# 11 Gladys Ave & 116-120 Frenchs Forest Rd – Waste Management Plan

## A Submission to Young Assets Holding Pty Ltd

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MRA Consulting Group

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## Disclaimer



In the spirit of reconciliation MRA Consulting Group acknowledges the Traditional Custodians of country throughout Australia and their connection to land, sea and community. We pay our respects to Aboriginal and Torres Strait Islander peoples and to Elders past, present and emerging.

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# Glossary

| Terminology | Definition |
|---|---|
| AS | Australian Standard |
| DA | Development Application |
| DC | Development Consent |
| DECC | Department of Environment and Climate Change |
| DCP or WDCP | Development Control Plan or Warringah Development Control Plan 2011 |
| ENM | Excavated Natural Material |
| EPA | Environment Protection Authority |
| LEP or WLEP | Local Environmental Plan or Warringah Local Environmental Plan 2011 |
| LGA | Local Government Area |
| MGB | Mobile Garbage Bin |
| MSW | Municipal Solid Waste (also referred to as domestics or residential waste) |
| NBC | Northern Beaches Council |
| TG | Truslan Group |
| VENM | Virgin Excavated Natural Material |
| WMP | Waste Management Plan |
| WSP | Waste Service Provider |

# 1 Introduction

MRA Consulting Group (MRA) was engaged to prepare a Waste Management Plan (WMP) related to the proposed residential flat development at 11 Gladys Avenue and 116-120 Frenchs Forest Rd, Frenchs Forest. The site is situated in the Northern Beaches Council (NBC) Local Government Area (LGA).

The proposal involves the construction of a residential flat development comprising 124-unit dwellings over basement carparking.

This WMP addresses the requirements of the Consent Authority (Council) and conforms to the following reference documents:

- The Warringah Local Environmental Plan 2011 (WLEP).
- The Warringah Development Control Plan 2011 (WDCP).
- Northern Beaches Council's Waste Management Guidelines (2016).

This WMP also has regard to the following supplementary reference documents:

- NSW EPA's Better Practice Guide for Resource Recovery in Residential Developments (2019).
- NSW EPA's Better Practice Guidelines for Waste Management in Commercial and Industrial Facilities (2012).

A Waste and Recycling Management Plan has been prepared in accordance with Chapter C9 - Waste Management, of the Warringal Development Control Plan 2011, which provides the following general objectives for waste management:

- *To facilitate sustainable Waste management in a manner consistent with the principles of Ecologically Sustainable Development (ESD).*
- *To achieve Waste avoidance, source separation and recycling of household and industrial/commercial Waste.*
- *To design and locate waste storage and collection facilities which are convenient and easily accessible; safe; hygienic; of an adequate size, and with minimal adverse impacts on residents, surrounding neighbours, and pedestrian and vehicle movements.*
- *To ensure Waste storage and collection facilities complement Waste collection and management services, offered by Council and the private service providers and support on-going control for such standards and services.*
- *To minimise risks to health and safety associated with handling and disposal of Waste and recycled material and ensure optimum hygiene.*
- *To minimise any adverse environmental impacts associated with the storage and collection of Waste.*
- *To discourage illegal dumping.*

This WMP is used to inform the building design to deliver best practice waste management and promote sustainable outcomes at the demolition, construction and operational phases of the development. The WMP addresses waste generation and storage associated with demolition and construction works through redevelopment, and ongoing occupation of the proposed use.

# 2 Background

## 2.1 Description of Proposed Development

The proposal involves:

- the demolition and removal of four single residential dwellings (including ancillary structures)
- construction of a residential flat development comprising:
  - Three building forms over shared basement carparking,
  - 124 dwellings,
  - Sitewide landscaping, and
  - Shared communal spaces.

## 2.2 Site Location

The site is located at 11 Gladys Avenue and 116-120 Frenchs Forest Road, Frenchs Forest identified as Lots 14 and 24 of DP 25713 & Lots 1 and 2 of DP 213608 in the Warringah LEP 2011. Figure 1 depicts an aerial image of the site and surrounds.

The site comprises four lots and has frontages to Frenchs Forest Road to the south and Gladys Avenue to the north which ends on a cul-de-sac. The site is surrounded primarily by single detached dwellings and is located opposite the Northern Beaches Hospital across Frenchs Forest Rd. Wakehurst Parkway is located to the east of the development.

**Figure 1: Site Location and Surrounds**


*Source: Nearmaps, 2023.*

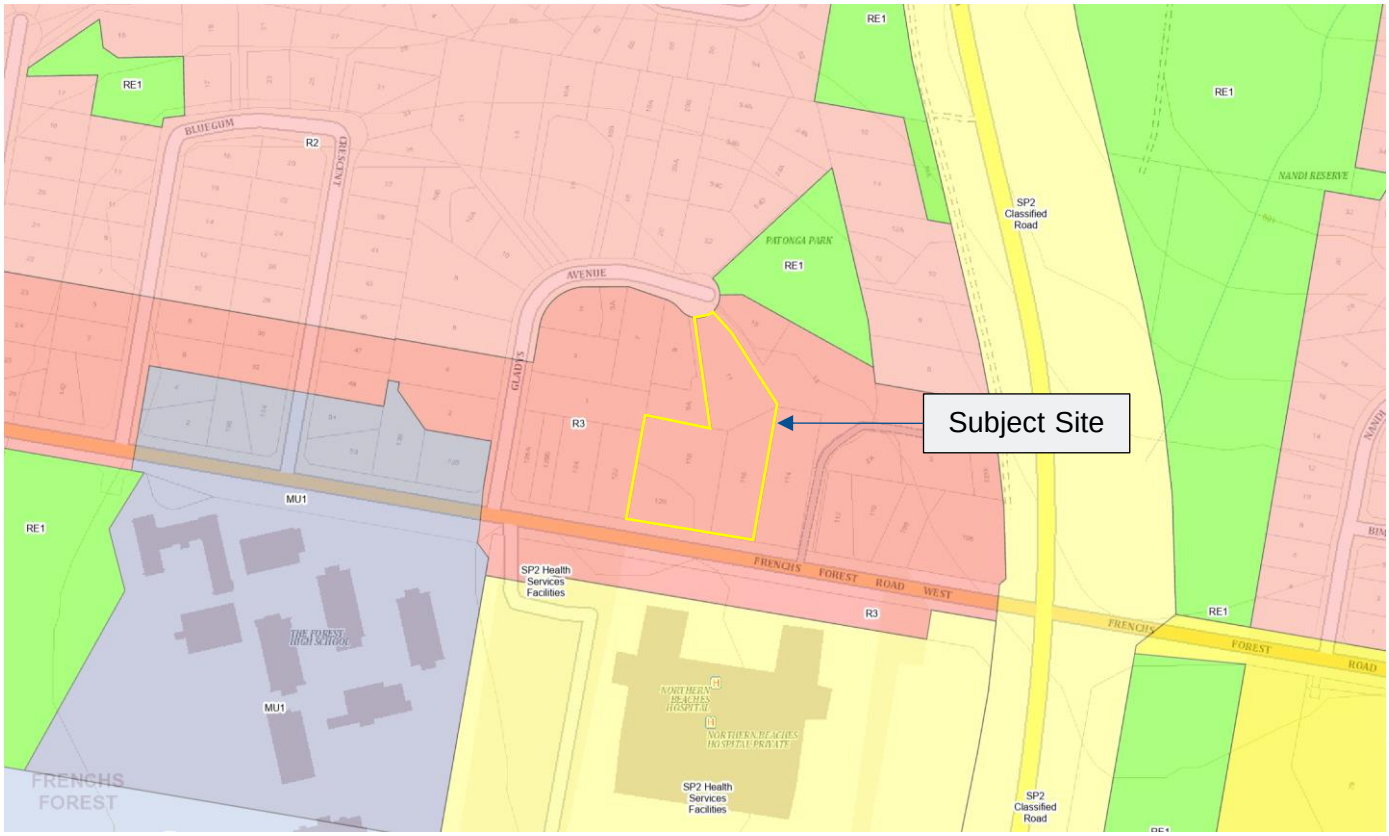
## 2.3 Zoning and Land Use

The site is zoned R3 – Medium Density Residential in the WLEP 2011 (see Figure 2). Objectives of the zone include:

