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WASTE MANAGEMENT PLAN

2 – 4 Burleigh Street & 20 – 24 Railway Parade, Burwood, NSW 2134

Proposed Mixed Use/Residential Development

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Introduction

AusWide Consulting was commissioned by NSW Housing Corporation Pty Ltd to prepare a Waste Management Plan (WMP) for approval of a mixed-use office, hotel and residential development at 2 – 4 Burleigh Street & 20 – 24 Railway Parade, Burwood NSW 2134.

The proposed development consists of a new mixed used & residential development to accommodate the following:

Development Details
Basement Level 2 – 5: Parking, Services/Storage, Storage and Lifts & Stairs
Basement Level 1: Parking, Services/Storage, Storage, Waste Rooms
Ground Level: Commercial / Hotel Lobby and café, Residential Lobby, amenities, Loading Dock, Waste Rooms
Level 1 & 2: Hotel Facilities
Level 3 – 18: Residential Apartments
Level 19: Plant Room
Level 20 – 31: Hotel Rooms
Level 32: Plant Room
Level 33 – 35: Office (346m ² /floor)
Level 36 – 37: Hotel Facilities
Level 38: Residential Common Open Space

In the course of preparing this WMP, the subject site and its environs have been inspected, plans of the development examined, and all relevant council requirements and documentation collected and analysed.

This WMP has been prepared based on the following information:

- Architectural Plans provided by PTI Architecture;
- Burwood Development Control Plan;
- NSW EPA *Construction & Demolition Waste – A Management Toolkit* ;
- NSW EPA - Better Practice Guide for Resource Recovery in Residential Developments;
- NSW EPA - Better Practice Guidelines Waste management and Recycling in Commercial and Industrial Facilities;
- NSW DECC&W, House deconstruction Information Booklet.

Background and Existing Conditions

The subject site is located at 2 – 4 Burleigh Street & 20 – 24 Railway Parade, Burwood NSW 2134, on the corner of Burleigh Street and Railway Parade. All pre-existing buildings on the site have recently been demolished. Pre-existing development on the site consisted of single storey buildings, both detached and attached, occupied by various small businesses, including a family medical practice, tutoring business and a hearing clinic.

Figure 1 provides an overview of the area, and its surrounding land uses whilst **Figures 2 and 3** on page 7 provide aerial views of the immediate area surround the subject site.

