plastic film and tie them into bales so that they remain compacted. They are advantageous in situations where large amounts of bulky materials are produced but where space is limited to compress materials and maximise available bin capacity.

Balers come in a wide variety of sizes and capacities and can have a small footprint. Balers can be customised by size and use requirements. Someone is normally required to load and operate the baler, which involves labour costs. Bales can also be large, heavy and difficult to move manually. Sometimes equipment including pallets, forklifts and pallet jacks are required to move bales safely.

Glass Bottle Crushers

Council recommends using the Return and Earn container deposit scheme for all glass containers that are accepted under the scheme to redeem the 10 cent per bottle value. For other types of recyclable glass containers, bottle crushers may be appropriate.

Bottle crushers are designed to break glass into small but recyclable-sized fragments, known as “cullet”. Most crushers are integrated with a small mobile bin (typically ≤ 60 litres) to keep the weight of the cullet within limits for ease of handling. Crushers allow for much larger weights of glass to be stored in smaller volumes, reducing storage space required for glass recycling by over 50 per cent.

In addition, the crushers minimise noise associated with handling glass recycling by reducing the need to tip bottles from smaller to larger storage bins while also reducing noise at the collection point.

Glass bottle crushers are available in different sizes and configurations to suit venues ranging from small bars to large clubs.

Crushers should be considered in areas within close proximity to residential dwellings to reduce loss of amenity from recycling noise levels and where bottle disposal is high and storage areas are limited.

APPENDIX 6 – Advanced waste collection systems

(Source: City of Sydney Council)

Developers of precincts or large sites with multiple buildings are encouraged to consider options for advanced waste collection systems. These options must be discussed and approved by Council before development.

Leading advanced waste collection systems to consider, particularly in high density or space constrained developments include:

- automated waste collection systems; and
- alternative bin and compaction systems.

Automated Waste Collection Systems

Automated waste collection is an integrated network of underground pipes and chute inlets that transport both waste and recycling directly from residential or commercial buildings to a centralised collection point using a vacuum transport. These systems can collect all waste and recycling from an area up to 2.5 kilometres from the central station.

The use of automated waste collection is widespread internationally. Some systems have operated continuously for 50 years. Over 100 cities around the world operate at least one area with automated collection systems and over 1,000,000 households are currently connected to an automated waste collection system.

Automated waste is most effectively installed if included at the design stage for new developments. This allows for optimum conveyance pipe layout across the precinct and the incorporation of waste and recycling chutes in multiple buildings integrated with the system.

Benefits of automated waste collection include:

- improved amenity for residents and businesses (reduced odour, noise, spillage and vermin);
- reduced need for space allocated for waste handling and waste storage in buildings;
- reduced or eliminated need for waste management equipment and bins;
- 24/7 access to waste removal (offering reduced commercial waste storage allocation); and
- reduced or eliminated vehicle collection and access at individual buildings. Waste collection would be at a central location rather than scattered throughout a precinct.

The key requirements for bins, collection points, access and waste collection for service rooms referred to in the Waste Management Guidelines may be open to amendment if an automated waste collection system is considered.

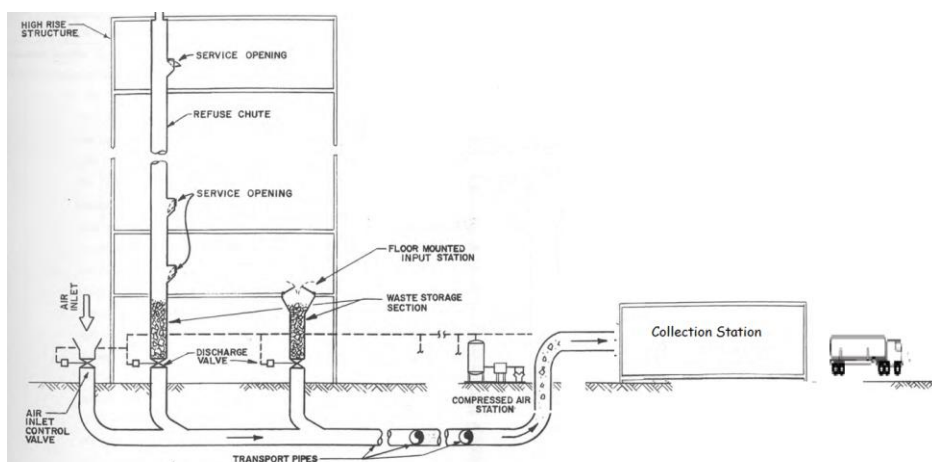


Figure 30 - Schematic of automated waste collection system within a development

Developers interested in installing these systems within a new development should contact Council waste and planning officers at the earliest stage possible.