- *To provide for the housing needs of the community within a medium density residential environment.*
- *To provide a variety of housing types within a medium density residential environment.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*
- *To ensure that medium density residential environments are characterised by landscaped settings that are in harmony with the natural environment of Warringah.*
- *To ensure that medium density residential environments are of a high visual quality in their presentation to public streets and spaces*

Surrounding zones include R2 – Low Density Residential and RE1 – Public Recreation, SP2 - Health Services Facilities and MU1 – Mixed Use Zone.

**Figure 2: Land Use Zoning Map**




*Source: ePlanning Spatial Viewer, 2023.*

## 2.4 Strategies

Waste management for the site considers better practice, necessary equipment, and integration with other guidance documents including the NSW Waste and Avoidance and Resource Recovery (WARR) Strategy (NSW EPA 2014), and National Waste Policy: Less Waste, More Resources (DAWE, 2018). The key policy aims that are considered are:

- Avoidance (to prevent the generation of waste);
- Reduce the amount of waste (including hazardous waste) for disposal;
- Manage waste as a resource; and
- Ensure that waste treatment, disposal, recovery and re-use are undertaken in a safe, scientific and environmentally sound manner.

Management of waste generated onsite according to directives of the WARR Strategy 2014-2021 will assist in achieving the target of 80% diversion from landfill in the C&D sector.

## 2.5 Assumptions

This report is a Waste Management Plan (WMP), forming part of the development documentation and assumes:

- Drawings and information that have been used in waste management planning for this WMP are the final reference/indicative development plan from the project architect, Brewster Murray, dated 25 October 2024.
- The NSW EPA's *Better Practice Guide for Resource Recovery in Residential Developments* (2019) and the WDCP 2011, outlines waste generation rates and services available for new developments which have been considered in the preparation of this report; and
- This WMP is a living document and therefore, waste management equipment and systems described in this report are subject to change based on future operations and available technology.

# 3 Demolition and Construction Waste

The Warringah DCP 2011 provides the following objectives for Demolition and Construction Waste (C8 of the WDCP 2011):

- *To manage demolition and construction sites so that there is no unreasonable impact on the surrounding amenity, pedestrian or road safety, or the natural environment.*
- *To promote improved project management by minimising demolition and construction waste and encouraging source separation, reuse and recycling of materials.*
- *To assist industry, commercial operators and site managers in planning their necessary waste management procedures through the preparation and lodgement of a Waste Management Plan*
- *To discourage illegal dumping.*

Throughout the C&D process, all materials will be reused and recycled where possible in line with the WDCP objectives, minimising the disposal (landfilling) of materials other than those that are contaminated or unsuitable for reuse or recycling. This is in line with the NSW WARR Strategy 2014-2021, to reduce landfilling and achieve a resource recovery target of 80% by 2022 for all construction and demolition related works.

Construction and demolition (C&D) activities at the site will generate a variety of waste types. Waste storage during demolition and construction operations will involve stockpiling of excavated and reusable material, as well as placement of skip (marrel) bins for the separation of building C&D materials for recycling. A separate skip bin for residual waste and/or contaminated material will also be made available at the site for disposal where necessary. The active waste management area(s) may require alternative placement throughout various stages of works, as areas are cleared, and existing structures are demolished. This will facilitate the safe and efficient storage of materials and will be retained within property boundaries to avoid illegal dumping. Where skips require temporary placement on the footpath or Council owned land, a separate approval from Council will be required.

Potential locations for C&D waste storage will be managed by the demolition or construction contractor to ensure good waste management practice is maintained at the site during works.

Site waste storage areas will be kept clear to maintain vehicular access and shall also be kept tidy to encourage separation of waste materials and for WHS reasons.

The waste management principles and facilities in use on the site shall be included as part of the site induction for all personnel working on the site.

## 3.1 Demolition

This section details the demolition waste materials expected for the proposed development, including their quantities and management options, and was designed with consideration of the requirements in the WDCP. The information below presents options for materials reuse, recycling and disposal where applicable. All materials are intended to be sent to a suitable, licensed landfill or resource recovery facility.

Table 1 below describes the expected demolition material quantities and appropriate management methods for the proposed development, related to the demolition or deconstruction works proposed.

Demolition involves the removal of four single residential dwellings (including ancillary structures).

**Table 1: Demolition waste material by volume**

| Type of Material | | Estimated volumes ($m^3$) | Re-use on-site | Recycle (Separate collection) | Recycle (Off-site) | Estimated % Landfill | Estimated % of landfill diversion | Methods for re-use, recycling or disposal |
|---|---|---|---|---|---|---|---|---|
| Concrete | | <100$m^3$ | ✓ | ✓ | ✓ | <5% | >95% | On site: to be separated wherever possible to enhance resource recovery.<br>C&D processor: crushing and recycling for recovered products (aggregates). |
| Bricks/pavers | | <20$m^3$ | ✓ | ✓ | ✓ | <5% | >95% | On site: cleaned and separated wherever possible for reuse or to enhance resource recovery.<br>C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products. |
| Tiles | Roof | N/A | ✓ | ✓ | ✓ | <5% | >95% | On site: cleaned and separated wherever possible for reuse or to enhance resource recovery.<br>C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products. |
| | Interior | <5$m^3$ | - | ✓ | ✓ | 0% | 100% | |
| Timber (engineered/ treated) | | <10$m^3$ | - | ✓ | ✓ | 50% | 50% | On site: to be separated wherever possible to enhance resource recovery.<br>Reuse: surplus and offcut material returned to manufacturer for reuse.<br>C&D processor: recovery and recycling for recovered product (e.g. mulch) or organics processing. |
| Metals (ferrous and non-ferrous) | | <5$m^3$ | - | ✓ | ✓ | <10% | >90% | Onsite: to be separated wherever possible to enhance resource recovery.<br>C&D processor: metals recovery and recycling. |

