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Waste Management Plan for Residential Flat Building Development at 28 & 30 Mckay Avenue, Moorebank, NSW

Prepared by

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1. Introduction

Loka Consulting Engineers Pty Ltd has been engaged by Morfosis Architects to provide a Waste Management Report for the site at 28 & 30 Mckay Avenue, Moorebank, NSW (refer to Figure 1.1 and Figure 1.2) for DA stage.

A waste management plan and report is required for the proposed development to support the design during demolition, construction and service conditions, along with achieving the objectives to promote sustainable operation of the development. The development achieves the waste management objectives set out in the council codes as well as any statutory requirements. The details which will be addressed include:

- A description of the site and details of the development proposal;
- reuse, recycling and disposal of materials during demolition, construction and service conditions;
- a review of the design features of the proposed waste management system for compliance with relevant codes, standards and regulations; and
- identification of procedures for on-going waste management.

Figure 1.1: Subject site (Source: SIX Maps)

Figure 1.2: Site location (Source: SIX Maps)

2. Property Description

The proposed development will facilitate the construction of a residential flat building development with a site area of approximately 1372.65 m^2.

The proposed development is bounded by:

- No. 32 Mckay Avenue on the East,
- No. 26 Mckay Avenue on the West,
- No. 25 & 23 Harvey Avenue on the North, and
- Mckay Avenue on the south.

3. Project Proposal

The proposed new development will involve the demolition of existing two single storey dwellings, and the construction of a residential flat building development with 2 basement levels, 1 ground level & 5 upper levels. Car parking is proposed from basement 2 to Basement 1 and residential units from ground floor and above.

Waste storage and transportation will be managed during demolition, excavation and construction stages as well as in service conditions. Waste produced from the excavation and construction

stages will be reused or recycled as appropriate, or disposed using certified waste collection contractors.

The management of waste during service conditions of the residential flat building will involve the building manager maintaining Waste Storage and Recycling Area located on site, with the collection of general waste and recycling primarily involving council. It is proposed that **7 x 240L** garbage bins and **7 x 240L** recycling bins are provided for the proposed development. Council will collect the garbage bins and recycling bins twice per week.

4. Demolition

Materials from the demolition stage shall be reused, recycled or disposed in accordance with the provisions outlined in this WMP and the requirements of the Protection of the Environment Operations (Waste) Regulation 2014.

Where possible, waste materials should be managed so most materials will be reused or recycled, with only a small proportion of waste going to landfill.

Prior to any demolition works, a suitably qualified inspector shall conduct inspection of asbestos construction materials (ACMs) on the existing buildings to be demolished. The inspector shall certify to council in writing if the asbestos materials are less than $10m^2$. If more than $10m^2$, a licensed asbestos remover shall conduct the asbestos removal and tipping. In the latter case, the name, address and asbestos license number of the remover, as well as the name and address of the licensed landfill where all asbestos will be taken shall be informed to the council. All records covering All records covering the transport and tipping of any asbestos construction materials or any asbestos contaminated materials must be maintained on site for the inspection of a Council officer or other Principal Certifying Authority.

Asbestos-contaminated soils must be wetted down. All asbestos waste must be transported in a part of the vehicle that is covered and leak-proof; and disposed of at a landfill site that can lawfully receive it. The project manager will ensure a unique consignment number is created and report to EPA using WasteLocate if over 100 kilograms or 10 square meters of asbestos is being disposed of. No asbestos waste is disposed to general waste or recycle bin; or reuse, recycle or illegally dumped.

4.1 Managing Materials from Demolition

Table 1 below details the amount of material that is estimated to be produced from the demolition stage, as well as the planned reuse, recycling or disposal plans.

Table 1: Management of demolition materials

Materials on-site		**Reuse and recycling**		
Type of Material	**Estimated volume (m^3) or area (m^2) or weight (t)**	**On-site** How materials will be reused or recycled on-site	**Off-site** Contractor and recycling outlet	**Disposal** Contractor and landfill site
Timber	$15m^3$	Reuse for formwork, landscaping, shoring	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW
Concrete	$20m^3$	N/A	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	Nil to landfill
Bricks/Pavers	$30m^3$	Clean & reuse for landscaping, bricks in good condition used for internal walls	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	Nil to landfill
Plasterboard	$10m^3$	N/A	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW
Metals	$5m^3$	N/A	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW

4.2 Managing Materials from Excavation

Excavated materials from the Excavation stage shall be reused, recycled or disposed in accordance with the provisions outlined in this WMP and the requirements of the Protection of the Environment Operations (Waste) Regulation 2014. Table 2 below details the amount of material that is estimated to be produced from the excavation stage, as well as the planned reuse, recycling or disposal plans.