If an automated waste collection system is included in a DA, the following requirements will need to be taken into account:

- the ventilation, air intake and air outlet units shall be located to minimise nuisance to neighbouring premises;
- the waste and recycling storage capacity within a building shall be at least one day's waste or recycling output of the building;
- waste and recycling collection points and storage stations shall be accessible to Council collection vehicles and be located to minimise nuisance to neighbouring premises;
- adequate measures shall be taken to minimise noise resulting from the operation of the system; and
- adequate measures shall be provided to remove dust and smell from the air used for waste conveyance before it is discharged into the atmosphere. The discharge point shall be located away from neighbouring premises.

Alternative Bin Systems

Underground Bins

Underground bins use hidden capacity by installing large collection containers below ground-level. The general user does not see the container but simply a small portion of the container or a small bin above ground. Underground bins are available in a range of sizes including over 5000 litres. These bins offer the advantage of having a large storage capacity that can be used to effectively manage the waste from many dwellings, while only requiring a small above-ground footprint.



Figure 31 - Hydraulic-underground bins at Royston Street, Darlinghurst (Sydney)

Below-ground storage of waste is an advantage, particularly in summer as the waste is kept cool. The frequency of bin collection may also be reduced significantly, subject to appropriate control of odour and liquids from decay.

Waste collection from underground bin systems can be made by a vehicle that must be modified with a hook-arm or crane. In some systems, like Royston Street Darlinghurst, the underground bins are hydraulically lifted enabling use of 660-1100 litre bins with rear lift waste collection vehicles.

Both an appropriate location for underground bins and access for collection vehicles are therefore important due to the servicing method.

Underground bins are well-suited to collect garbage. However, depending on the bin capacity, they may not be as suitable for collecting recyclables, particularly cardboard due to its bulky nature, unless used in conjunction with an underground compaction system.

Shared Compaction Bins

A number of designs are now available for externally located compaction systems. These systems are typically suited for high-density retail areas. Access is secure, usually by a card identification system. Waste is deposited through an inlet hopper suitable for regular smaller loads arising from retail outlets or some commercial premises. The compactor storage container is typically collected by a hook-lift-vehicle. Consideration should be made for noise impacts and collection access when considering these systems.

APPENDIX 7 – Why plan for waste management?

Waste management is a very important health, environmental, social and economic consideration.

There are undesirable ongoing cost implications on owners and occupants of properties with poorly planned waste management systems. This is particularly the case when high frequency waste collection services are needed that require engaging private waste collection service providers and/or care takers to move waste around a development to enable appropriate storage and collection.

There are also undesirable environmental, health, vermin, visual amenity, odour and social impacts if waste is not well managed.

The benefits of minimising waste include:

- budget cost savings;
- resource use efficiency;
- reduced environmental impacts in production and disposal;
- alignment with community waste management expectations;
- improve the sustainability of the earth's resources and landfill capacity;
- minimise the overall environmental impacts of waste;
- foster the principles of Environmentally Sustainable Development;
- meet legal and governance requirements; and
- achieve Federal and State Government waste minimisation targets.

Having a Waste Management Plan provides many benefits, including:

- averting waste problems for future occupants of the property by upfront planning in the design stage;
- helping proponents save money on development projects;
- providing a reference plan for stakeholders involved in design and building of the property's development can implement;
- identifying and submitting the information required for assessment of the development application;
- avoiding waste generation and diverting waste from landfill to reuse and recycling; and
- recovering recyclable wastes and using these as secondary resources.

FICTION:

Waste is an inevitable part of being in business.

FACT:

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

The waste minimisation hierarchy, illustrated below, shows explains that waste avoidance is the most environmentally and economically sustainable outcome, followed by reuse (such as reusing a window)

and then recycling (for example, smelting the Aluminium window frame to make new Aluminium products). Some unrecyclable resources have potential for energy recovery to realise the embedded energy that went into forming the original product. Best practice is for waste disposal to landfill to be viewed as a last resort after all other options are exhausted.