| Type of Material | Estimated volumes ($m^3$) | Re-use on-site | Recycle (Separate collection) | Recycle (Off-site) | Estimated % Landfill | Estimated % of landfill diversion | Methods for re-use, recycling or disposal |
|---|---|---|---|---|---|---|---|
| Plasterboard | 10- 20$m^3$ | - | ✓ | ✓ | <10% | >90% | On site: to be separated wherever possible to enhance resource recovery.<br>Reuse: surplus and offcut material returned to manufacturer for reuse. |
| Glass | <10$m^3$ | ✓ | ✓ | ✓ | <10% | >90% | On site: to be separated wherever possible to enhance resource recovery.<br>Reuse: surplus and offcut material returned to manufacturer for reuse where possible.<br>Glass recycler: recovery and recycling. |
| Fixtures and fittings | <15$m^3$ | ✓ | ✓ | - | 50% | 50% | On site: reuse wherever possible or return to manufacturer.<br>Reuse: surplus and offcut material returned to manufacturer for reuse where possible.<br>C&D processor: recovery and recycling. |
| Floor coverings | <20$m^3$ | - | ✓ | ✓ | 50% | 50% | On site: to be separated wherever possible to enhance resource recovery.<br>Reuse: surplus and offcut material returned to manufacturer for reuse where possible.<br>C&D processor: recovery and recycling. |
| Garden organics (Vegetation) | N/A | ✓ | ✓ | ✓ | 0% | 100% | Garden organic waste from landscaping.<br>Organics processor: storage on-site (from minor excavations) processing for recovered product (e.g. mulch or other blended recovered fines) or organics treatment. |

| Type of Material | Estimated volumes ($m^3$) | Re-use on-site | Recycle (Separate collection) | Recycle (Off-site) | Estimated % Landfill | Estimated % of landfill diversion | Methods for re-use, recycling or disposal |
|---|---|---|---|---|---|---|---|
| Residual waste (general refuse) | <10$m^3$ | - | - | - | 100% | - | Separate recyclables where possible and disposal at principal licensed waste facility. |
| Hazardous/ special waste (e.g. spills and contaminated wastes) | Unknown | - | - | - | 100% | - | Management by a licensed asbestos and site hygienist should hazardous or special waste be found at the site. |
| **Total % Diversion from Landfill Estimated** | | | | | | **>80%** | |

## 3.2 Construction Waste

The project involves the construction of a residential flat development, featuring:

- excavation for basement level carparking
- the demolition and removal of four single residential dwellings (including ancillary structures)
- construction of a residential flat development across three building forms, comprising 124-unit dwellings,
- sitewide landscaping, and
- shared communal spaces.

Table 2 outlines indicative volume to weight conversion factors for common construction materials.

**Table 2: Building waste material by percentage and conversion factor for volume and weight**

| Building waste material | Tones per $m^3$ | Waste as % of the total material ordered |
|---|---|---|
| Bricks | 1 | 5-10% |
| Concrete | 2.4 | 3-5% |
| Tiles | 0.75 | 2-5% |
| Timber | 0.5 | 5-7% |
| Plasterboard | - | 5-20% |
| Ferrous metal | 2.4 | - |

*Source: NSW EPA's Model Waste DCP Chapter 2008*

Table 3 outlines the estimated waste generation rates for materials through construction of the proposed development, in addition to the appropriate management methods for each material type.

**Table 3: Construction waste generation estimations**

| Type of Material | Estimated Volumes ($m^3$) | Re-use on-site | Recycle (Separate collection) | Recycle (Off-site) | Landfill | % of landfill diversion | Methods for re-use, recycling or disposal |
|---|---|---|---|---|---|---|---|
| Excavated material | 3,000 – 5,000$m^3$ | ✓ | ✓ | ✓ | <5% | >95% | Onsite: Reuse for fill and levelling.<br>Offsite: Removed from site for reuse as recycled fill material or soil.<br>Disposal: Removal of any contaminated material for appropriate treatment or disposal. |
| Bricks/pavers | <10$m^3$ | ✓ | ✓ | ✓ | <10% | >90% | Onsite: Separated wherever possible and reused or crushed for landscaping and driveways.<br>Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products. |
| Concrete | 50 – 80$m^3$ | ✓ | ✓ | ✓ | <10% | >90% | Onsite: Separated wherever possible and reused or crushed for filling, levelling or road base.<br>Offsite: Removed to C&D facility for crushing and recycling for recovered products. |
| Tiles | <10$m^3$ | ✓ | ✓ | ✓ | <10% | >90% | Onsite: Separated wherever possible and reused or crushed for landscaping and driveways.<br>Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products. |
| Timber (clean) | <10$m^3$ | - | ✓ | ✓ | <10% | >90% | Onsite: Separated wherever possible to improve resource recovery. |

| Type of Material | Estimated Volumes ($m^3$) | Re-use on-site | Recycle (Separate collection) | Recycle (Off-site) | Landfill | % of landfill diversion | Methods for re-use, recycling or disposal |
|---|---|---|---|---|---|---|---|
| | | | | | | | Offsite: Returned to supplier for reuse removed to C&D facility for recovery where possible. |
| Timber (treated) | Minor | - | ✓ | ✓ | 50% | 50% | Onsite: Separated wherever possible to improve resource recovery.<br>Offsite: Returned to supplier for reuse removed to C&D facility for recovery where possible. |
| Plasterboard | <20$m^3$ | - | ✓ | ✓ | <10% | 90% | Onsite: Separated wherever possible to improve resource recovery.<br>Offsite: Returned to supplier or removed to a C&D/plasterboard recovery facility for recovery where possible. |
| Glass | Minor | ✓ | ✓ | ✓ | <10% | >90% | Onsite: Separated wherever possible and reused or crushed for landscaping and driveways.<br>Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products. |
| Metals (ferrous)<br>Metals (non-ferrous) | <10$m^3$ | - | ✓ | ✓ | <10% | >90% | Onsite: Separated wherever possible to improve resource recovery.<br>Offsite: Returned to supplier for reuse or removed to C&D facility for recovery and recycling. |
| Floor covering | <10$m^3$ | - | ✓ | ✓ | <10% | >90% | Offcut carpet separated where possible and returned to supplier for reuse. |

| Type of Material | Estimated Volumes ($m^3$) | Re-use on-site | Recycle (Separate collection) | Recycle (Off-site) | Landfill | % of landfill diversion | Methods for re-use, recycling or disposal |
|---|---|---|---|---|---|---|---|
| Electronic waste | <5$m^3$ | - | ✓ | ✓ | <10% | >90% | Offcut wires and electronics separated where possible or returned to supplier for reuse. |
| Packaging materials (pallets, wrap, cardboard, etc) | 80 - 100$m^3$ | - | ✓ | ✓ | <10% | >90% | Returned to supplier where possible or separated by material type for resource recovery. |
| Residual waste | 30 - 50$m^3$ | - | ✓ | ✓ | 100% | - | Resource recovery dependant on facility destination capability. |
| | | | | | **Total Diversion %** | **>90%** | |

## 3.3 Waste Contractors and Facilities

To ensure best practice waste management, appropriate contractors and facilities have been proposed based on their location and service offerings (Table 4).

**Table 4: Waste service contractors and facilities**

| Role | Details |
|---|---|
| Recommended Waste Collection Contractor | The following are local skip bin operators for consideration in the management of excavation and construction waste for the site:<br>• Brown Bros Skip Bins<br>• Purple Cow Skips<br>• Aussie Industries<br>• Bingo Skip Bins<br>Or another supplier as elected by the building contractor. |
| Principal Off-Site Recycler | The following are local C&D processing facilities for consideration in the management of C&D waste generated at the site:<br>• Cleanaway Rockdale Resource Recovery Centre<br>• Bingo Alexandria,<br>Or another appropriate facility as elected by the waste management contractor. |
| Principal Licensed Landfill Site | Bingo Eastern Creek, or other appropriate facility as elected by the waste management contractor. |

## 3.4 Site Documentation

This WMP will be retained on-site during the construction phases of the development, along with other waste management documentation (e.g. contracts with waste service providers).