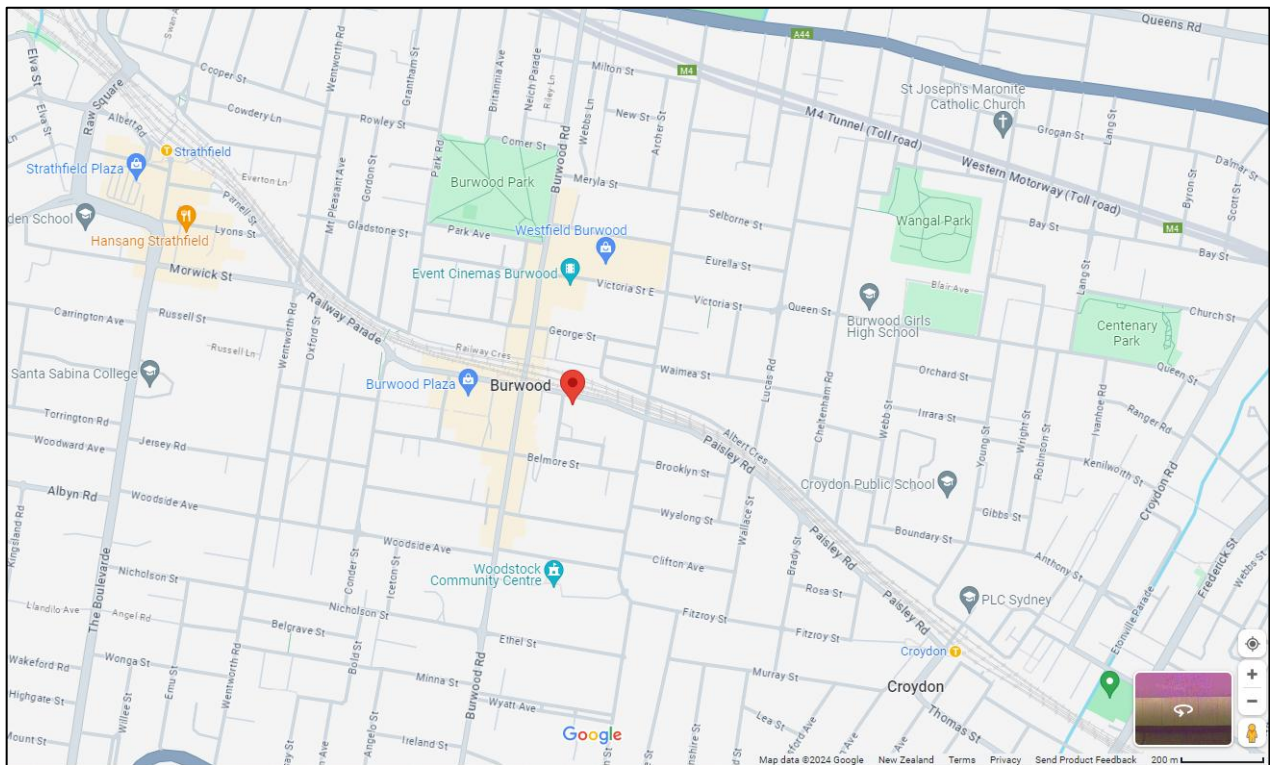


Figure 1: Location of the Subject Site

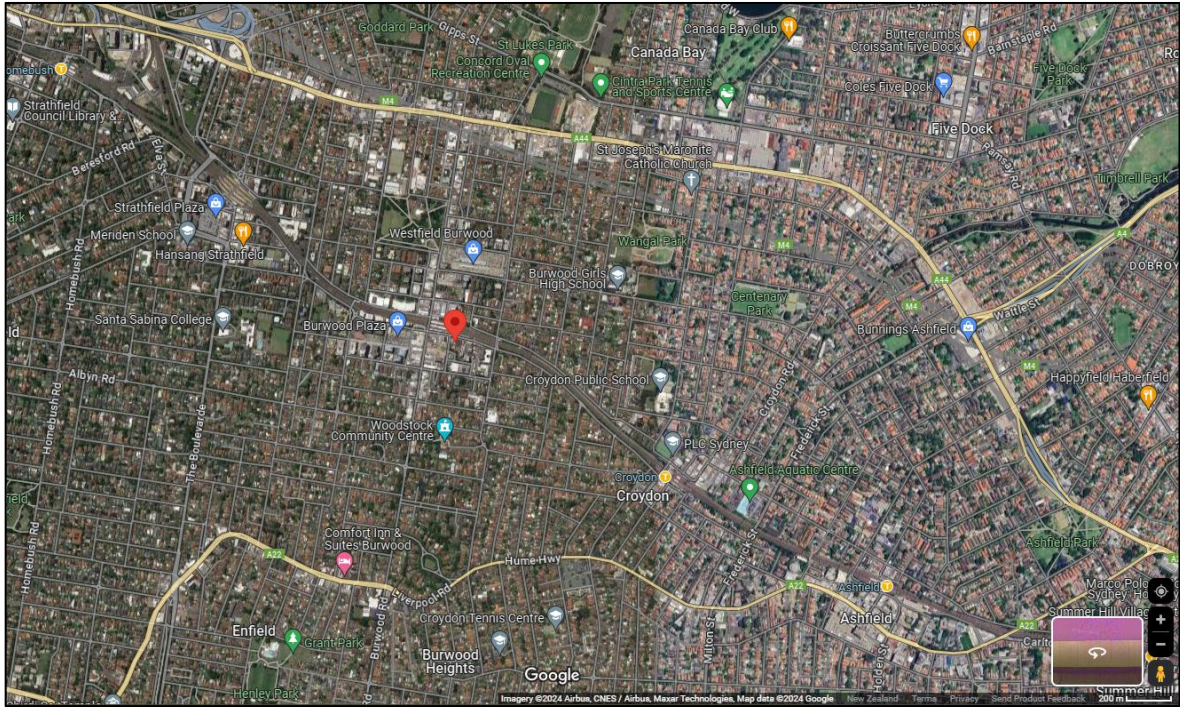


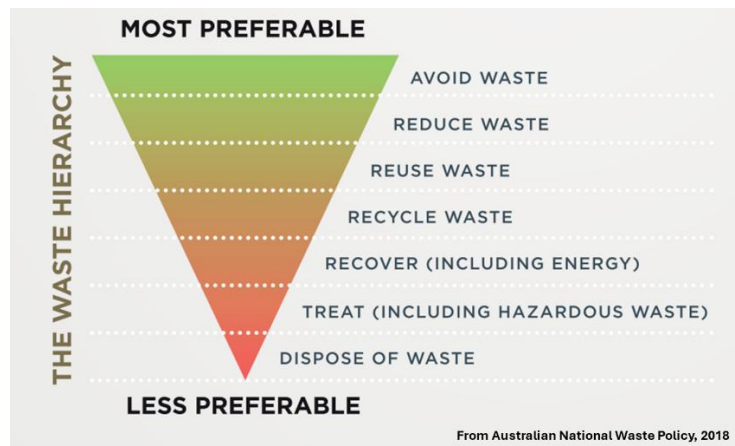
Figure 2: Aerial View of the Subject Site



Figure 3: Close up Aerial View of the Subject Site (from Colliers Sydney)

Waste Management Principles

When dealing with waste, the following hierarchy has been adopted from the Australian National Waste Policy, prioritising from top to bottom:



Avoid/Reduce

Particularly during the construction phase, avoidance of waste will be achieved through:

- Selecting design options with the most efficient use of materials; and
- Selecting materials with minimal wastage, such as prefabricated materials.

Reuse

Some of the materials encountered in the construction stage can be recovered and reused both on-site and off-site. This will be practised wherever possible. Reusable materials shall be appropriately stored to avoid damage from weather or machinery.

Recycle

Similarly, many materials from the construction stage will be recyclable. A system should be developed that incorporates to efficiently separate reusable materials, recyclable materials, and disposable materials. Recyclable materials shall be appropriately stored to avoid damage from weather or machinery. Details and receipts verifying the recycling of these materials shall be kept present on site at all times.

Recover/Treat

Processing of waste to recover resources, including energy, may be an option, with many waste companies processing construction waste before disposal. Some waste may also be treated to reduce its environmental impact before disposal.



Disposal

The waste disposal contractor chosen for the job will comply with Council's DCP. Details and receipts verifying the disposal of these materials shall be kept present on site at all times.

Handling

When handling waste on-site, the system (including bin placement, volumes, and access) shall be designed with the following factors in mind:

- Safety (highest priority);
- Ease of use; and
- Aesthetics.

Stockpiling