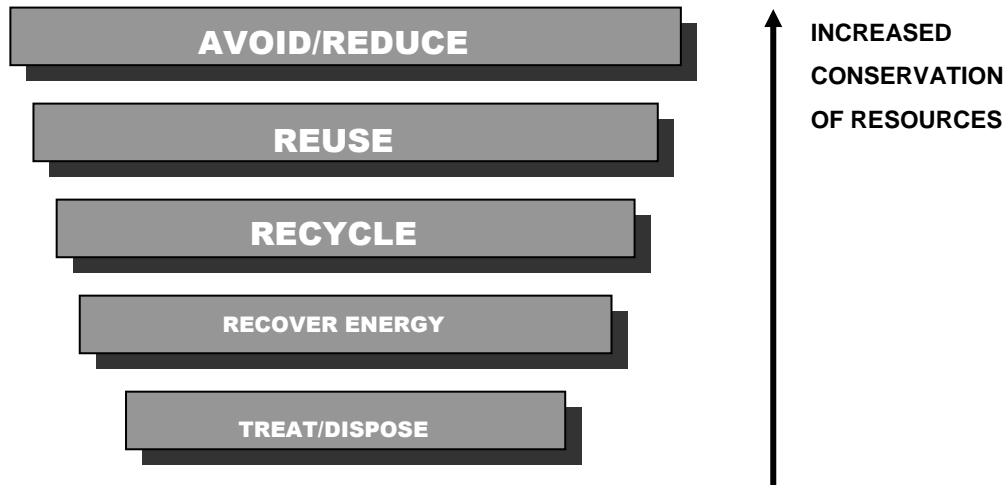


Figure 32 - Waste minimisation hierarchy

All levels of government are concerned to reduce the waste problem and better use our resources.

The NSW Government's goals for waste management by 2021–22 are:

- to reduce the rate of waste generation per capita.
- to increase recycling rates for:
 - municipal solid waste from 52 per cent (in 2010–11) to 70 per cent;
 - commercial and industrial waste from 57 per cent (in 2010–11) to 70 per cent; and
 - construction and demolition waste from 75 per cent (in 2010–11) to 80 per cent;
- to increase the waste diverted from landfill from 63 per cent (in 2010–11) to 75 per cent; and
- to establish or upgrade 86 drop off facilities or services for managing household problem wastes state-wide.

The *NSW Waste Avoidance and 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 two roles that aid waste minimisation:

- as a service provider – arranging for the collection of food and garden waste to be turned into compost, recyclable material and residual garbage waste. In Lake Macquarie, there are a range of services provided, including kerbside domestic and commercial/industrial business bin collection services, household bulk waste services, household problem waste drop offs and access to general advice on how to manage waste; and
- as a regulator of building and land development activity.

APPENDIX 8 – What is a waste management plan?

A Waste 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 waste is to be collected and where it will be taken; and
- how Operational Waste Management will operate.

A Waste 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.

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 can save developers, future owners and occupants money. For example, considering the reuse of existing structures and materials and recycling on-site can save resources and material costs at construction stage while reducing transport and waste disposal costs.

The Waste Management Plans for most new developments consist of three parts:

- Demolition Waste Management Plan (including vegetation removal and excavation);
- Construction Waste Management Plan; and
- Operational Waste Management Plan (for ongoing use).

It is important to provide a building and/or landscape plan (drawn to scale) that shows locations of bins and waste processing equipment, waste storage and waste collection point(s). The drawing should show how pedestrians and vehicles will access the waste storage areas and collection points. For example, widths of doors and gates, any steps present in the carting path, gradient of the carting path, carting distances and sufficient spacing of bins at the collection point.

When is a Waste Management Plan required?

All development applications must provide a completed Waste Management Plan that complies with *Lake Macquarie City Council Waste Management Guidelines* unless the development is one of the following:

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

What are the key elements of an acceptable Waste Management Plan?

Properly Planned Design: The design of the property considers waste management as part of the design process, not as something to be added as an afterthought.