Responsibility for the WMP, waste documentation and processes during the excavation and construction phases will be with the site manager or builder.

A logbook that records waste management and collection will be maintained on site, with entries including:

- Time and date of collections;
- Description of waste and quantity;
- Waste/processing facility that will receive the waste; and
- Vehicle registration and company name.

Waste management documentation, the logbook and associated dockets and receipts must be made available for inspection by an authorised Council Officer at any time during site works.

# 4 Operational Waste Management

## 4.1 Overview

Operational waste management requirements of the site arise from the daily activities as residential accommodation, with the site featuring 124-unit dwellings. The site will adopt a chute collection system for the consolidation of the general waste stream, whilst collection container recycling and paper and cardboard in separate 240L bins available on each residential floor level. These systems will be maintained by a site waste caretaker.

Waste management strategies related to site operations have been established according to the Warringah DCP 2011 and NSW EPA guideline documents.

The following space calculations are based on the mobile garbage bin (MGB) and bulk bin dimensions sourced from Northern Beaches Waste Management Guidelines - Appendix A (Table 4).

**Table 5: Mobile Garbage Bin (MGB) and Bulk Bin capacity and footprint**

| Bin Capacity | Height (mm) | Depth (mm) | Width (mm) | Footprint (Approx. $m^2$) |
|---|---|---|---|---|
| **240L** | 1,080 | 750 | 600 | 0.45 |

## 4.2 Waste Generation

Waste generation for the residential development has been applied in accordance with comments from Council's Planners from the Pre-DA process, the Warringah DCP 2011 and Northern Beaches Council's *Waste Management Guidelines,* Appendix A. The following bin allocation is provided for development containing 3 or more dwellings, based on a twice weekly collection of garbage and recycling bins, and fortnightly collection of vegetation bins (option shaded and in bold). Council's Waste Officer has confirmed the below servicing frequency.

**Table 6: Bin requirements for 3 or more dwellings**

| Number of Units | Waste Stream | 240L Bins– twice weekly collection | 240L Bins– fortnightly collection |
|---|---|---|---|
| **124** | General Waste | **22** | - |
| | Paper Recycling* | **16** | - |
| | Container Recycling* | **11** | - |
| | Vegetation | | (1 x 240L bin per 200sqm landscaped open space collected fortnightly) **14** |
| **Total Bin Numbers** | | **Minimum 49 bins** | |

**Council's assumption that 60% of total recycling volumes are paper and 40% are container recycling*

Additional residential floor level bins and bins for rotation will be required and are addressed in further sections below.

## 4.3 Residential Level Waste Management

Council's DCP identifies that each residential level is to provide 1 x 240L bin for paper recycling, 1 x 240L bin for container recycling accompanying a general waste chute. In this manner every residential unit has access to either a floor level bin or chute to deposit their waste and recycling (see Figure 3 Figure 4 and Figure 5)

The rotation of full and empty bins around the site will be carefully managed by a site waste caretaker. Residential levels containing higher numbers of unit dwellings will require more frequent rotation of bins as they fill at a faster rate. The table below outlines the amount and type of recycling bins required for storage across building levels.

**Table 7: Floor level recycling bin allocation**

| Building | Recycling stream | GF | L1 | L2 | L3 | L4 | L5 | L6 | units per building | 240L bins |
|---|---|---|---|---|---|---|---|---|---|---|
| **Building A** | **Number of units per floor** | **9** | **9** | **9** | **9** | **5** | **5** | **5** | **51** | - |
| | Paper | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 7 |
| | Container | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 7 |
| | | | | | | | | | **Total Bins Building A** | **14** |
| **Building B** | **Number of units per floor** | **9** | **9** | **9** | **9** | **6** | **6** | **6** | **54** | |
| | Paper | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 7 |
| | Container | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 7 |
| | | | | | | | | | **Total Bins Building B** | **14** |
| **Building C** | **Number of units per floor** | **3** | **4** | **4** | **4** | **2** | **2** | **-** | **19** | |
| | Paper | 1 | 1 | 1 | 1 | 1 | 1 | - | - | 6 |
| | Container | 1 | 1 | 1 | 1 | 1 | 1 | - | - | 6 |
| | | | | | | | | | **Total Bins Building C** | **12** |
| **TOTAL minimum residential level bins per recycling stream** | | | | | | | | | **240L Paper & Cardboard Bins** | **20** |
| | | | | | | | | | **240L Container Bins** | **20** |

Some floors in the development have up to 9-unit dwellings (see Building A). Assuming a single unit generates around 60L per week of paper and cardboard, a floor containing 9 dwellings would fill a 240L bin in around 3 days (9 dwellings x 60L / 7 days = 77L per day, and 240L/77L = 3.11 days). This would require the waste caretaker to swap the full bin for an empty one, before the next collection. Collections are expected to occur twice weekly for this recycling stream, or once every 3.5 days. In this instance, 1 additional paper and cardboard bin per floor containing 9 units will be required to be stored in the ground level holding area (i.e. 4 additional paper and cardboard bins).

For all other floors and recycling streams, a Council collection will occur before any bin rotations are required. All bins will be transported from residential levels to the bin holding area and collected twice weekly.

Therefore, from the total amount of recycling bins required at the site are:

- Paper and Cardboard: 14 x 240L bins (including the additional 4 rotation bins).
- Container Recycling: 10 x 240L bins.

The bin hold area is to be sufficiently sized to accommodate the above bin numbers, in addition to general waste bins.

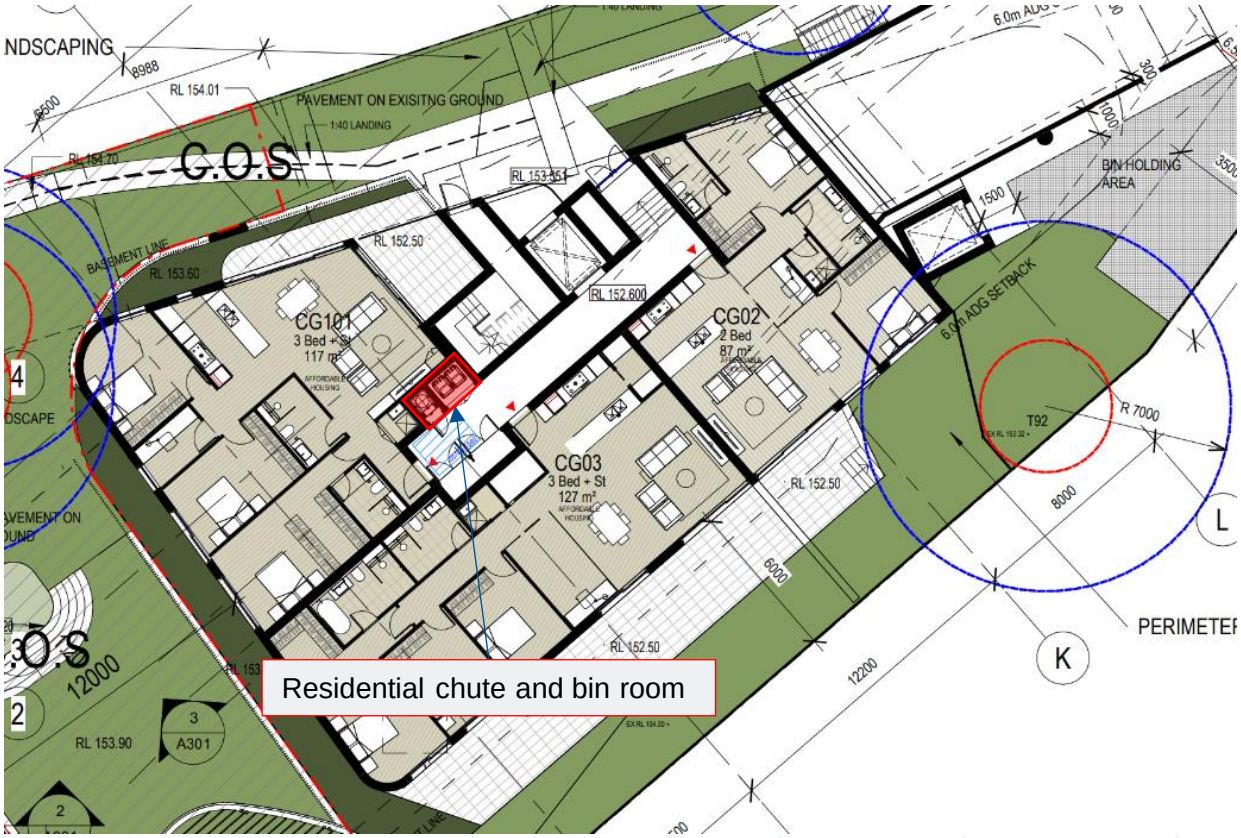
**Figure 3: Building A - Floor level chute room**


