



11-13 Mannix Parade
Warwick Farm

Operational Waste
Management Plan

April 2021

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1. Introduction

This Operational Waste Management Plan has been prepared by Waste Audit & Consultancy Services (Aust) Pty Ltd (Waste Audit) to provide guidance to the Land and Housing Corporation (LAHC) development located at 11-13 Mannix Parade, Warwick Farm, NSW to document the ongoing management of general waste and recycling and compliance with Liverpool City Council's requirements, current legislation, and best practice standards.

The development of this Plan has been based on the established principles of:

- (a) The Waste Hierarchy: Ensuring all waste able materials are properly managed from generation to final reuse, recycling, treatment, or disposal;
- (b) Source Segregation: Separating wastes and recyclables at the point of generation to ensure that contamination does not occur, and that resource recovery is maximised; and
- (c) Due Diligence: Ensuring that all staff and contractors responsible for aspects of waste management do so in accord with all statutory and corporate responsibilities.

The intent of the Plan is to ensure that waste management practices are consistent across all stages, of the development with the maximum possible quantity of materials directed away from landfill disposal to more environmentally beneficial outcomes.

Please see the separate Waste Management Plan prepared by Waste Audit for details of management of general waste and recycling from the development's Demolition and Construction phases.

2. The Development

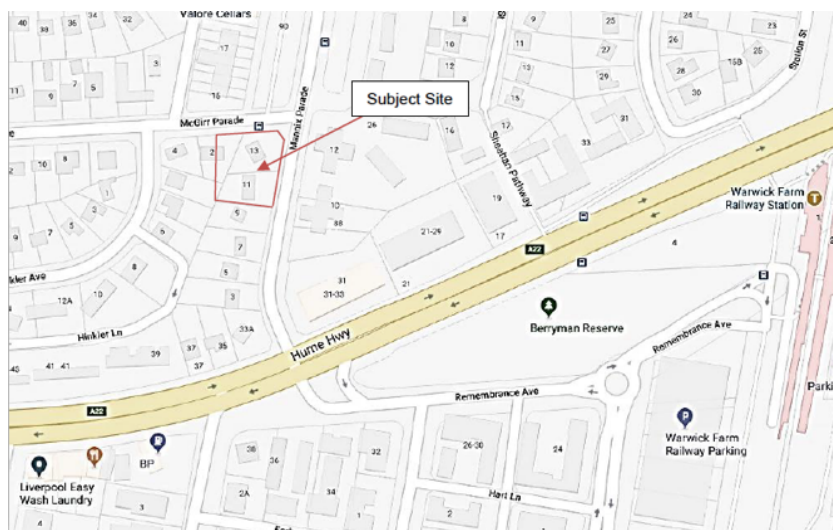
The development site will involve construction of 43 separate dwellings spread over four residential lots: 11-13 Mannix Parade, 2 Hinkler Avenue and 2 McGirr Parade in Warwick Farm. The proposed development will consist of the amalgamation and boundary adjustment of the existing lots as follows:

- Lot 26 (11 Mannix Parade)
- Lot 27 (13 Mannix Parade)
- Part of the rear portion of Lot 8 (2 Hinkler Avenue)
- Part of the rear portion of Lot 9 (2 McGirr Parade)

The site is relatively irregular in shape and will have a combined total area of approximately 1,683 square metres and is currently occupied by free-standing/single-storey dwelling-houses, made of fibrocement material and tile roofing.

The site's location is shown in Figure 1 below.

Figure 1: Site Location



3. Reference Documents & Standards

- *Liverpool Development Control Plan 2008, Part 25*
- *Waste Management Services for Residential Flat Buildings & Multi Dwelling Housing Fact Sheet*
- NSW Department of Planning & Environment *Apartment Design Guide*
- Livable Housing Australia *Livable Housing Design Guidelines*

4. Predicted Operational General Waste & Recycling

4.1 Material Streams

Based on the estimated waste profile, the following materials streams will be generated during the development's operational phase:

- General Waste
- Recycling (Mixed Cardboard, Paper, Glass, Metals, and Plastic)
- Garden Waste
- Bulky Waste