Demolition: When demolition is proposed, the potential to avoid full demolition by integrating the existing infrastructure and buildings on site is maximised. If this is not achievable, then the potential to reuse carefully deconstructed materials on site is maximised. If this is not achievable, then the potential to recycle materials offsite are maximised. All unavoidable wastes are then properly disposed of through legal, licenced operators. Sufficient space is allocated to enable maximum waste separation and management.

Construction: When construction is being planned and implemented, the design and materials bill aims to minimise offcuts and packaging of materials. Sufficient space is allocated to enable maximum

waste separation and management. The waste that is generated on site from construction is diverted to reuse or recycling through efficient, effective, safe waste collections by lawful operators.

Waste storage within dwellings: Space allocated to storage of waste within dwellings and businesses:

- allows enough space to separate multiple waste types in suitable containers. All new designs should enable space for maximising separation of recyclables and compostables, such as space for comingled recyclable bins and food (and garden) green waste bins;
- can hold 2 days' worth of waste and recycling; and
- is functionally and visually appealing.

Storage of Waste Bins: Space allocated to storing waste bins:

- efficiently uses space, but allows adequate room to handle correctly projected waste volumes that will be generated by the development;
- is close to the waste generation sources (shops, offices and dwellings), with security, but easily accessible;
- is close to the waste collection point (whether kerbside, or an on-site collection) and accessible (such as no steps, short distances and gradients below 1:14);
- allows for management of all the types of waste generated by the property use including recyclables, garbage, food waste, garden waste, bulk furniture wastes and commercial wastes in mixed developments; and
- addresses visual, odour, vermin, bin and space cleaning and safety considerations.

Waste Collection Point: Space allocated at the waste collection point:

- is easily and safely accessible from the bin storage point;
- is unobstructed for the waste collection vehicles, allows room for bins to be sufficiently spaced apart along the kerb (or other location) and does not have obstructions to overhead or wide arm arc lifts;
- considers noise and visual amenity for those near the collection point; and
- is in a safe location for the waste collection vehicle to access and depart without obstruction by parked vehicles, pavement weaknesses or accident risks and noise from having to reverse or take tight turns.

APPENDIX 9 – Construction certificate, occupation certificate, conditions of consent

In some circumstances, all of the waste management planning details for a development may not be known at the time the development application is submitted. Key waste management details that affect the design and layout of the development (such as presence of waste chutes, waste storage areas and appropriately located waste collection points) must be identified in the development application. However, other waste management details may be submitted prior to requesting a construction certificate, or prior to requesting an occupation certificate. Any outstanding waste management details may be the subject of conditions of consent for the development approval.

DETAILS REQUIRED FOR DEVELOPMENT APPROVAL

The following information is ordinarily required before a development approval will be given:

- completed Operational Waste Management Checklist that is relevant to the proposed development type;
- completed Operational WMP form that provides estimated volumes of garbage, recycling, green waste, bulk furniture waste and other waste types that will be generated per week by the ongoing use of the development;
- design and/or landscape floor plan drawings (drawn to scale) showing;
- location and dimensions of waste storage areas;
- routes and distances from dwellings or businesses to waste storage area (including gradients, door/gate widths and no obstacles like steps or fences);
- design and build materials for waste enclosures to assess visual impact;
- routes and distances from waste storage area to collection location;
- waste collection locations, bin spacing and clearance from surrounding obstacles for bin lifts;
- waste collection vehicle access to collect bins, including turning circles if accessing on site and pavement quality sufficiency for vehicle weight; and
- where waste collection will take place on site, drawings showing access roads/driveways, vehicle turning circles, pavement strength, collection points free from obstructions beside or above where bins will be emptied.

DETAILS REQUIRED FOR CONSTRUCTION CERTIFICATE

The following details are required before issuing a construction certificate, if not already provided and approved for the development approval:

Demolition and Construction Waste Management Plans:

- list of waste types and volumes to be generated by deconstruction (demolition) and construction works;
- plans for demolition and construction waste management, including which wastes will be reused/recycled and what licensed facilities will process or dispose of the materials;
- plan showing location of waste storage area(s) during demolition and construction works (for each stage if multiple stages);
- information on how waste storage area(s) will be screened to improve the site's visual amenity; and
- routes between demolition and construction work area(s) and waste storage location(s).