*Source: Brewster Murray, 2024.*

**Figure 4: Building B - Floor level chute room**


*Source: Brewster Murray, 2024.*

**Figure 5: Building C - Floor level chute room**




*Source: Brewster Murray, 2024.*

## 4.4 Chute Room Requirements

Each residential level will have access to a general waste chute. Chutes will be co-located with recycling bins in an accessible location within the floor lobby and in proximity to a lift core where possible.

Chutes will discharge general waste into 240L bins on linear tracks within the Basement level. Access to these chute rooms will be limited to the site waste caretaker and maintenance staff.

As discussed in Table 6, a minimum of 22 general waste bins will be required to capture the site's expected general waste volumes. These bins are expected to be stored in basement chute rooms, filled and transported to the bin hold area prior to collection (twice weekly). Bins will be divided between chute rooms in the following manner (see Table 8):

**Table 8: Chute Room Bin Requirements**

| Building | Number of units | Number of 240L General Waste bins | Additional bin on the linear track during servicing* | Total bins |
|---|---|---|---|---|
| **Building A – Chute Rm A** | 51 | 9 *Or*<br>5 with 2:1 compaction | 1 | 10 *Or*<br>6 with 2:1 compaction |
| **Building B – Chute Rm B** | 54 | 9 *Or*<br>5 with 2:1 compaction | 1 | 10 *Or*<br>6 with 2:1 compaction |
| **Building C – Chute Rm C** | 19 | 4 | 1 | 5 |
| | | | **TOTAL General Waste Bin requirement** | **25 (17 with compaction)** |

**Note that 3 additional bins on will not be required to be accommodated within the temporary bin holding area*

The amount of general waste bins required at the site is approximately 25 x 240L bins (17 with compaction), inclusive of spare bins for under the chute during collection times.

It is expected that a 3-bin linear track will be utilised underneath waste chutes and should be accounted for in spatial estimations (See Appendix B). Bins will fill under the chutes and automatically be replaced by empty bins without the assistance of the site waste caretaker.

A linear track with compaction should be investigated for Building A and Building B, which will produce high volumes of general waste. The system should be able to service the building over the weekend in the absence of the site waste caretaker. A linear track and chute with a 2:1 compaction ratio will enable over 2 days uninterrupted servicing for general waste (51 dwellings x 80L per week / 7 days = 583L per day for Building A, and 583L x 2 days = 1,166L with compaction of 2:1 = 583L). Therefore a 3-bin track will be adequate to capture general waste volumes under the chute for all buildings over the weekend. Chutes for Building B and C will not require compaction.

## 4.5 Bin Hold Storage Requirement

From the calculations above, the total number of bins required to be stored in the bin hold area before collection are:

- 22 x 240L General waste bins (not including additional bins on the track)
- 10 x 240L Container recycling bins
- 14 x 240L Paper and cardboard bins
- 14 x 240L Vegetation bins

A total of 60 x 240L bins equates to approximately 41sqm of space required, including area for handling and manoeuvring of bins. The bin hold should be designed with aisle clearance and access to all bin types, to enable efficient collection for Council's waste staff.

A bin hoist is provided between the basement level and ground floor bin holding area.

#### 4.5.1.1 Bulky Waste

The DCP requires space for bulky waste at a rate of 4m$^2$ per 10 dwellings. Bulky waste items include those that cannot be disposed of to general waste and recycling, including but not limited to broken/damaged/old whitegoods, furniture, appliances, mattresses, etc.

Space for bulky waste is provided in the basement, in a dedicated bulky waste store in proximity to the site entrance and the bin hoist.

# 5 Waste Management Systems

## 5.1 Waste Management System Summary

The following specific management methods are proposed for the various collection waste streams expected to be generated at the site, including alterative waste streams outside of general waste, recycling and organics:

- **General Waste:** General waste shall be placed within a tied plastic bag prior to transferring to residential floor level waste chutes, which deposit materials into 240L bins. For collection purposes, general waste shall be stored within 240L mobile garbage bins (MBG).
- **Commingled Recycling:** All recyclables will be stored in 240L bins. Recyclable materials include mixed plastic, glass, aluminium. All recyclables should be decanted loose (not bagged) with containers un-capped, drained and rinsed prior to disposal into the recycling bin.
- **Food Waste:** Residents can collect their food organics waste for composting or worm farms onsite. A suitable garden area at least 1m$^2$ in size should be chosen as a composting location, should residents elect to do so. This can be managed in conjunction with the contracted landscape gardener, until Council FOGO collection becomes mandatory for MUDs.
- **Paper and Cardboard:** A separate paper and cardboard service for recyclables is provided by Council. Paper should be flattened and placed in paper and cardboard bin in 240L residential floor level bins provided.
- **Other (Problem) Waste:** The disposal of hard, bulky, electronic, liquid or potentially hazardous wastes shall be organised between the operator and site users as necessary. Council in conjunction with the NSW EPA provides cleanout events and bulky waste pickups are available to residents.

## 5.2 Management System and Responsibilities

The site manager will be responsible for the management of waste at the site. Should there be any issues that impact on the operational efficiency, safety and suitability of waste management, management will be responsible for making any necessary changes, responsibilities include:

- Using this WMP to inform waste management operations, design and infrastructure;
- Providing educational materials and information on sorting methods for recycled waste, awareness of waste management procedures for waste minimisation and resource recovery;
- Maintaining a valid and current contract with a licensed waste service provider for waste and recycling collection and disposal;
- Making information available to residents and visitors about waste management procedures.
- Organising, maintaining and cleaning bins as part of a regular maintenance schedule;
- Manoeuvring bins to specified onsite collection point prior to and following scheduled collection of waste bins;
- Organising bulky waste collections as required;
- Ensuring bin allocation and waste/recycling collection frequency is adequate. Requesting additional infrastructure or services where necessary; and
- Monitoring any vermin and pest issues and arranging appropriate controls (traps or fumigating) and maintenance of doors or other points of potential entry.