Waste sorting areas on-site during construction shall be adequately maintained. The material (construction material and waste) stockpiling area shall always remain within the site boundary and relocate during different construction stages as necessary. The waste area shall be largely located at the front of the site to provide access for waste collection vehicles via the site construction entrance. This is to maintain easy access and removal of waste. The stockpiling area shall not infringe on access to the site however, hoardings shall bind the site perimeter; therefore, the waste shall not be visible from the street.

Construction Stage

The proposal involves the construction of a new mixed used & residential development.

Construction Works

The following measures shall be considered during the construction stage in order to save resources and minimise waste:

- Purchasing Policy – i.e. ordering the right quantities of materials and prefabrication of materials where possible;
- Reusing formwork;
- Minimising site disturbance, limiting unnecessary excavation;
- Careful source separation of off-cuts to facilitate re-use, resale, or efficient recycling; and
- Co-ordination/sequencing of various trades.

Estimating Waste Quantities

There are many simple techniques to estimate volumes of construction waste. The sequence of steps provided below can be used as a guide:

- 1) Quantify materials for the project;
- 2) Use margins normally allowed in ordering;
- 3) Copy these amounts of waste into your waste management plan.

When estimating waste generation, the following percentages can be used as a “rule of thumb” practice (**Table 1**):

Table 1: Estimating Waste Levels

Materials	Percentage of Waste / Total Materials Ordered
Timber	5-7%
Plasterboard	5-20%
Concrete	3-5%
Bricks	5-10%
Tiles	2-5%

Subsequently, the following **Table 2** illustrates how to convert volumes of material to their respective weights. This information is particularly important during material storage and transportation stages.

Table 2: Converting Volume into Weight

Materials
Timber = 0.5 tonnes per m ³
Concrete = 2.4 tonnes per m ³
Bricks = 1.5 tonnes per m ³
Tiles = 0.75 tonnes per m ³
Steel = 2.4 tonnes per m ³

Construction Waste Types and Handling

Waste volumes produced by the construction stage is estimated in the following **Table 3**. Detailed waste volumes will be confirmed by the contractor at the construction certificate stage. Where possible, materials shall be reused or recycled, with disposal being the last resort. The destination of all recycled and disposed material shall be announced upon the selecting the waste collectors and recyclers.