Detailed designs:

- sufficient cupboard space for waste storage in or near kitchen; and
- details of waste storage area design (size, provision of taps, lighting, drainage and ventilation if it is a waste storage room).

DETAILS REQUIRED FOR OCCUPATION CERTIFICATE

The following details may be required for developments prior to issuing of an occupation certificate:

Evidence of resource recovery (recycling/reuse) from demolition and construction stages:

- receipts for disposal of demolition and construction wastes to licensed recyclers, composters and landfills; and

Waste services engagement:

- evidence that an appropriate standard of garbage, recycling and green/food waste collection services are in place with Council (including access indemnity agreement if required) and/or with a private waste service provider(s).

APPENDIX 10 – Awaba Waste Management Facility

Lake Macquarie City Council owns and operates the Awaba Waste Management Facility, which has an Environment Protection Licence that allows for Solid Waste Class 1 to be received and disposed on site. Waste is classified and charged under the following categories:

- mixed waste;
- clean fill;
- organic garden waste;
- dry recyclables (paper and cardboard, glass, aluminium and plastic containers);
- metals and whitegoods;
- electronic waste;
- mattresses;
- household problem wastes (cooking and motor oils, paint, batteries, gas bottles, fluorescent light globes, smoke detectors); and
- asbestos (phone Council to make pre-arrangements for dropping off asbestos prior to delivery).

Other landfills in the region include Summerhill Waste Management Facility at Wallsend run by Newcastle City Council, Buttoderry at Jilliby run by Central Coast Council, Cessnock and Maitland City Councils also operate landfills in their local areas.

APPENDIX 11 – Useful Resources for waste management planning

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

Recycling businesses are often listed in Planet Ark's Business Recycling database online at www.businessrecycling.com.au.

For EPA-licensed recyclers. See: <http://www.epa.nsw.gov.au/wasteregulation/licensing.htm>;

The Master Builders Association (MBA) has created a program called Green Living to provide builders with tools for sustainability options in building and construction activities. In New South Wales contact the Master Builders Association on 1800 622 679 for more information.

Other useful contacts are listed in Table 29.

Table 29 - Useful contacts

Contact	Address	Phone	Internet Address
Lake Macquarie City Council	Box 1906, Hunter Region Mail Centre NSW 2310	(02) 4921 0333	www.lakemac.com.au
Association of Wall and Ceiling Industries	PO Box 450 PARRAMATTA NSW 2150	(02) 9891 6188	www.awci.org.au
Frame and Truss Manufacturers Association of Australia Ltd	PO Box 703, HEALESVILLE VIC 3777	(03) 5962 3453	ftmaustralia.com.au
Housing Industry Association (HIA)	17 Murray Dwyer Circuit, Steel River Estate, Mayfield West NSW 2304	(02) 4014 2000	hia.com.au
Master Builders Association New South Wales	Private Bag 9, Broadway NSW 2007	1800 622 679	www.mbansw.asn.au
NSW Environmental Protection Authority / NSW Office of Environment and Heritage	EPA (Newcastle) 117 Bull Street, Newcastle West NSW Regional Operations (Sustainability) Level 4, 26 Honeysuckle Drive, Newcastle NSW	(02) 4908 6800	www.environment.nsw.gov.au
Planning Institute Australia	Suite 404, Level 4 32 York Street Sydney NSW 2000	(02) 8904 1011	www.planning.org.au/
Property Council of Australia - NSW	Level 1, 11 Barrack Street, Sydney NSW 2000	(02) 9033 1900	www.propertycouncil.com.au
Waste Management Association Australia (WMAA)	Suite 4.08 10 Century Circuit Baulkham Hills NSW 2153	(02) 8746 5000	www.wmaa.asn.au

The following are useful documents that can be referenced for further information:

- Australian Capital Territory, October 2016, **Waste and Recycle Management Code for the ACT – Version 2 – Revision 1.**
- Better Building Partnerships, 2016, **Stripout Waste Guidelines**, www.betterbuildingspartnership.com.au.
- City Switch, accessed 2016, **City Switch Green Office**, www.cityswitch.net.au.
- Commonwealth of Australia (Department of the Environment and Heritage), 1998, **Waste Wise Construction Program Handbook: Techniques for Reducing Construction Waste.**
- Commonwealth of Australia (Department of Sustainability, Environment, Water, Population and Communities), 2011, **Construction and Demolition Waste Guide – Recycling and Reuse Across the Supply Chain**, prepared by Edge Environment Pty Ltd.
- Commonwealth of Australia (Department of Sustainability, Environment, Water, Population and Communities) and Queensland Department of Environment and Resource Management, October 2011, **Construction and Demolition Waste Status Report**, prepared by Hyder Consulting, Encycle Consulting and Sustainable Resource Solutions.
- Department of Environment and Conservation NSW, February 2007 **Waste Wise Events Guide: How to make your event Waste Wise** www.epa.nsw.gov.au/warrlocal/waste-wise-events.htm.
- Department of Environment, Climate Change and Water NSW, July 2010, **House Deconstruction Information Booklet.**
- Hunter Region, 2018, **Hunter Region Plan 2036.**
- Lake Macquarie City Council, 2015, **City of Lake Macquarie Waste Strategy 2015 – 2023.**
- Lake Macquarie City Council, current revision, **Development Control Plan 2014.**
- Lake Macquarie City Council, current revision, **Local Environment Plan 2014.**
- Rhymer, Schwartz, Wenger and Kohrall (USA CRC Press, 1995), **Waste Management and Resource Recovery** (Route Optimisation).
- State of NSW legislation www.legislation.nsw.gov.au [or also at Australasian Legal Information Institute (AustLii) <http://www.austlii.edu.au/>] NSW legislation:
Lake Macquarie Local Environment Plan 2014
NSW Contaminated Land Management Act 1997
NSW Environmental Planning and Assessment Act 1979
NSW Environmental Planning and Assessment Regulation 2000
NSW Work Health and Safety Act 2011
NSW Protection of the Environment Operations Act 1997
NSW Protection of the Environment Operations (Waste) Regulation 2014
NSW Waste Avoidance and Resource Recovery Act 2001.
- State of NSW and NSW Government legislation www.legislation.nsw.gov.au **State Environmental Planning Policies.**
- State of NSW and NSW Department of Environment and Climate Change, 2007, **Environment Action for Marinas, Boatsheds and Slipways**, accessed from www.environment.nsw.gov.au .
- State of NSW and NSW Department of Planning and Environment, 2016, **Hunter Region Plan 2036.**
- State of NSW and NSW Department of Primary Industries, November 2014, **Dangers in feeding waste material to livestock.**
- State of NSW and NSW Environment Protection Authority (EPA), December 2012, **Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities.**
- State of NSW and NSW Environment Protection Authority, 2014, **Draft protocol for managing asbestos during resource recovery of construction and demolition waste.**
- State of NSW and NSW Environment Protection Authority, January 2015, **Guidance Material: Asbestos and Fire-damaged Buildings.**

- State of NSW and NSW Environment Protection Authority, accessed July 2017, **Lead Safety**, www.epa.nsw.gov.au/pesticides/lead-safety.htm.
- State of NSW and NSW Environment Protection Authority, accessed 2016, **Current resource recovery orders and exemptions** <http://www.epa.nsw.gov.au/wasteregulation/orders-exemptions.htm>.
- State of NSW and the NSW Environment Protection Authority, October 2018. **Too Good to Waste – Discussion paper on a circular economy approach for NSW.**
- State of NSW and the NSW Environment Protection Authority, February 2019. **NSW Circular Economy Policy Statement – Too Good to Waste.**
- State of NSW and the NSW Environment Protection Authority, 2019. **Better Practice Guide for Resource Recovery in Residential Developments.**
- State of NSW and NSW Environment Protection Authority and Timber Development Association (NSW) Ltd, December 2012, **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.**
- State of NSW and NSW Environment Protection Authority, 2016, **Ways to reduce food waste in your business.**
- State of NSW and NSW Planning, July 2010, **Telecommunications Facilities Guideline Including Broadband.**
- Zero Waste SA and Integrated Design Commission by GHD, June 2012, **Report for State Waste Management Guidance for Medium Density, High Density and Multi-Unit Developments in Metropolitan Adelaide – A New Approach for Municipal Waste – Delivering the Strategy.**

For more information

 02 4921 0333  lakemac.com.au  council@lakemac.nsw.gov.au  lakemaccity  lakemac