## 5.3 Waste Chute Requirements

Waste chutes will be designed in accordance with requirements of Council's waste management guidelines, Appendix C, for the collection of general waste only. Waste chute considerations include:

- Access to the Waste Garbage Chute must be provided by an inlet hopper (or service opening) which must be located within designated Waste Service Rooms. The Waste Service Room must also provide interim disposal areas for the temporary storage of recyclables.

- Chutes, charging devices and service openings must be constructed of fire-resistant material which is additionally smooth, durable, impervious and non-corrosive.
- Garbage Chutes must be constructed in accordance with the requirements of the Building Code of Australia.
- Chutes must be designed to reduce noise impact.
- Chutes, service openings and charging devices must be constructed of material (such as metal) which is smooth, durable, impervious and non-corrosive.
- Chutes must be cylindrical and should have a diameter of at least 500mm.
- There must not be any bends (or sections of reduced diameter) in the main shaft of the chute.
- Internal overlaps in the chute must follow the direction of waste flow.
- Chutes must deposit rubbish directly into a bin or compactor located within a designated Waste Storage Area.
- A cut-off device must be located at or near the base of the chute so that the bottom of the chute can be closed when the bin or compacting device at the bottom of the chute is withdrawn or being replaced.
- Any charging device required for each service opening must be self-closing and must not project waste into the main chute.
- Any required charging devices are to:
- Effectively close the service opening in the chute when the device is open for loading;
- Permit free transfer of waste into the chute;
- Not project into the chute;
- Return to the closed position after use automatically;
- Permit easy cleaning of the device and the connection between the service opening and the chute.
- The chute, charging device and service opening must be designed to enable easy cleaning.
- Chutes must be ventilated to ensure that air does not flow from the chute through any service opening.
- Branches connecting service openings to the main chute are to be no more than 1m long.
- Any mechanical compaction device within the building shall comply with the following requirements
    - Maximum compaction rate of 2:1;
    - Designed to accommodate general household garbage only; and
    - Not be used to compact recyclables.

## 5.4 Collection Method and Loading Areas

Collection points for the waste service provider (WSP) and areas for handling and loading are as follows:

- Waste collections are recommended to occur outside of peak visiting hours to avoid high associated traffic around the site;
- The site waste caretaker will be responsible for ensuring full bins are transported to the site's bin holding area prior to collection, from the basement level to the bin hold via a dedicated bin hoist/service lift.
- The development's loading and collection point is Gladys Avenue. A wheel in wheel out system will be used by Council staff to access the bin hold area, service by Council waste trucks and then returned to the bin hold.
- Clear, safe, accessible and convenient space for handling of MGBs and equipment and loading of collection vehicles; and
- Identifiable areas where visitors and workers can recognise and avoid any risk associated with moving vehicles, and bin moving and handling.

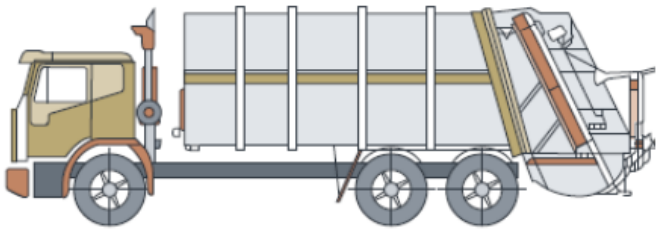
Table 9 outlines relevant requirements and specifications:

**Table 9: Collection points and loading areas requirements and specification**

| Component | Requirement | Specification |
|---|---|---|
| Collection point | Allow safe waste collection and loading operations | - Adequate clearance and manoeuvring space;<br>- Sufficient clearance for the safe handling of materials and equipment; and<br>- Sectioned loading bay does not impede upon traffic and pedestrian safety. |
| Staff Access to bin holding area | Allow safe and efficient collection for waste staff | - The pathway and access between the Waste Storage Area and Collection Point will be:<br>o Solid, concrete, continuous, non-slip and clear of any obstructions and steps.<br>o A maximum ramp gradient of 1 in 8.<br>o Hazard free and not via a pathway with vehicular traffic.<br>o A minimum width of 1,200mm.<br>- Any doors fitted on the Waste Storage Area, pathway and access will be:<br>o A minimum width of 1,200mm.<br>o Able to be latched in an open position.<br>o Unobstructed by any locks and security devices.<br>o Openable in an outward direction. |
| Vehicle manoeuvring and loading space | Truck space for adequate lift clearance, manoeuvring and operation for a contractor collection vehicle | - Collection from each site use loading area by Council's collection vehicle;<br>- Adequate clearance for truck operation;<br>- Operational clearance for truck manoeuvring in a forward direction; and<br>- The provision of space clear of vehicle parking spaces (level and free of obstructions). |
| Operating times | Appropriate collection times to limit noise and traffic disturbance | - Collection times will be arranged during off-peak times to ensure minimal disturbance to pedestrians and visitors along Gladys Ave. Noise disturbance will be minimised as per requirements of the DCP, being between 10pm and 7am. |

## 5.5 Council's Waste Collection Vehicle

### Collection Vehicle Specifications



Heavy rigid rear loader compaction vehicle

| Vehicle | Length | Width | Service height | Travel height | Weight | Turning Circle |
|---|---|---|---|---|---|---|
| Council's waste vehicle | 10.5m | 2.5m | 4.5m | 3.7m | 22.5t | 19m |

## 5.6 Waste and Recycling Storage Areas

The waste areas will provide centralised storage that has adequate capacity to receive and store the maximum likely generation of waste and recycling between collection times. In accordance with NSW EPA guidance documentation, storage areas will be constructed in the following manner:

- Ensuring storage areas are well lit (sensor lighting preferred) and have lighting available 24 hours a day.
- Proximate location of bin washing facilities, including taps for hot and cold water provided through a
- Be located in a position that is convenient for users and waste collection staff, located away from habitable rooms;
- All waste and recycling storage areas and access paths to be kept clean and free of obstructions;
- The floor being graded and drained to an approved drainage outlet connected to the sewer and having a smooth, even surface, coved at all intersections with walls;
- The walls being cement rendered to a smooth, even surface and coved at all intersections;
- The room shall be adequately ventilated (either natural or mechanical) in accordance with the Building Code of Australia.
- At street level and permit easy, direct and convenient access for the residents, Council and Council's waste contractors.
- Clear of any obstructions and security devices.
- Incorporated entirely within the site boundary and, if it is an external structure, be designed to reduce visual impact and clutter.
- No closer than 3m from any dwelling openings.
- Clear of any entry points to stormwater systems and prevent waste water from entering any stormwater system.

## 5.7 Signage

Signage that promotes resource recovery, waste minimisation, safety and amenity follows the Australian Standard for safety signs for the occupational environment (Standards Australia, 1994).

Signage will be designed to consider language and non-English speaking backgrounds, vision impairment and accessibility. Illustrative graphics must form a minimum 50% of the area of the signage. Signage is to be prominently posted in the waste room indicating:

- Details regarding acceptable recyclables;
- Recyclables are to be decanted loose (not bagged)
- *No standing* and *danger* warnings apply to the area surrounding the waste storage area;
- Contact details for arranging the disposal of bulky items;
- The area is to be kept tidy.

Standard signage requirements and guidance for application apply.