4.2 Bin & Storage Requirements

Table 1 shows the number of Mobile Garbage Bins (MGBs) required to manage the expected volumes of general waste and recycling, based on a total of 43 dwellings, using the following formulas for calculating bin requirements:

- General Waste: 1 x 660-litre bin per week for every 6 units
- Recycling: 1 x 660-litre bin per week for every 6 units
- Garden Waste: Not required; not collected by Council
- Bulky Waste: 8 square metre space allocated in waste storage area

4.3 Bin Storage Room Sizing & Equipment

Table 1 shows recommended equipment, collection frequencies, and storage areas, based on full occupancy of 43 dwellings, and weekly collection of general waste and recycling. Please note that all waste and recycling will be collected by Council.

Standard dimensions in mm of Council's MGBs are shown below:

Bin Size	Height	Width	Length
240-litre	1060	580	730
660-litre	1210	780	1420

Based on preliminary discussions with Liverpool City Council, 660-litre MGBs will be used for general waste and recycling, and 240-litre MGBs for green waste.

Table 1: Bin Requirements & Storage Space (Standard Council Weekly Collections)

Material Stream	Bin Size	No. of Bins	Weekly Collections	Footprint per Bin (m ²)	Area Required (m ²)*
General Waste	660-litre	8	1	1.11	10.63
Recycling	660-litre	8	1	1.11	10.63
Bulky Waste Storage	N/A	N/A	Ad hoc	N/A	6.0
Bin Washing Area	N/A	N/A	N/A	N/A	4.0
TOTAL		16			31.26

* Includes 20% allowance for space between bins and storage areas to allow access and bin circulation

The total size of the waste storage room as designed is 46 square metres, with 8 square metres allocated for bulky waste storage. Figures 2 and 3 show a total of 18 bins, 9 for General Waste and 9 for Recycling, to demonstrate that there is sufficient space for additional bins if the development's actual operational waste and recycling volumes exceed predicted levels.

4.4 Bin Storage Room Construction & Maintenance

The design and construction of this room will conform to Council's requirements (see Section 9). A bin washing facility will be provided in this area with appropriate drainage to sewer. The storage room will be cleaned at minimum once weekly, with all empty bins also rinsed out following the weekly collections by Council. Designated LAHC site staff will be responsible for these tasks and general maintenance of the bin storage room.

5. Operational General Waste & Recycling Management

Building management will be responsible for ensuring that the waste and recycling systems described below are implemented and maintained, with regular oversight and monitoring to take place. This will include providing all residents with information, guidance, and if necessary, correction with regard to following correct practices.

5.1 General Waste

Residents will bring general waste to the Ground Floor storage room and place the material in designated 660-litre Mobile Garbage Bins (MGBs). The site will oversee this area and ensure efficient waste management.

General waste and recycling bins will be kept in separate areas, with suitable wall signage and floor markings to indicate correct location of bins. This room will be locked and only accessible to authorised users, i.e. residents, site staff, cleaners, and Council waste collection staff.

5.2 Recycling

Mixed recyclables will be taken to the Ground Floor storage room and placed in 660-litre MGBs. To ensure that this system is managed correctly and to minimise contamination residents will receive information on proper segregation and disposal of general waste and recycling.

5.3 Garden Waste

These materials (lawn clippings, branches, leaves, etc.) will be removed directly from site by LAHC's gardening contractor, and therefore no on-site bins will be provided for this stream.