Table 2: Management of excavation materials

Materials on-site		**Reuse and recycling**		
Type of Material	**Estimated volume (m^3) or area (m^2) or weight (t)**	**On-site** How materials will be reused or recycled on-site	**Off-site** Contractor and recycling outlet	**Disposal** Contractor and landfill site
Excavated material	7500 m^3	Reuse for formwork, landscaping, shoring	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW

4.3 Site Operation and Management

The site operation will be managed to reduce waste creation and maximise reuse and recycling by setting waste management requirements in contracts with sub-contractors, on-going checks by supervisors on site and the use of clear signage at designated waste areas.

In addition, the project team leader will:

- Liaise with contractors to identify areas where they can reduce waste and reuse materials in their respective trades
- Meet local, state and federal waste minimisation legislation and environmental standards
- Prevent pollution and damage to the environment
- Protect the safety and health or employees and the public

Waste will be separated and stored onsite for reuse and recycling through maintaining separate areas for sorted wastes with one area for recyclables and another area for waste going to landfill. Utilising selective deconstruction rather than straight demolition will ensure that good quality material can be reused or recycled.

5. Construction

Materials that are not used in the construction stage shall be reused, recycled or disposed in accordance with the provisions outlined in this WMP and the requirements of the Protection of the Environment Operations (Waste) Regulation 2014.

Where possible, waste materials should be managed so most materials will be reused or recycled, with only a small proportion of waste going to landfill.

5.1 Managing Waste Materials from Construction

Table 3 below details the amount of waste material that is estimated to be produced from the construction stage, as well as the planned reuse, recycling or disposal plans.

Table 3: Management of waste from construction materials

Materials on-site		**Reuse and recycling**		
Type of Material	**Estimated volume (m^3) or area (m^2) or weight (t)**	**On-site** How materials will be reused or recycled on-site	**Off-site** Contractor and recycling outlet	**Disposal** Contractor and landfill site
Timber	5-7%	N/A	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW
Concrete	3-5%	N/A	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	Nil to landfill
Bricks/Pavers	5-10%	Clean & reuse for landscaping, bricks in good condition used for internal walls	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	Nil to landfill
Plasterboard	5-20%	N/A	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW
Metal	2-5%	N/A	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	Nil to landfill
Tiles	2-5%	Break up and use as fill, aggregate	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW	**Benedict Recycling Chipping Norton** 33-39 Riverside Rd, Chipping Norton NSW

5.2 Construction Design and Management

Waste avoidance has been incorporated into the design by incorporating as much detail as possible within the design, and using pre-fabricated materials to ensure a reduction in waste generated on-site. Materials purchased will be checked against previously known quantities required to build similar projects, and adjusted as construction progresses for this particular

project. Reduction in waste can also be achieved through the reuse of building materials in good condition from the demolition phase.

6. Management of Waste

6.1 Design Requirements

6.1.1 Waste production and storage per unit

According to Liverpool City Council Development Control Plan 2008, waste generation rates have been given below:

- 110L/unit/week general waste
- 110L/unit/week recycling

The total waste generated by the building is shown in Table 4.

Table 4: Calculations for waste/recycling storage space required

Building	Amount	Service type	Rate of waste production	Waste generated (L/week)
Residential Flat building	28 units	General waste	110L/unit/week	3080
		Recycling	110L/unit/week	3080

6.1.2 Collection frequency and bins required

To service the generation of waste/recycling expected from the proposed development, the following number of bins and frequency of collection is outlined in the Table 6 below.

Table 5: Waste collection service requirements

Service type	Number of bins	Collection frequency
General waste	7 x 240L	Twice per week
Recycling	7 x 240L	

6.2 Design Detail

6.2.1 Overall waste and recycling storage and servicing within the complex

Waste service to the development will be provided by Liverpool council. Waste and recycling storage room for the development is provided on the basement level 1 with a total area of 35.78 m². The total bin area required for 7 x 240L general waste bin and 7 x 240L recycling bin is approximately 5.98 m². Therefore, waste storage area is able to accommodate all bins. However,

the bins must be placed to allow for sufficient manoeuvring. The building manager or caretaker will manage the bins placement of both general waste and recycling waste bins for the garbage chute as required.