## 5.8 Prevention of Pollution and Litter Reduction

To minimise dispersion of litter and prevent pollution (to water and land via contamination of runoff, dust and hazardous materials), building management and the site cleaning staff will also be responsible for:

- Maintenance of open and common site areas;
- Ensuring waste areas are well maintained and kept clean;
- Securing the waste storage area from vandalism and the escape of litter;
- Identification and appropriate disposal of goods with hazardous material content (paints, e-waste, fluorescent tubes);
- Taking action to prevent dumping and unauthorised use of waste areas; and
- Requiring contractors to clean up any spillage that may occur during waste servicing or other work.

# 6 References


Australian Building Codes Board (2016) National Construction Code (NCC).

Australian Department of Sustainability, Environment Water, Population and Communities (2011) Construction and Demolition Waste Guide - Recycling and Re-use Across the Supply Chain.

Australian Standards 4123.7 Mobile Waste Containers.

Blue Environment (2020) Australian National Waste Report.

Department of Environment and Climate Change (2008) NSW Model Waste Not DCP Chapter.

Department of Environment, Climate Change & Water (2010) House deconstruction fact sheet: Bricks and concrete removal.

Environment Protection and Heritage Council (2009) National Waste Policy: Less Waste, More Resources. Available at: http://www.nepc.gov.au/system/files/resources/906a04da-bad6-c554-1d0d-45216011370d/files/wastemgt-rpt-national-waste-policy-framework-less-waste-more-resources-print-ver-200911.pdf

NSW EPA (2012) Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities.

NSW EPA (2021) NSW Waste and Sustainable Materials Strategy 2041.

NSW EPA (2014) Waste Classification Guidelines.

NSW EPA (2016) Recycling Signs, Posters and Symbols. Available at: http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm.

NSW EPA (2019) Better Practice Guide for Resource Recovery in Residential Developments.

Standards Australia (1994) AS 1319: Safety signs for the occupational environment, Homebush, NSW: Standards Australia.

Warringah Local Environmental Plan 2011

Warringah Development Control Plan 2011

# Appendix A – Site Plans

**Figure 6: Basement 1 Floor Plan**

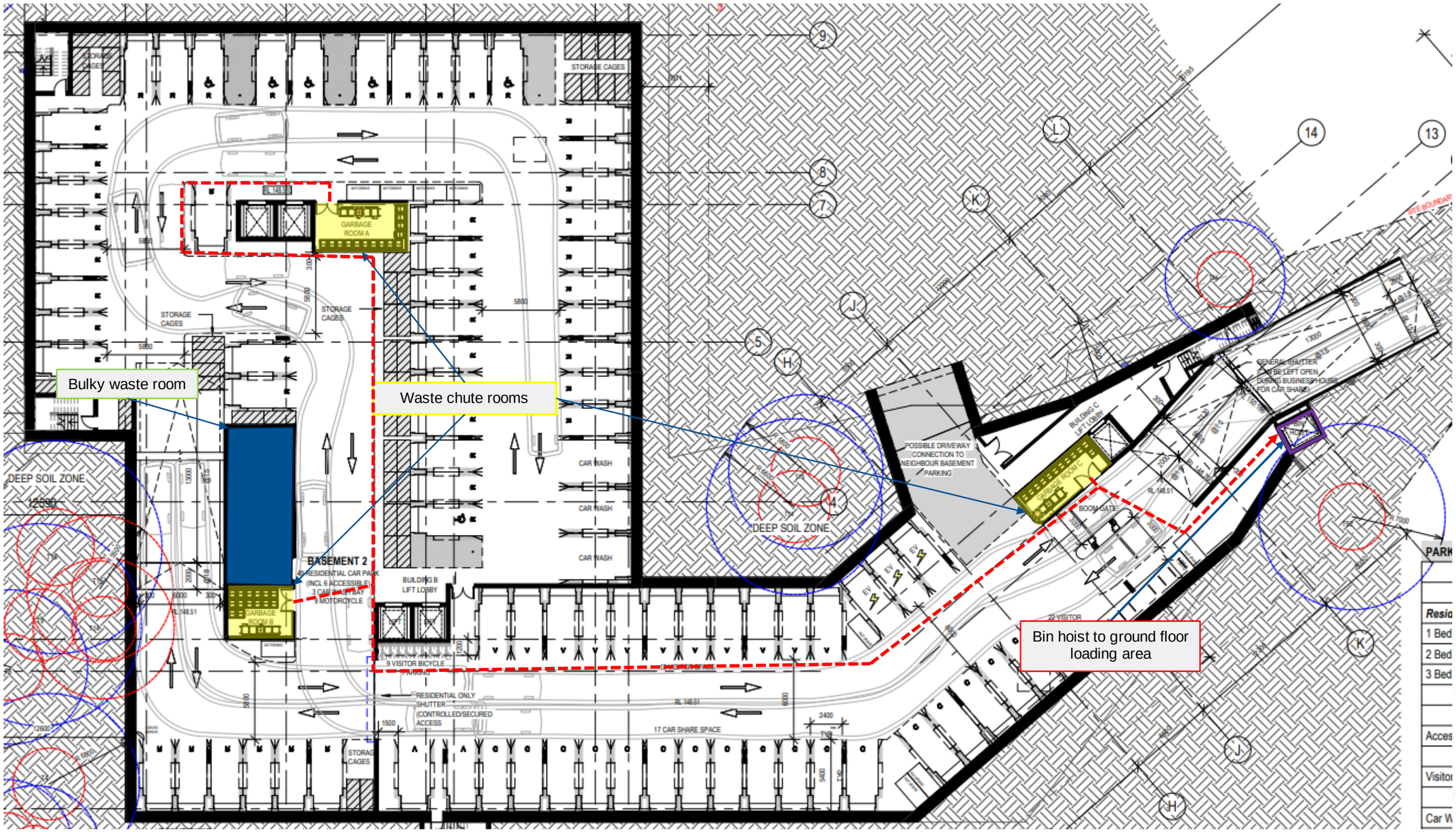
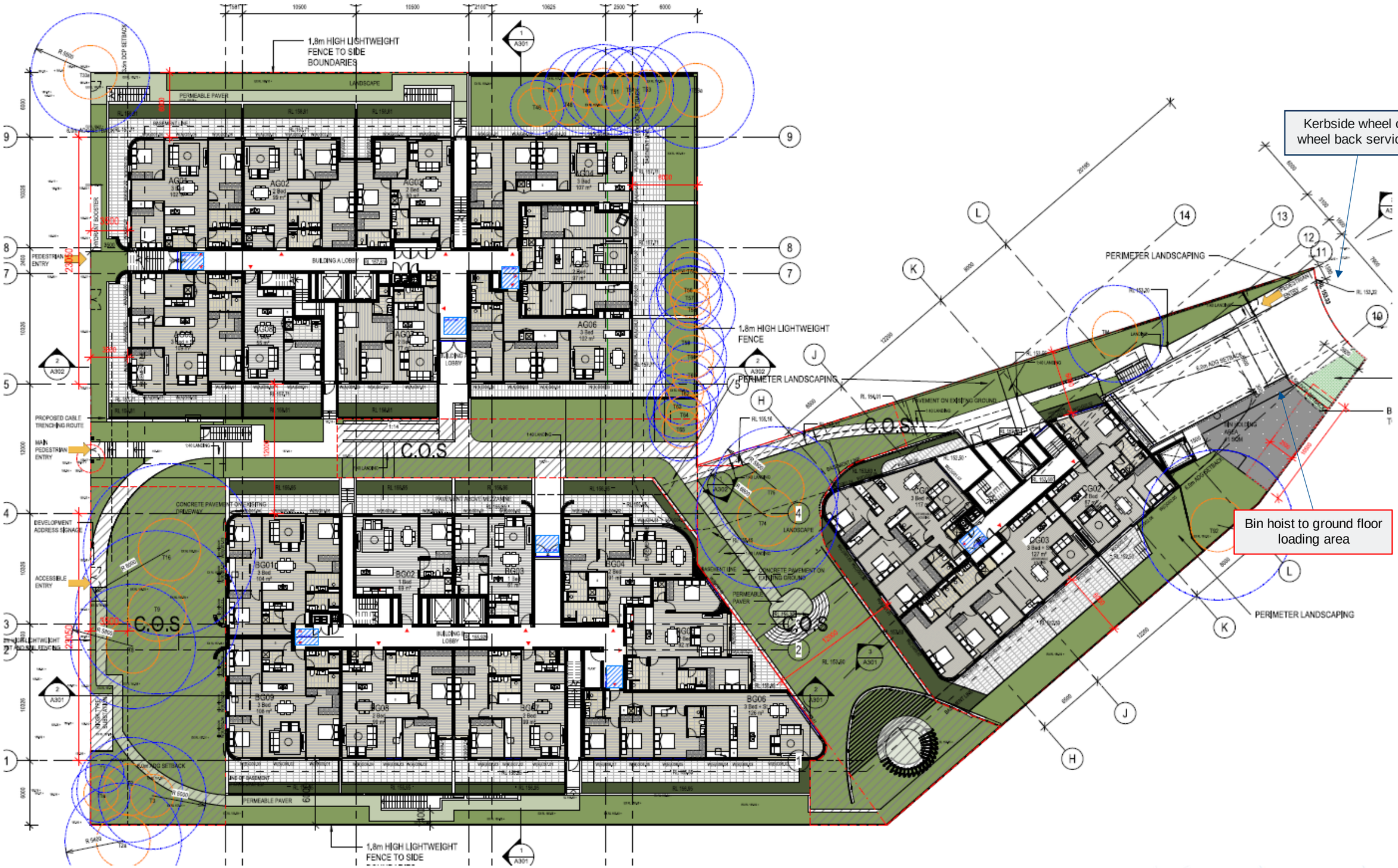