5.4 Bulky Waste

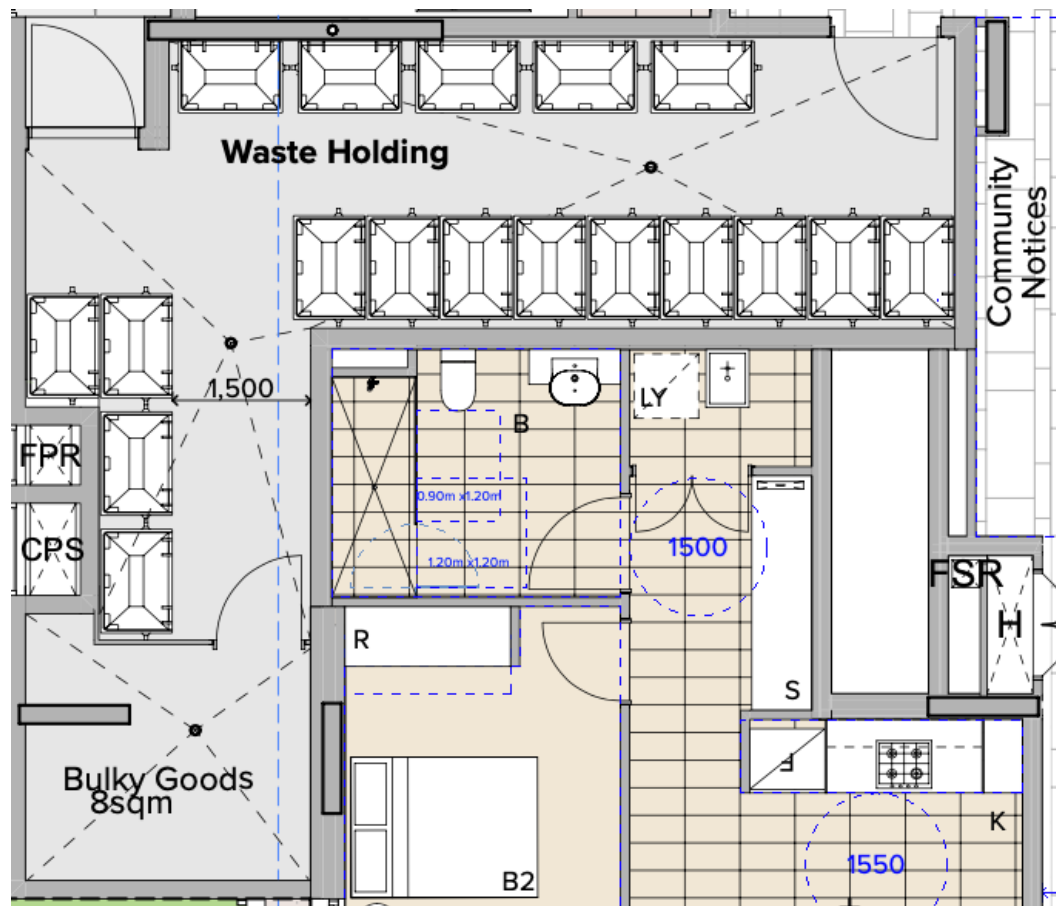
An 8 m² room has been provided on Ground Level for storage of bulky waste items (furniture, household goods, mattresses, etc.) and other items unsuitable for disposal in Council's MGBs.

6. Storage Facilities & Loading Procedures

6.1 Storage Areas

Figure 2 shows the bin holding room for general waste and recycling, with a separate section for bulky waste storage. Bulky waste items will be collected directly from this room by arrangement, on an as-needed basis.