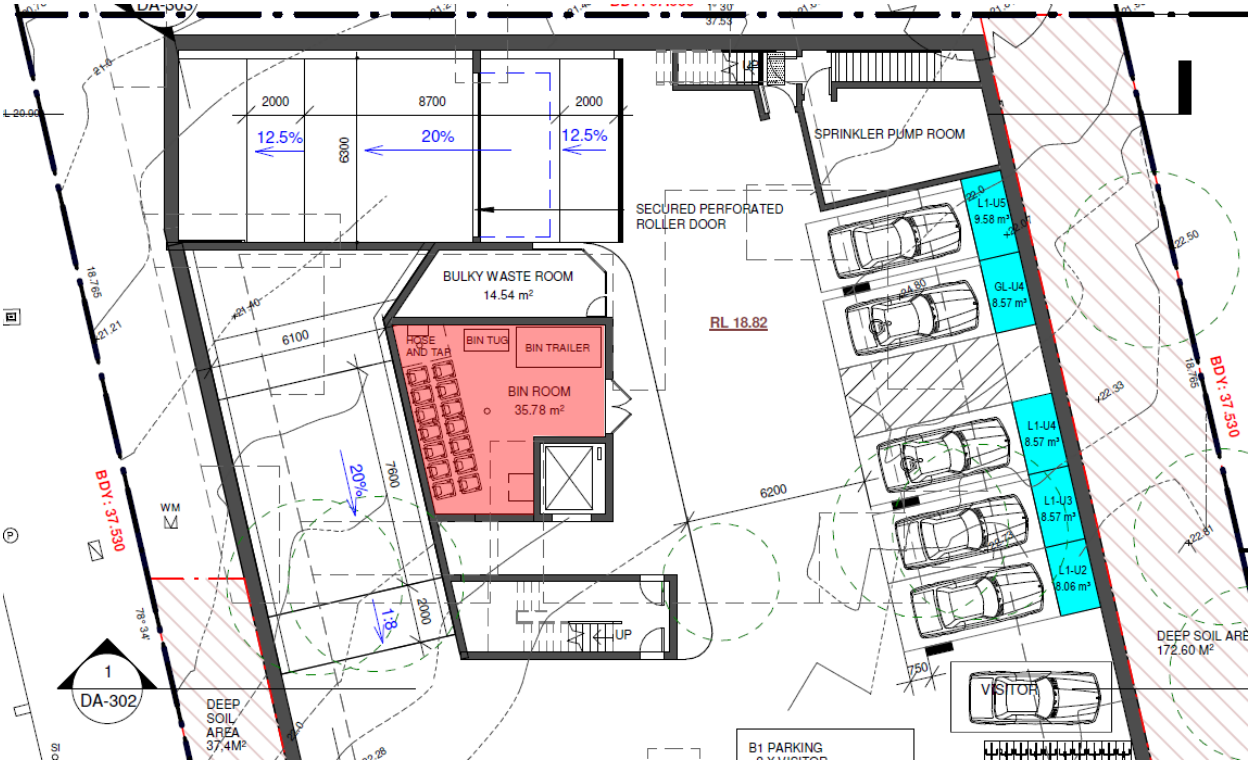


Figure 2 Location of Garbage room

One garbage chute is proposed for all residential levels. The chute is connected to the waste room on basement 1. Residents must bag the general waste before disposing through the chute system.

The garbage chute is provided on each floor. The garbage chute is used for both general waste and recycling waste. Chute diverter will be used to separate general waste & recycling as shown in Figure 3 below.

Appropriate signage and instructions shall be provided for the waste chute to inform residents regarding the operation of garbage chute.