The arrangements for all reused, recycled and disposed waste shall be tracked and recorded, and all receipts shall be held on-site.

Construction Phase

If sound construction management practises are in place, then waste volumes should be minimised with the majority of this waste being recyclable. It would be expected that the construction of a new dwelling unit would create 1-2 tonnes of waste. For the purpose of this exercise, 0.5 tonnes have been used as the development proposes apartment units smaller than the average detached single dwelling.

Construction waste will be collected in skip bins and taken to the construction contractors nominated reprocessing facility. Such facilities typically recover over 80% of materials from construction waste by mass, with less than 20% being disposed of to landfill. Greater detail will be provided by the contractor at the CC stage.

Table 3: Estimated Construction Waste

Materials on Site	Waste Estimate - Weight (tonnes t)	On-Site Reuse	Off-Site Recycling	Off-Site Disposal (Accordance with NSW EPA)
Bricks	11t	Minimal	90%	10%
Ceramic Tiles	5t	Minimal	90%	10%
Timber	16t	Minimal	90%	10%
Concrete	25t	Nil	90%	10%
Metals	5t	Nil	95%	5%
Plaster Board	22t	Nil	94%	6%
Other	8t	Nil	50%	50%
TOTAL	92t	n/a	>80%	<20%

On-Going Waste Management, Storage and Collection

The proposed development consists of construction of a 39 storey mixed use development containing;

- a hotel with 120 rooms;
- commercial office premises;
- a residential flat building with 48 dual key residential apartments; and
- 5 levels of basement car parking.

The Mobile Garbage Bins (MGBs) waste storage room can be accessed on the basement level 1 and ground level (Ref: **Figures 4 & 5**).

Waste Generation

Waste generations rates have been adopted from Table 8.1.6 of the Burwood Council DCP (amendment 10).

It is assumed that waste from the residential facilities is included in the generation volumes for the residential spaces. The residential facilities consist of:

- Lounge, Co-working and Kitchen on Level 1;
- Lounge and Outdoor space on Level 2;
- Lounge/Games room and kitchen on Level 36;
- Gym on level 37; and
- Communal Open Space and Pool on Level 38.

For the coffee shop, it is recommended that bringing your own cups be encouraged, and a disposable coffee cup recycling service, such as Simply Cups, be adopted and their receival bin be placed in the flyer.

Table 4 below illustrates the typical garbage, recycling, and food/organic waste generation rates, and **Table 5** estimates waste volumes from the development based on these rates.

Table 4: Typical General and Recycling Generation Rates for Residential & Commercial.

Type of Premises	General Landfill Waste	Comingled Recycling Waste
1 Bedroom apartment or studio Residential Unit	60L/occupant space/week	60L/occupant space/week
2 Bedroom Residential Unit	2 x 60L/occupant space/week	2 x 60L/occupant space/week
Hotels	5L /bed space/day	1L/bed space/day
Office	50L/100m ² floor area/day	10L/100m ² floor area/day
Coffee Shop	10L/1.5m ² /day	2L/1.5m ² /day

Table 5: Estimated General and Recycling Generation Volumes for Residential & Commercial.

Type of Premises	General Landfill Waste	Comingled Recycling Waste
Residential – 48 x 2 bedroom (dual key)	5,760L/week	5,760L/week
Hotel (120 rooms)	4,200L/week	840L/week
Offices (1,038m ² , 5 days per week)	2,595L/week	519L/week
Coffee Shop (Lobby, 30m ² , 5 days/week)	1,000L/week	200L/week
Total Waste Generation	13,555L/week	7,319L/week

NB: Assumed 5-day operation for Office tenancies.

Based on the total waste generated by the development, the following combination of MGBs should be provided:

Residential Waste Area

- 6 x 1,100L General Waste MGBs – collected once a week; and
- 6 x 1,100L Container Recycling MGBs – collected once a week.

NOTE: The volume of residential waste could be reduced by 30 to 50% by incorporation of a compactor plate in the waste chute plant. This could reduce the number of 1,100L bins to 3 or 4 bins per week.

Commercial Area – Hotel, Offices and Coffee Shop (5-day operation)

- 4 x 1,100L General Waste MGBs – collected twice a week;
- 3 x 660L Comingled Recycling MGBs – collected once a week.

The following **Table 6** illustrates the typical dimensions of 120L, 240L and 360L MGBs as mentioned above.

Table 6: Typical Measurements for MGBs.