Figure 2: Waste Storage Area



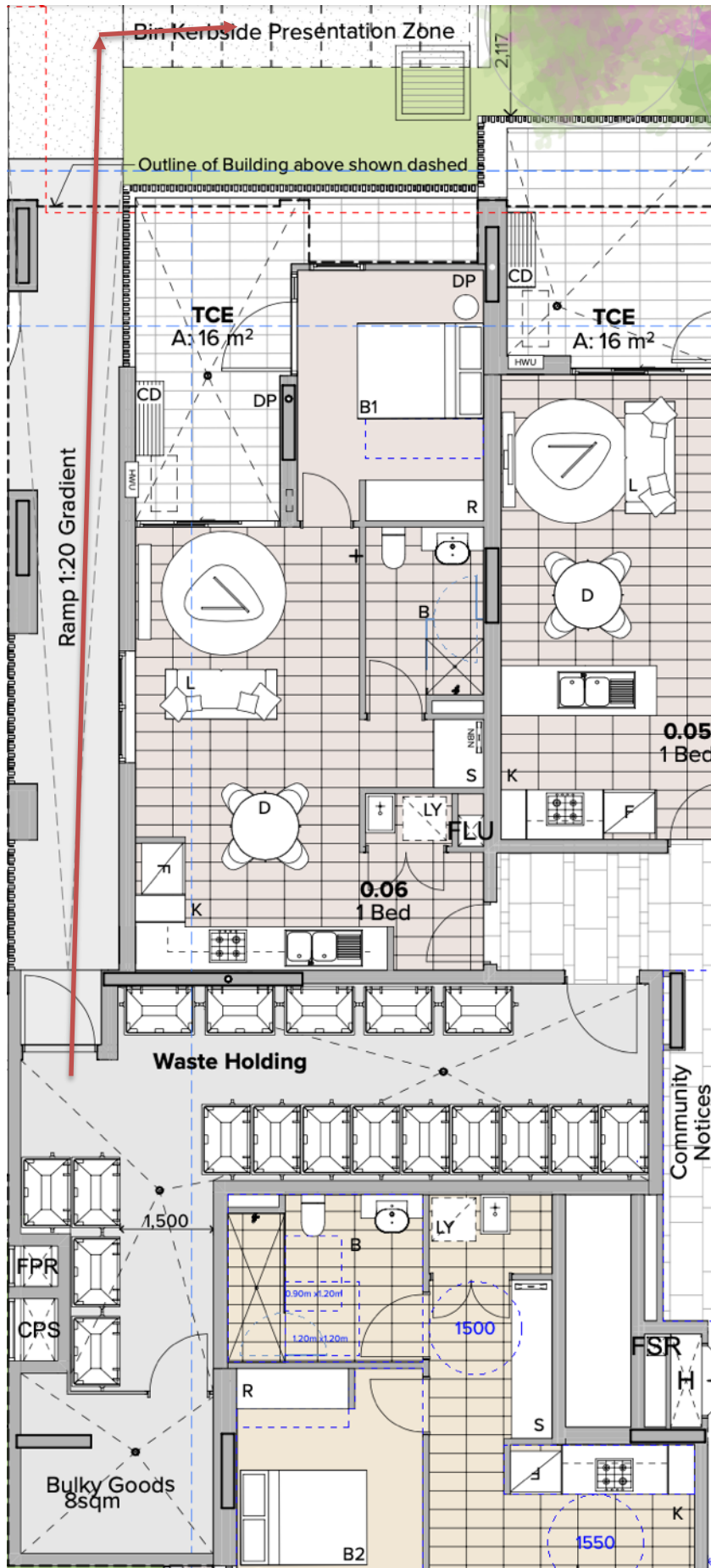
6.2 Bin Presentation & Loading Procedures

Designated LAHC staff will wheel bins from the waste holding room to the kerbside presentation zone on McGirr Parade on the designated respective collection days for general waste and recycling. This area is indicated in Figure 3 which also shows the pathway for movement of bins to the presentation zone and return of empty bins to the holding room.

Council's waste contractor will collect all bins from the kerbside zone using a side loading vehicle, and the development's staff will then bring the empty bins back from here to the storage room as soon as possible following Council collection.

The collection zone's location in relation to the Bus Zone on McGirr Parade will conform to the *Australian Road Rules 2014* - Regulation 195 and will be controlled by a 'No Parking 5am-8am' sign in addition to the existing 'No Stopping 8am-6pm' zone located directly after the Bus Zone. Due to the expected collection window for the waste collection vehicle (5am-6am) it is unlikely that any buses would arrive at the same time as Council's vehicles.

Figure 3: Bin Movement & Collection



7. Waste Management Principles

The following waste hierarchy has been used to guide this Waste Management Plan:



Avoid/Reduce

Purchase materials that have minimal packaging requiring recycling, treatment, or disposal

Reuse

Ensure that wherever possible, materials are reused either on site or offsite:

- Identify and put systems in place to separate and store materials that can be reused onsite
- Identify the potential applications for reuse offsite and facilitate this process

Recycle/Recover

Identify all recyclable waste products to be produced on site:

- Provide clear signage to ensure recyclable materials are separated
- Process the material for recycling either onsite or offsite

Treat/Dispose

Waste products which cannot be reused or recycled will be removed and treated/disposed of at appropriately licensed facilities, ensuring the following:

- Demolition/construction waste contractor(s) are compliant with OEH requirements
- Bins to be collected on an efficient schedule minimising transport

8. User Education

All site users (residents, facilities staff, and cleaning contractors) will be provided with detailed information on recycling and waste management, as part of general building orientation in the first instance, with updates on at least an annual basis. The site's management team should be responsible for guiding this initiative.