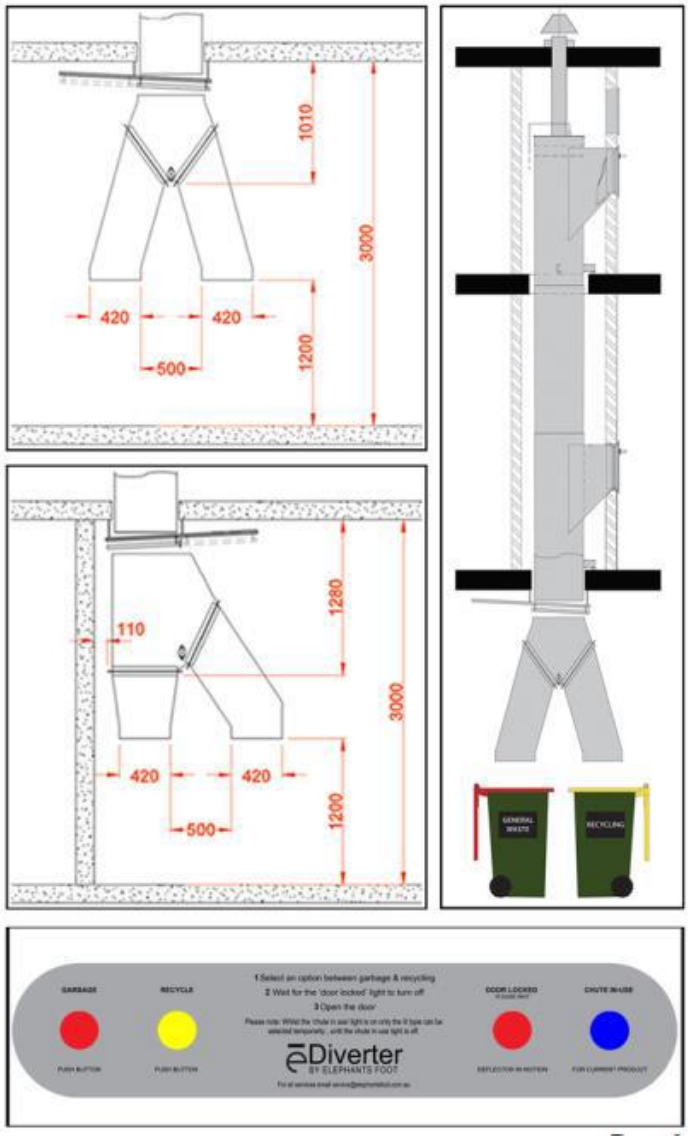


Figure 3 Chute diverter

The building manager or caretaker will take responsibility for transportation of all the bins to the kerbside for collection. The bins will be collected from kerbside on Mckay Avenue. The bins will be transferred to the kerbside by using a bin tug and a bin trailer (refer to figures 4 & 5).

Bins shall be placed to minimise the impacts on traffic on the road and not block access to driveways and pedestrian footpath.

Figure 4 Electric bin tug

Figure 5 Bin trailer

6.2.2 Bin Collection and transportation path

The general waste bins and the recycling waste bins will be collected twice per week via standard side-lift waste truck by council in the early morning.

All bins will be collected from the kerbside collection point which is located at ground floor (refer to figure 7). It is the responsibility of the building manager or caretaker to transfer the bins from the bin storage area (refer to figures 6 for transportation path) for collection at night before, and back to bin room located at the basement after council's collection.

Waste service will be provided by the council.

