

**ESQ1818, Stages 4 & 5,  
Residential Development,  
Panthers North Precinct,  
Ransley Street, Penrith**

NOVEMBER 2021

**Operational Waste  
Management Plan**



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# 1. Introduction

This Waste Management Plan (WMP) has been prepared to accompany a Development Application for the ESQ1818 Stages 4 & 5, Development (Buildings H, J, K and L). This stage of the development consists of 330 residential apartments and 2,146 m<sup>2</sup> of retail, restaurants and club premises.

This Plan has been developed with reference to the Penrith City Council's Development Control Plan 2014: Section C5 Waste Management (including Residential Flat Building Waste Management Guidelines), and Appendix F5 Technical Information, and other Authority's requirements.

Further guidance has been obtained from the Department of Environment and Climate Changes NSW's *Better Practice Guide for Waste Management in Multi-Unit Dwellings*.

These sources have been referred to in the development of the waste estimates and related requirements. They are intended to inform the design of the waste services by identifying the estimated waste profile for the development and providing the total area required by the recommended equipment/systems.

Waste audit and management strategies are recommended for new developments to provide support for the building design and promote strong sustainability outcomes for the building. All recommended waste management plans will comply with council codes and any statutory requirements. The waste management plan has three key objectives:

To assist building management in achieving effective waste and recycling management, this waste management plan has three key objectives:

- i. **to minimise the environmental impacts of the operations of the development** – this will be achieved by ensuring maximum diversion of waste from landfill; correct containerisation and transport of materials; correct segregation of materials into appropriate management streams; awareness among tenants of waste avoidance practices.
- ii. **to minimise the impact of the management of waste within the development on local residents** – this will be achieved by ensuring waste is managed so as to avoid odour and litter and collected during suitable times.
- iii. **to ensure waste is managed so as to reduce the amount landfilled and to minimise the overall quantity generated** – this will be achieved by implementing systems that assist tenants to segregate appropriate materials that can be recycled; displaying signage in all tenant areas to remind and encourage avoidance and recycling to staff; and through associated signage in the waste storage areas to reinforce these messages.

## 2. Waste Generation

### 2.1 Waste Streams

Based on the profile for this development (as per Section 1), the following are the predominant waste streams that would be expected on a regular basis:

- Comingled and Paper/cardboard recycling; and
- General waste.

Paper, Cardboard and Commingled recycling will be consolidated into the one bin – this is to ensure that the system is economically viable. However, once the waste contractor has been appointed this may be reviewed depending on management costs and potential for rebates for materials.

Other wastes may be generated, but these would be irregular in terms of when generated and as such the quantities not able to be estimated. These would be materials such as furniture, e-waste, and other materials. Space will be provided for recycling of these other streams as required.

It is not expected that significant quantities of garden waste will be generated. The appointed gardener will be required to manage this waste by disposal at a composting facility.

### 2.2 Waste Generation Estimates

Calculations for the types and quantities of waste that will be generated are based on the estimates are provided in the City of Penrith's *Development Control Plan 2014: Appendix F5 Technical Information*. In addition, averages for quantity of waste generated and composition as determined by industry data (ie., data/information provided by WACS' waste audits conducted in a broad range of sectors).

The following table shows the estimated waste generated for the development – these estimates are based on averages for quantity of waste generated and composition as determined by industry data (ie., data/information provided by WACS' waste audits conducted in a broad range of sectors) as well as consideration of waste management requirements as specified by the City of Penrith.

### 2.3 Residential Development

#### Waste generation estimate – residential (Stage 4)

Waste Stream	Bin Type	No. of Bins	Clearance Frequency (week)	Capacity - (week)	Estimated volume / week (litres)	Footprint per bin (m2)	Total Footprint
General Waste	1100 MGB	5	2	11,000	9,472	1.04	5.2
Recycling	1100 MGB	9	1	9,900	9,472	1.04	9.36
<b>TOTAL</b>		<b>14</b>		<b>20,900</b>	<b>18,944</b>		<b>14.56</b>