Size	Height (mm)	Width (mm)	Depth (mm)
660L	1250	1370	850
1,100L	1470	1370	1245

Signage

Appropriate colour coded signage will be provided in the waste chutes and bin storage rooms. These will be displayed in a prominent position to assist residents and commercial operators when depositing their waste. In particular, the signage will include educational material from Council and address items that are acceptable or not acceptable based on Council’s requirements.

Waste Collection and Storage

The residents will utilise a waste chute for general waste, and a 240L bin in a cupboard will be used for recycling waste (**Figure 4**). Building management will bring the 16 recycling bins from the residential floors to the ground level loading dock (**Figure 6**) using the service lift twice a week. When emptied, the bins will be inspected and cleaning if necessary and then taken back to the bin cupboards on the residential floors using the service lift. The recycling bin cupboards will be temporarily locked during collection day with notices telling residents to hold recycling while the bins are being emptied.

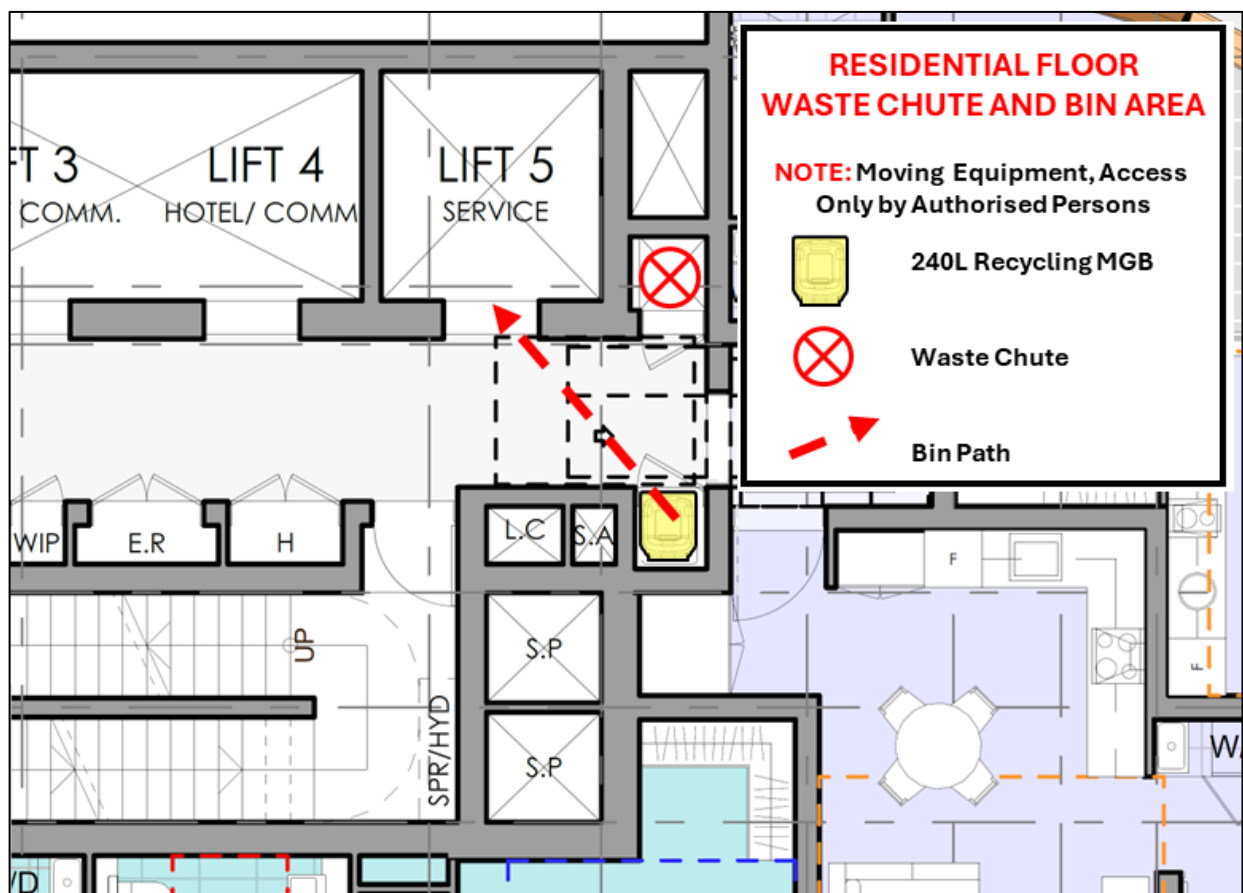


Figure 4: Residential Waste Chute and Bin Cupboard, Levels 3 to 18

Figure 6 shows the residential waste chute room, the commercial bin room for the hotel, offices and café, and loading dock for waste collection with a rear-loading MRV waste truck. The residential chute room will have a diverter (**Figure 6**) to ensure that the chute is always available.