Clear, unambiguous signage will also be installed in the waste storage areas – examples of suitable signage are shown in Appendix 2. Waste Audit can also assist with design of suitable signage on request.

Liverpool City Council also has a range of useful resources on [its website](#).

9. Liverpool City Council Waste Management Requirements

The following requirements relevant to the development have been extracted from Liverpool City Council's *Development Control Plan 2008*:

Objectives

- To minimise waste produced during demolition and construction of new development and maximise resource recovery
- To ensure waste management for the end use of the development is designed to provide satisfactory amenity for occupants and provide appropriately designed collection systems.
- To minimise ongoing waste to landfill and maximise recycling of ongoing waste.

Controls

A Waste Management Plan (WMP) shall be submitted with a Development Application for any relevant activities generating waste. The WMP is provided in three sections:

- Demolition
- Construction
- On-going waste management

The WMP shall show:

- Estimated volumes of waste generated according to type
- Information about reuse, recycling and disposal options for all types of waste produced on site during demolition, construction or ongoing waste generation activities

The WMP must be implemented throughout the development process, demolition, construction and use of the development. During demolition and construction, the WMP together with proof of lawful disposal for all waste that is disposed of or otherwise recycled from the site, must be retained onsite in a Waste Data File. Proof is to include a log book with receipts/invoices, waste classifications, and site validation certificate. All entries in the Waste Data File must include:

- Time and date
- Description and size of waste
- Waste facility used
- Vehicle registrations and company name

The Waste Data File must be made available for inspection by any authorised Council Officer at any time during site works and at the conclusion of site works should be retained by the person responsible and made available for inspection by authorised Council Officers.

Waste Management Facilities

1. Waste management facilities shall be provided for in all new buildings (except dwelling houses, Attached dwellings, Semi-Detached Dwellings and Dual Occupancy). These shall be designed to ensure that the storage and collection of waste and recyclables is user friendly for both the occupant and the waste collection contractor.
2. Where a communal Waste Management Facility for Multi dwelling housing and Residential flat buildings is required, on site storage details are to be submitted on the plans and set out as below:
 - Location of space within the dwelling for the separation and temporary storage of waste, recyclables and compost with sufficient capacity for a minimum of one day's waste or recycling
 - Location and design of the Waste Storage and Recycling Area (Bin bay) on the premises. This must be readily accessible for both residents and waste and recycling contractors.
 - Where applicable design details of any Volume Reduction Equipment. The use of volume reduction equipment (to compact waste materials) may be appropriate where space is a problem. In normal circumstances there will not be a reduction in area requirements where such equipment is proposed, to accommodate future variations to development management and waste disposal options. Volume reduction equipment should not be used on recyclables;

removing contaminants from compacted recyclables is almost impossible and compacted contaminated loads will be rejected by end markets.

- For buildings more than three (3) storeys, or where elevator access is required for dwellings on the upper levels a waste service room, or compartment must be provided on each floor of the building for the intermediate storage of garbage and/or recycling. Sufficient space must be allocated for access by residents, storage of bins, and easy manoeuvring of bins.
- The area must be suitably located on premises in terms of accessibility for both the occupants and the waste and recycling contractor. The system for waste management must be compatible with available collection services – collection occurs at the front of the land.
- Measures for protecting bins and any associated waste equipment from theft or damage are to be indicated within the WMP.