### Waste generation estimate – residential (Stage 5)

Waste Stream	Bin Type	No. of Bins	Clearance Frequency (week)	Capacity - (week)	Estimated volume / week (litres)	Footprint per bin (m2)	Total Footprint
General Waste	1100 MGB	5	2	11,000	10,694	1.04	5.2
Recycling	1100 MGB	10	1	11,000	10,694	1.04	10.4
<b>TOTAL</b>		<b>15</b>		<b>22,000</b>	<b>21,389</b>		<b>15.60</b>

## 2.4 Retail Development

For the retail, restaurant (and club for Stage 4), the following are the estimated generation rates per week

### Waste generation estimate - retail (Stage 4)

Waste Stream	Bin Type	No. of Bins	Clearance Frequency (week)	Capacity - (week)	Estimated volume / week (litres)	Footprint per bin (m2)	Total Footprint
General Waste	1100 MGB	13	2	28,600	26,403	1.04	13.52
Recycling	1100 MGB	9	1	9,900	9,638	1.04	9.36
<b>TOTAL</b>		<b>22</b>		<b>38,500</b>	<b>36,042</b>		<b>22.88</b>

### Waste generation estimate - retail (Stage 5)

Waste Stream	Bin Type	No. of Bins	Clearance Frequency (week)	Capacity - (week)	Estimated volume / week (litres)	Footprint per bin (m2)	Total Footprint
General Waste	1100 MGB	13	2	28,600	27,133	1.04	13.52
Recycling	1100 MGB	9	1	9,900	9,713	1.04	9.36
<b>TOTAL</b>		<b>22</b>		<b>38,500</b>	<b>36,845</b>		<b>22.88</b>

## 3. Waste Management Systems

### 3.1 Apartments

The following summarises the recommended waste and recycling systems that will be implemented for the buildings. These recommendations are based on the City of Penrith's requirements and systems implemented for similar developments (and tenants).

To ensure that the proposed management actions occur management requirements will be contained within the Strata By-laws as well as within the service contract for the maintenance/cleaning contractor(s).

Essentially all wastes and recyclables will be collected by the Council or qualified waste contractor from the dedicated storage room located in Stage 4, Basement 01 of the development.

The buildings will utilise a dual chute system which will be accessible from each residential level and will terminate in one of the Basement waste storage rooms.

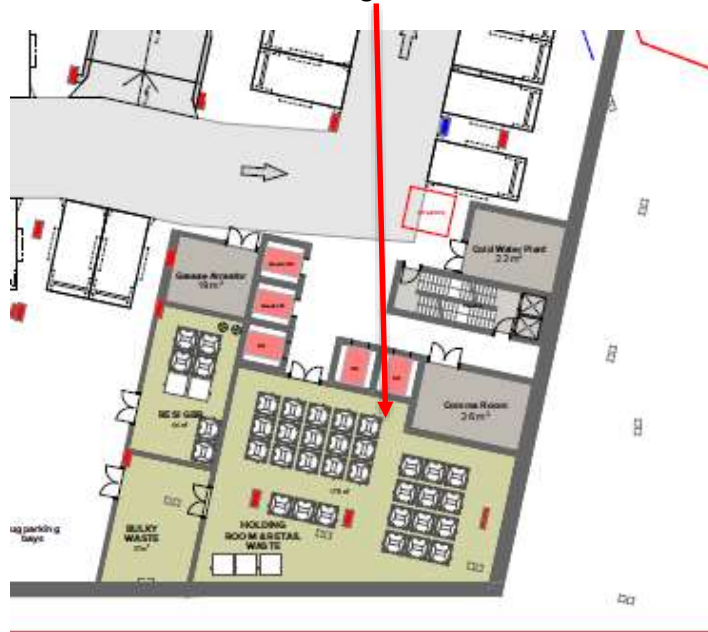
A dual chute access room will be provided for residents on each floor of the buildings. The chute system allows both general waste and recyclables to be deposited into the chute – (refer to Appendix C for indicative chute information).

The following illustrates the location of some chute rooms (Level 02):

A compactor unit for the general waste will not be provided as this will result in MGB being too heavy for servicing by Council (as well as transporting from waste room to collection room)

General waste will be collected under the chute into 1100 litre MGB. These and the waste bins will be transported to the Stage 4, Basement 01 holding room by cleaning staff, for collection by Council or qualified waste contractor.