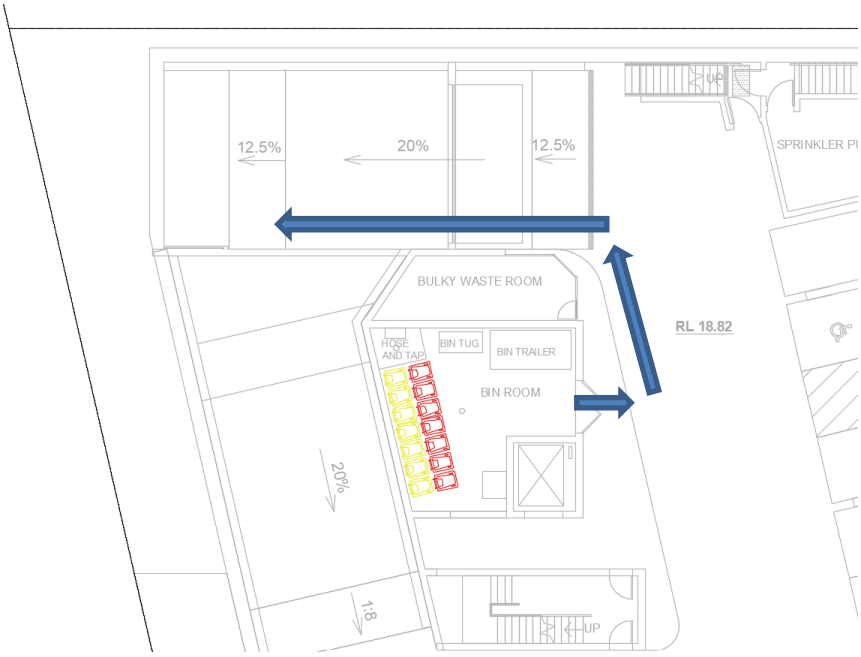


Figure 6 Bin transportation path

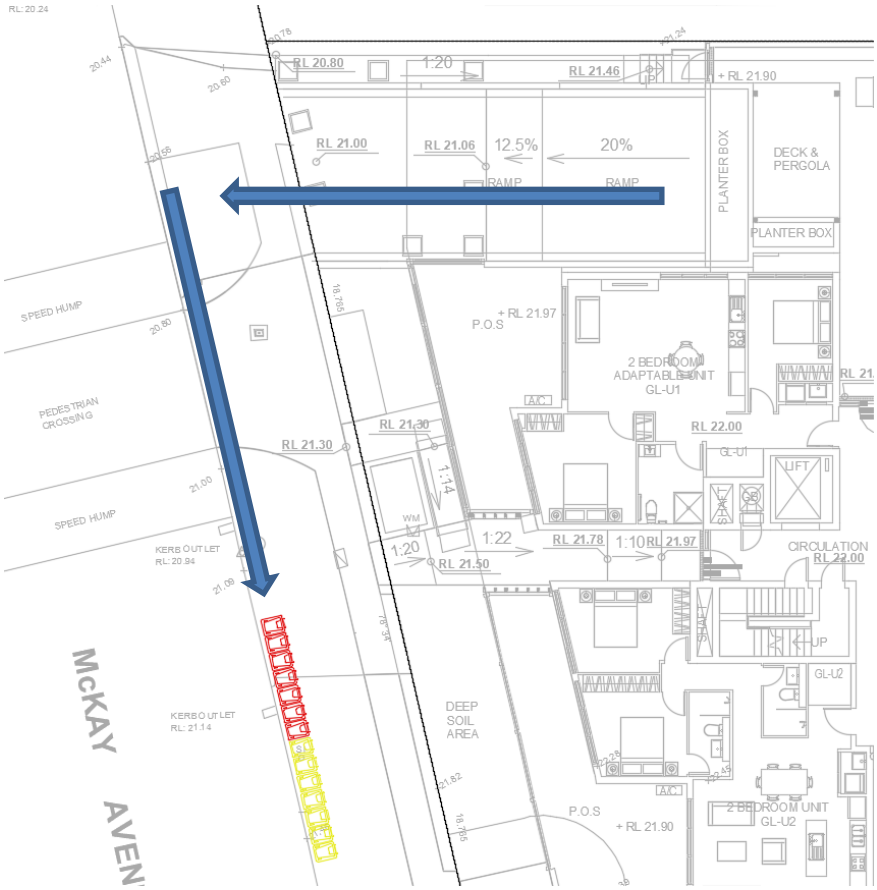


Figure 7 Bin Collection point located at kerbside

6.2.3 Green waste

Green waste will not be serviced in this development as this component is considered negligible. Building manager or caretaker will provide services to cater for any green waste accordingly.

6.2.4 Bulky waste

According to Liverpool Development Control Plan 2008, a caged bulky waste room of minimum 6 m^2 is required for the proposed development. A caged bulky waste room of 14.54 m^2 is provided next to garbage room. The building manager or caretaker shall contact council for bulky waste collection.