3. Provision of ongoing waste management facilities shall include:

- In the case of multi dwelling housing of 8 or fewer dwellings individual 240L waste bins are to be provided and stored within the courtyard of each dwelling. If such storage is not possible an easily accessible garbage bin bay is to be provided.
- In the case of multi dwelling housing of 9 or more dwellings and residential flat buildings one or more garbage and recycling enclosures (bin bays) are to be provided within the site.
- Bin bays are to be well ventilated and screened to a minimum height of 1.5m by a structure and landscaping. Construction materials are to be compatible with the proposed development and adjoining development.
- Bin bays or waste service rooms are to be sufficiently open and well lit to allow safe use after dark
- A hose cock for hosing the garbage bin bay and a sewerage drainage point are to be provided in or adjacent to the bin storage area. The drainage point should have a fine grade drain cover sufficient to prevent coarse pollutants from entering the sewer. If the hose cock is located inside the bin storage bay it is not to protrude into the space indicated for the placement of bins. Responsibility for cleaning of all waste storage areas should be determined when designing the system and clearly stated in the waste management plan. Frequency of cleaning to eliminate odour and pests should also be indicated on the WMP.
- Sufficient space must be allocated within the bin bays to allow for access to all required bins by residents and waste collectors, as well as manoeuvring of bins within the bay and for the removal and return of bins by the waste collector.
- The agreed numbers of bins that will require storage are given as a consent condition.

Access to Waste and Recycling Storage

1. Bin bays are to be adjacent to a street frontage, or if not possible then at a designated point adjacent to the common access driveway provided sufficient level areas (<5% grade) is available for bin collection to be carried out, away from vehicle ramps and steps. The bin bay is to be located so that distance from bin bay to the nearest waste collection point accessible by the collection vehicle is no further than 15m. The bin bay shall be positioned so as to minimise noise impacts on residents from the usage of bins and waste or recycling collection.
2. The access routes should be highlighted on the plan. Access must be made available by wheelchair for occupants. Bin bays should allow for bins to be wheeled by to the street kerb over flat or ramped surfaces with a maximum grade of 7% and not over steps, gutters, or landscape edging. The need for manual handling by collection staff should be kept to a minimum.
3. Residents should not be required to carry waste or recyclables more than 30m to a waste storage area such as a bin bay, or in the case of a residential flat building greater than three storeys, a waste service room for interim storage of waste and/or recyclables. Recycling bins are not to be stored in isolation, but in close proximity to garbage bins or chutes.

4. Waste service rooms or compartments where provided, shall be enclosed and of design compatible with the proposed development. Adequate ventilation shall be provided for the room or compartment. Suitable arrangements for transfer of any interim storage to the main bin bay are to be indicated in the WMP.
5. Waste and recycling collection vehicles should be able to service the development efficiently and effectively and with no need to reverse. Current collection vehicles are fitted with a left side lifter for handling MGBs, with a minimum height clearance of 3.6 m when lifting and 4.7m width when lifting.
6. Council and waste collection contractor vehicles will not enter private property including driveways to collect waste or recycling.

Other Waste Considerations

1. In the case of multi dwelling housing or residential flat buildings of more than 25 dwellings, a designated space reflecting the number of dwellings shall be provided for temporary storage of disposed bulky items awaiting Council clean up or contracted removal. The minimum allocated space must be 6sqm, with a minimum height of 2m. The space shall be signed as to its purpose.
2. No waste incineration devices are permitted.
3. Council will consider applications for buildings more than three (3) storeys or where elevator access is required for dwellings on the upper levels that utilise garbage chutes as a means of transferring waste from each level to a centralised garbage room, with the following criteria:
 - Garbage chute access can only be located within a waste service room or compartment.
 - Recycling chutes are not permitted. Recycling bins for interim storage are to be provided in each waste service room.
 - Garbage chutes are not to be situated adjacent to habitable rooms
 - Applications must state the material the chute is to be made from, how the chute is to be cleaned, how often the chute will be cleaned, how any blockages will be removed and any fire protection measures to be used.
 - The waste collection system that the chute feeds into must be stated (compactor, carousel, open bin) and suitable for the number of dwellings in the development.
4. Signage should be in English, and consideration given to other languages reflective of the most recent demographics of Liverpool LGA. Illustrative graphics will form a minimum 50% of the area of the signage. Council can provide appropriate bin bay usage signs if required. Signage is to be prominently posted in each bin bay, or waste service room indicating that:
 - Garbage is to be placed wholly within the garbage bins provided.
 - Only recyclable materials accepted by Council shall be placed within the recycling bins.
 - The area is to be kept tidy.
 - A telephone number for arranging the disposal of bulky items.
 - Should garbage chutes be incorporated, signage on how to use the chutes is to be located prominently next to the chute itself.

Appendix: Signage Examples