The following illustrates the location of this holding room.



In addition, a motorised “tug” will be provided to assist in the safe movement of the bins. An example is illustrated below.



Building management/onsite cleaning staff will be responsible for monitoring all chute waste rooms and transporting full bins (as required), to the holding.

The following represents the types of bins that will be used for the residential aspect of the development:





Residents will be briefed on the proper use of the chute system and any contamination of the recycling stream will be monitored and reported by cleaners/building management as it is imperative that the recycling stream remain free of contamination to ensure compliance with collection protocols. Residents will be encouraged to maximise the separation of general waste and mixed recyclables within their apartments to aid the proper disposal of all materials.

Prior to each collection, building management/onsite cleaning staff will transfer all bins from the waste storage room to the holding room. The service vehicle will service the bins from this area and it will be the responsibility of building management/onsite cleaning staff to return the bins to the waste rooms as required.

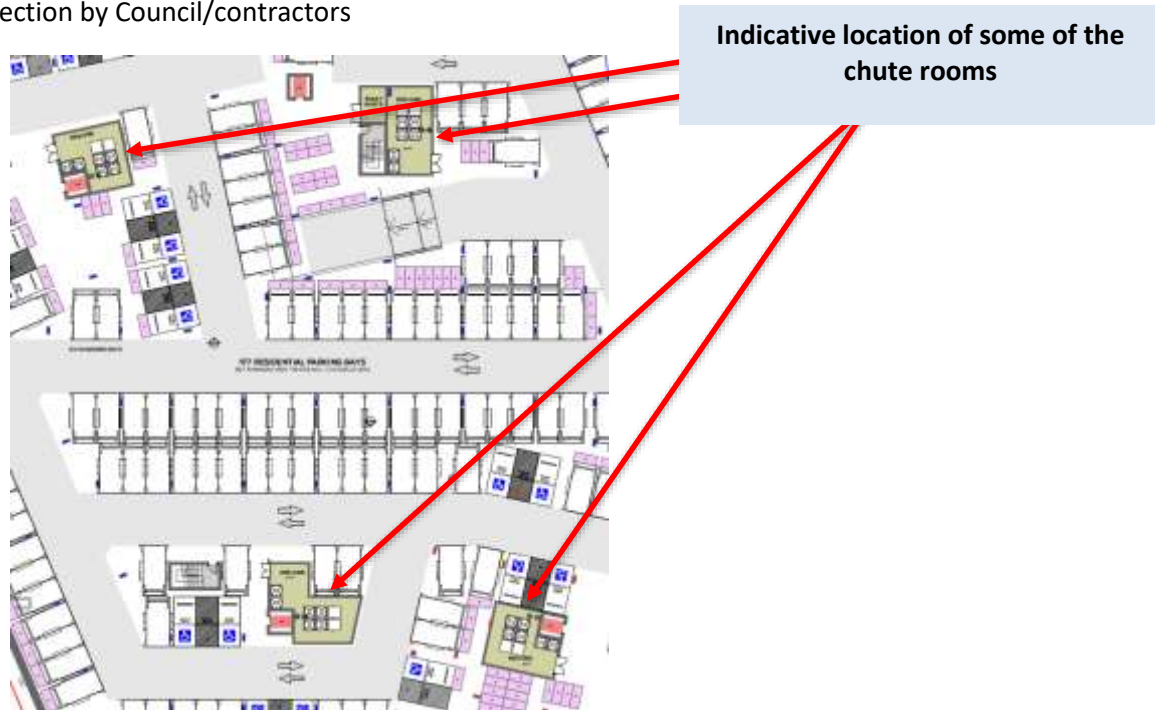
Items such as furniture/whitegoods stored within the bulky items storage rooms will be managed by building management and offered to other residents for reuse if desired. If items remain unclaimed, appropriate collection organisations will be called to collect the items for recycling/reuse as required. Bulky goods storage rooms and bulky goods trailer bays have been provided for, and are located adjacent to the turntable for the waste collection vehicle.