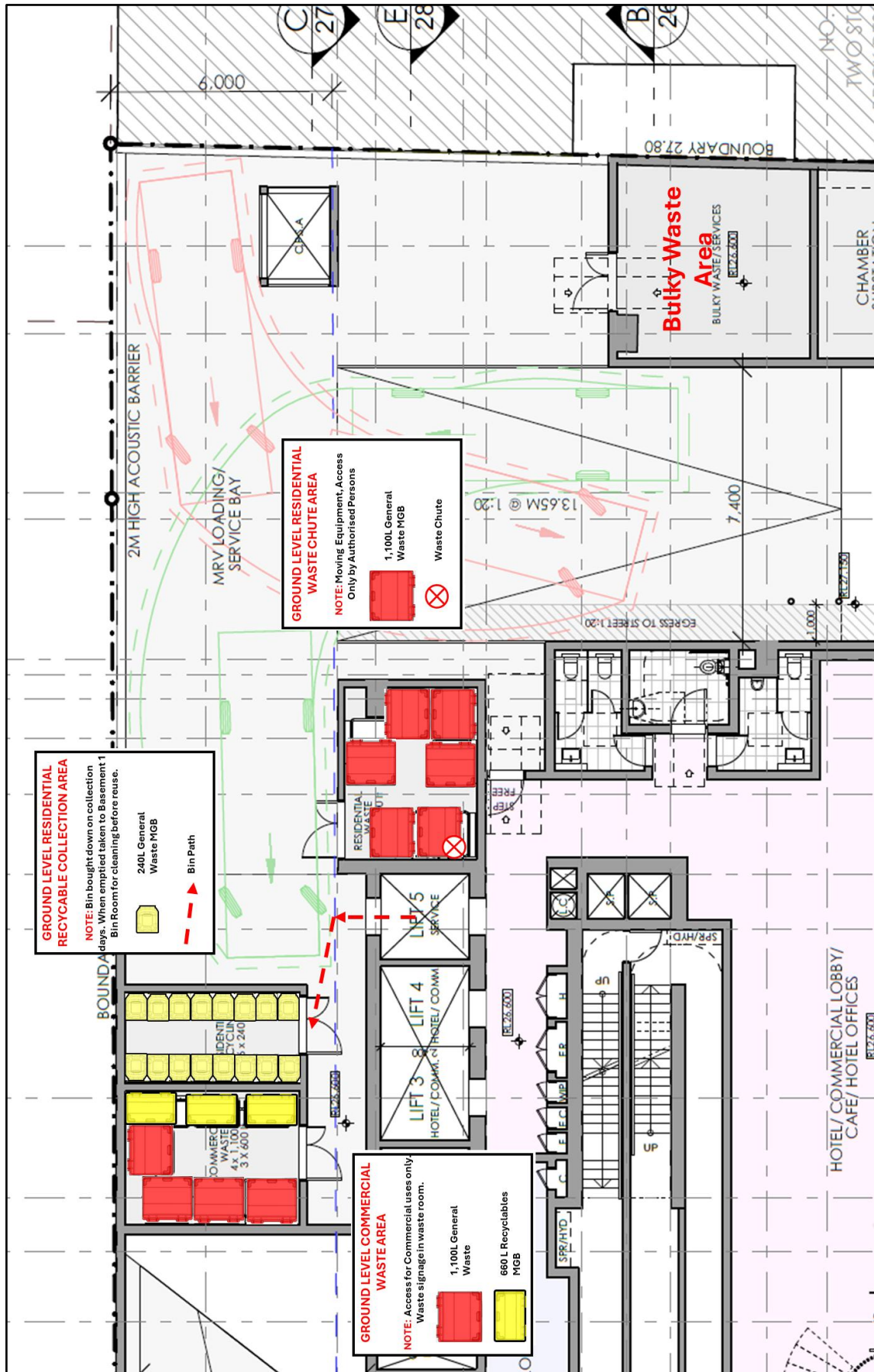


Figure 5: Residential and Commercial Bin and Chute Rooms, Ground Level

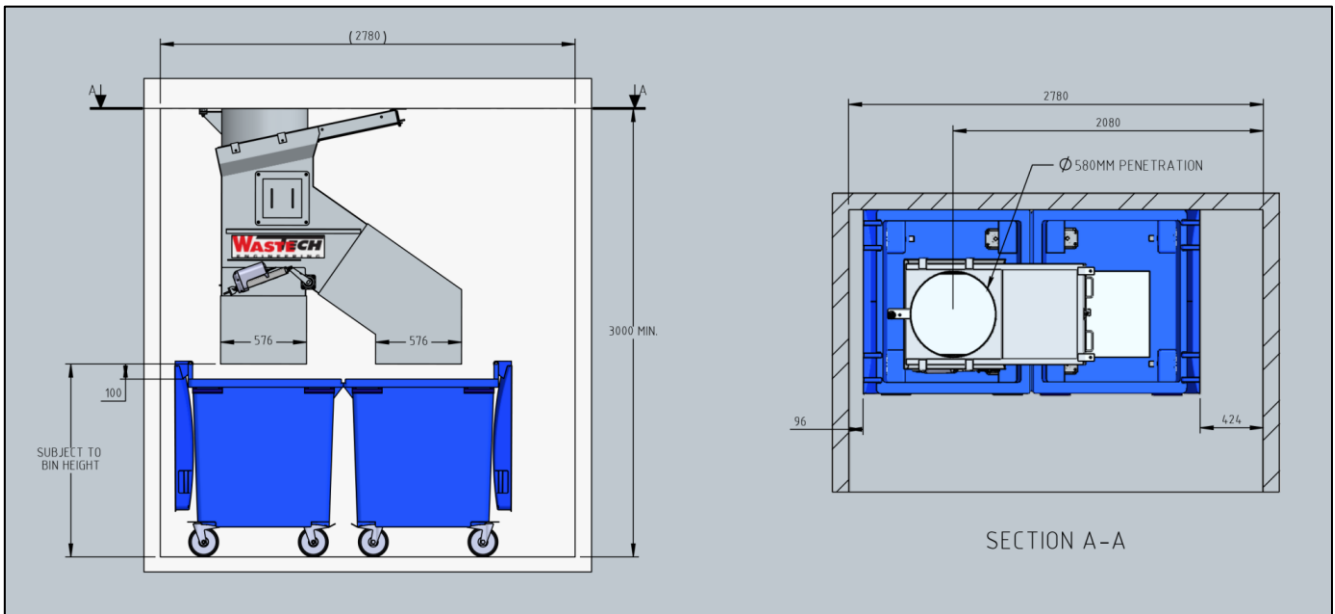


Figure 6: Typical 1,110L Residential General Waste Chute Diverter Layout and Dimensions

Waste Collection

The waste collection service for the residential and non-residential development will be provided by a private contractor. Swept paths for an MRV waste truck entering the site, reversing to the loading area, and exiting the site are included in **Figure 5**. The typical dimensions of a rear loading commercial MRV waste truck is shown in **Figure 7** below.

Residential general waste will be collected on a weekly basis, while the residential recycling will be collected twice a week. The commercial general waste should be collected twice a week, and the commercial recyclables on a weekly basis.