Figure 7: Ground Floor Plan



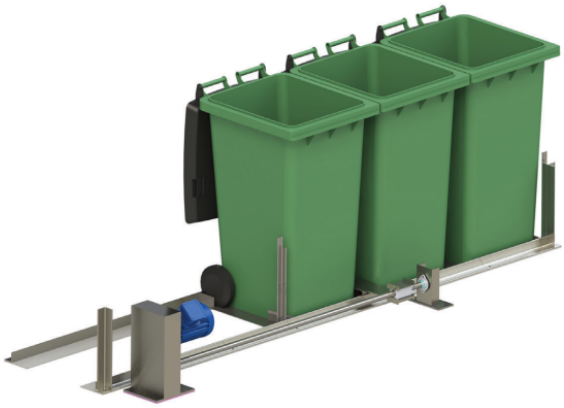
# Appendix B – Chute Equipment Specification Sheet

Chute Solutions.™
an Elephants Foot Company

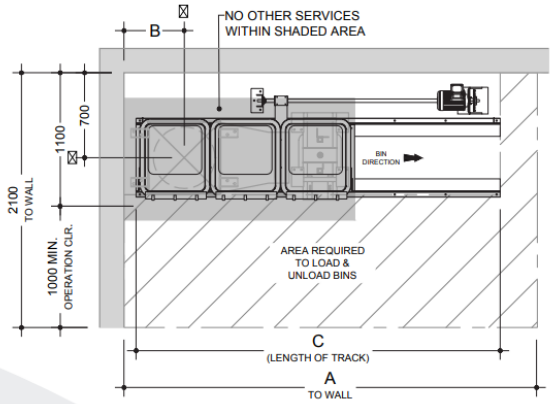
ELEPHANTS FOOT

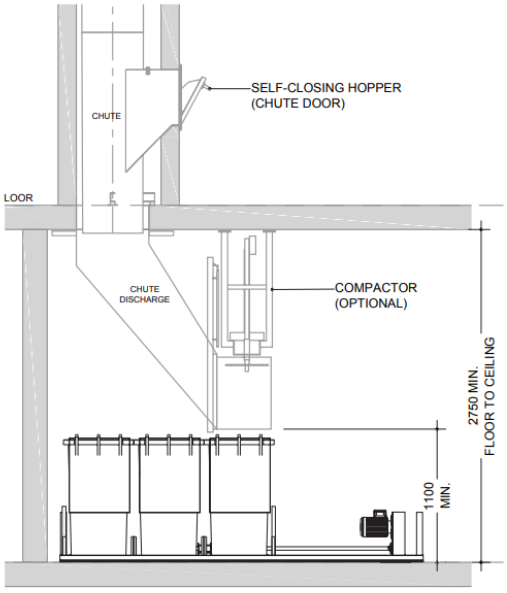
# 240 LITRE LINEAR TRACK SYSTEM

| No. of Bins | Reference (mm) | | |
|---|---|---|---|
| | A | B | C |
| 2 | 2500 | 400 | 2000 |
| 3 | 3700 | 600 | 3000 |
| 4 | 4800 | 1100 | 4250 |



Available with or without compaction unit, our standard 240 litre bin Linear Track System can support 2, 3 or 4 bin quantities.




**Notes:**
Bins not provided by Elephants Foot

Drawings shown are for general information purposes only and provide minimum equipment spacial requirements for waste room design.

These drawings are not intended for site specific use or for construction. Each project is unique and will be designed to suit.

Additional equipment options, systems and configurations are available. For design assessment, information and advice, please contact an Elephants Foot design consultant on 1300 435 374

# Appendix C - Standard Signage

**Waste Signage**

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the NSW Office of Environment and Heritage (NSW OEH 2008b).

Standard symbols for use in signage, bin facade and educational materials are promoted through the NSW Environment Protection Authority. They are available for download from the NSW EPA website (NSW EPA 2016b), in black and white and colour versions. The Australian Standard series AS 4123 (Part 7) details colours for mobile waste containers (Standards Australia 2008).

**Figure 8: Examples of standard signage for bin uses**

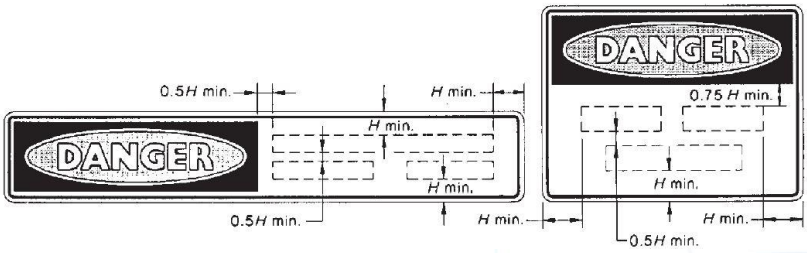

**Safety Signs**

The design and use of safety signs for waste and recycling rooms and enclosures should comply with AS 1319 (Standards Australia 1994). Safety signs should be used to regulate, and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Below are some examples. Clear and easy to read 'NO STANDING' and 'DANGER' warning signs must be fixed to the external face of each waste and recycling room where appropriate.

**Figure 9: Example and layout of safety signage**


(d) Horizontal

FIGURE D5 TYPICAL ARRANGEMENTS OF DANGER SIGNS



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