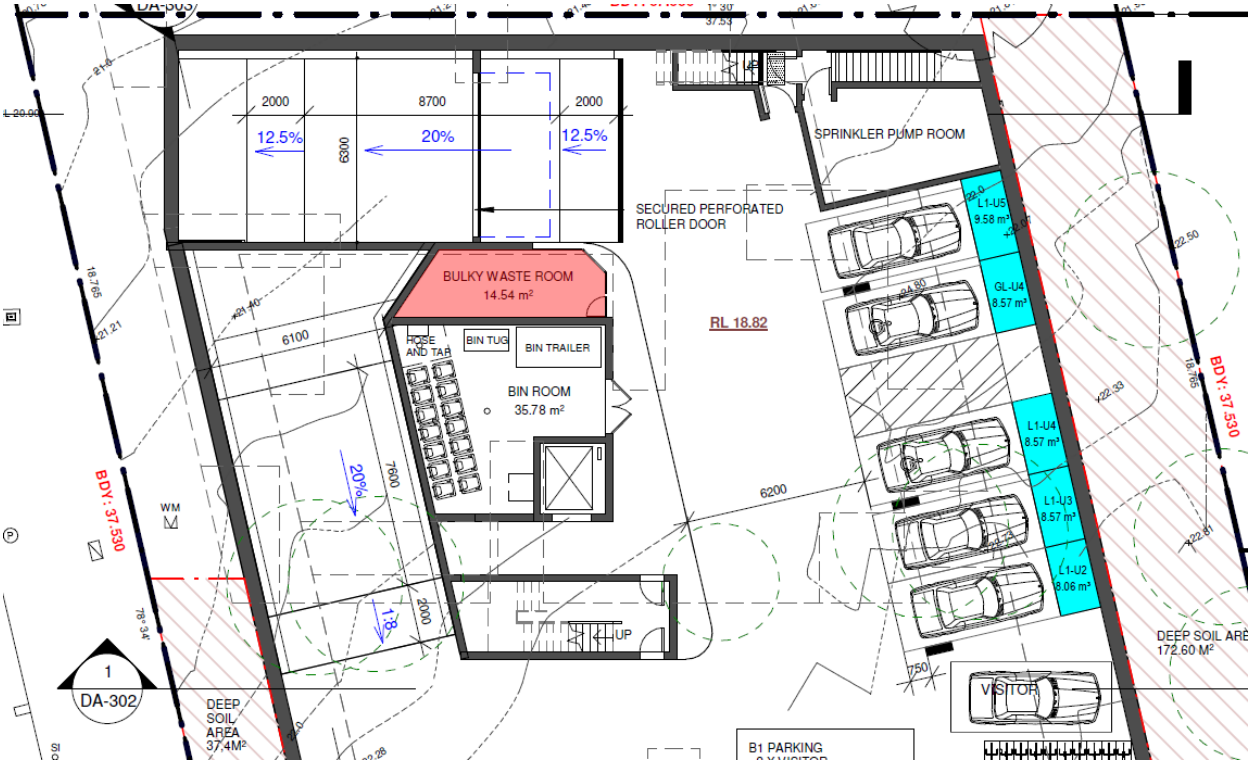


Figure 6 Bulky waste room

6.3 Further Design Requirements

Other design details that will be required as per Council and other relevant regulations are listed below:

- Waste water in waste storage areas discharge to sewer, with a cold water tap to facilitate cleaning of floor waste.
- Waste storage is aesthetically pleasing and integrated with overall design.
- Floors and walls are to be finished with a smooth, impervious and easily cleaned material.
- Cavities and penetrations are to be sealed to prevent access to vermin.
- Inclusion of signage to guide correct usage of facilities in compliance with AS1319.
- Building manager/caretaker will take responsibility for the provision of bin servicing and transport as well as maintaining waste areas.

- Storage is of adequate size to store the required number of bins.
- Amenities are easily accessible to residents, but not for non-residents to discourage illegal dumping.
- Ventilation complying with AS1668, with ventilation openings located close to ceiling and floor and away from windows of dwellings.
- All lighting and electrical components will be built to comply with standards and building regulations.

6.4 On-going Waste Management

The on-going management of waste on-site will be stipulated with conditions set out in the conditions presented to occupants before they use the facility. The building manager or caretaker will transport the bins to and from the storage area for collection and clean the waste area at a regular interval of once a week.

Each unit will be supplied with a collection area suitable for one day's storage of waste and recycling. The occupants must bag their general waste before depositing into the chute however, recycling must not be bagged.

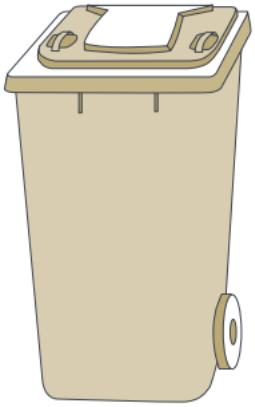
The building will be provided with a dual chute system with diverter where general waste and recycling waste will be deposited using the same chute and will be separated in the basement.

Signage and written information will be provided, so the occupants are aware of how to use and manage the waste and recycling services.

Appendix A – Signage used in waste storage areas

Appendix B –Indicative Bin Sizes

Mobile containers with a capacity from 80L to 360L with two wheels



Bin Type	80 Litre MGB	120 Litre MGB	140 Litre MGB	240 Litre MGB	360 Litre MGB
Height	870 mm	940 mm	1065 mm	1080 mm	1100 mm
Depth	530 mm	560 mm	540 mm	735 mm	885 mm
Width	450 mm	485 mm	500 mm	580 mm	600 mm

Source: Department of Environment & Climate Change NSW