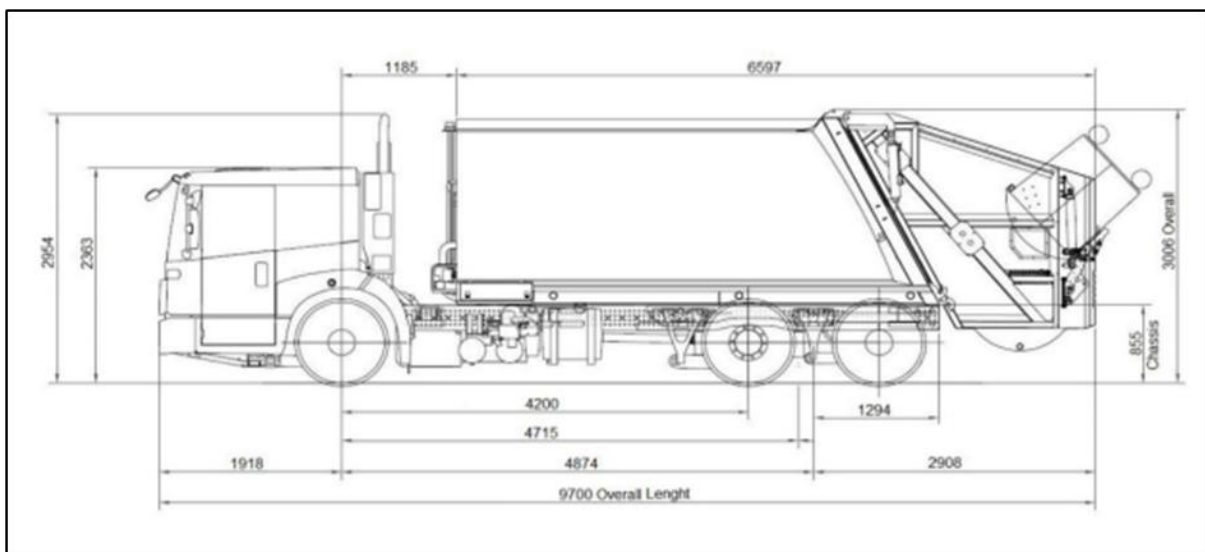


Figure 6: Typical Rear Loading Commercial MRV Waste Truck Dimensions

Amenity

Noise

The only noise generated from the waste management at the property will be that of the waste being collected, any other noise related to the waste management will be kept to a minimum.

Ventilation

All waste storage areas will be ventilated to Council's specification and BCA. This should be mechanical ventilation to outside of the building envelope.

Security/Communication Strategy

All MGBs will be secured within the waste storage area.

All residents and tenants will receive detailed documentation detailing all necessary requirements for safe waste management and handling including all relevant contact information.

Cleaning Facilities

The facility management will be responsible for keeping the MGBs clean.

The waste bin storage areas will have impervious coated/treated ground surface, and be painted in a light colour. It must have a tap and hose, and floor graded to a screen floor waste.

The commercial tenants will inspect the bin storage at time of collection to ensure it is free from loose refuse and debris.

Prevention of Vermin

The occupants will be advised to not overfill the bins so that the lids are closed at all times. It is suggested to place rat traps in the corners of the waste storage areas.

Miscellaneous

Communal Composting Facility

No consideration is given to composting on-site, but FOGO for collection for off-site composting can be considered at a later date if required by Council.

Internal Waste Storage

Enough space is to be provided within the kitchen of each dwelling and also the tenancies for the interim storage of at least one day of garbage and recyclables.

Green/Food Waste

All food waste for both the residential and non-residential areas will be disposed of in the general waste bins.

The garden waste will be placed into the green bin for fortnightly collection by council. If garden waste exceeds the allocated volume, it will be collected and managed by a private contractor.

Bulky Hard Waste

Bulky waste storage is not encouraged for residential developments therefore has not been provided for.

Provision, however, for the storage of bulky waste for the non-residential waste has been provided for in Waste Storage Area 1. A minimum of 4m² has been allocated.

The collection of bulky waste will be provided by a private contractor and will be arranged by the tenants of the non-residential tenancies as required.

E-Waste

Recyclable electronic goods include batteries, equipment containing printed circuit boards, computers, televisions, fluorescent tubes, and smoke detectors. E-Waste will be placed in impermeable surface containers and collected by a registered E-Waste Re-Processor as required.

Appendix A – Waste Management Contacts

Materials	Company Name	Company Address	Contact Details
Evacuation Material/Soil Waste	Enviroguard	Cnr Mamre & Erskine Parks Rds Erskine Park	9834 3411
Green Waste	Ecocycle	155 Newton Road Wetherill Park	9757 2999
Bricks	Brandown	Lot 9 Elizabeth Drive Kemps Creek	9826 1256
Concrete	Brandown	Lot 9 Elizabeth Drive Kemps Creek	9826 1256
Timber	Artistic Popular Furniture	10 Raglan Road Auburn	9644 3054
Metals	Parramatta Scrap Metal	12 North Rocks Rd Nth Parramatta	9630 2974
Roof Tiles	Obsolete Tiles	3 South Street Rydalmere	9684 6333
Door Fittings	Recycling Works	45 Parramatta Rd Annandale	9517 2711
Plastics	Cromford	120-122 Ballandella Rd Pendle Hill	9631 6644
Plasterboard	Ecocycle	155 Newton Road Wetherill Park	9757 2999
Fibro Containing Asbestos	Enviroguard	Cnr Mamre & Erskine Parks Rds Erskine Park	9834 3411