Bulky goods will be stored in the basement beneath the respective building, it will then be transported to the holding room for final collection. This enables efficiency for management and collection.

The following diagram illustrates the location of some of the bulky waste storage rooms.



The following diagrams illustrate some of the chute rooms that are located in the Basement This shows Stage 5 rooms). The wastes from these room will be transported to the holding room for collection by Council/contractors



Appendix A contains illustrations of other waste management equipment that could be used within the buildings. The pictures provide examples of the different options for equipment such as MGB, bins placed within the commercial areas, tugs for transporting bins, trolley unit and a wheelie-safe trolley.

Signage will be a crucial element of the waste management system. Appendix B contains examples of signage. These are the type of signs that should be used throughout the buildings and waste storage area. Other signs can be accessed from the NSW EPA website at: <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>.

In regards to storage space for “bulky waste”, Council requires space based on the calculation of Number dwellings x 8.0m<sup>2</sup> divided by 52. This results in a bulky waste space requirement for the following buildings. This is for the following buildings:

J – 24 m<sup>2</sup>

L – 27 m<sup>2</sup>

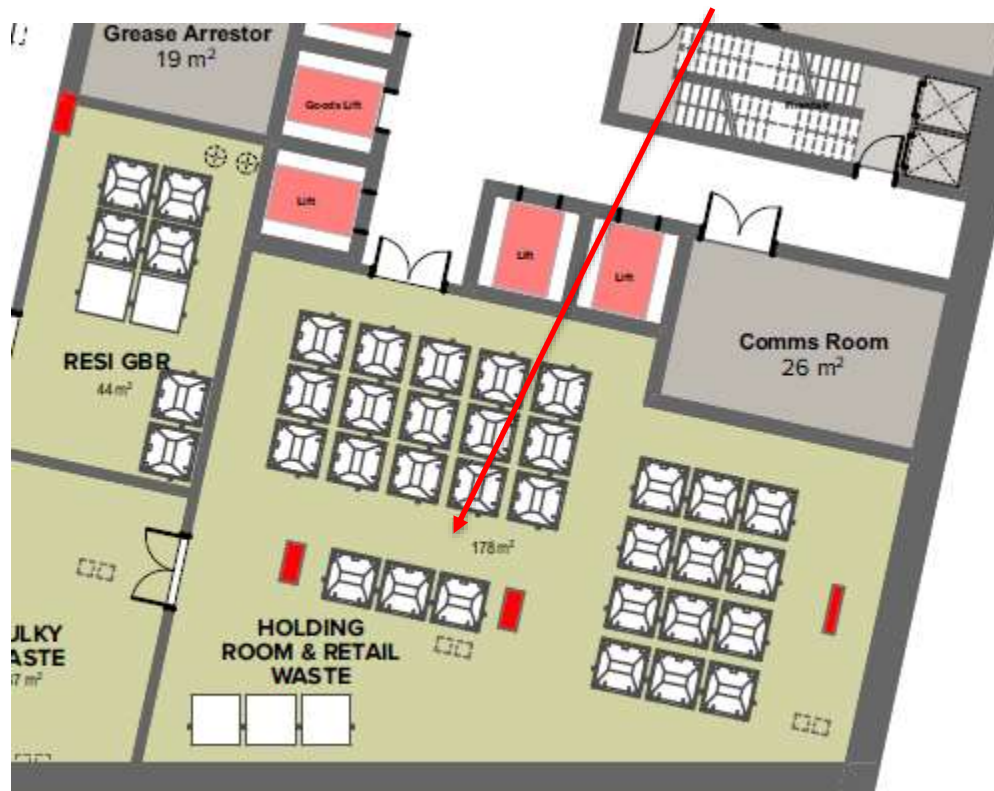
## 3.2 Commercial Tenants

The commercial tenancies will be designed so as to allow effective segregation of recyclables. These tenancies will (depending on the types of wastes/recyclables generated) be provided with sufficient smaller bins to allow for effective segregation of wastes/recyclables. This will include:

- Paper and Cardboard recycling
- Comingled recycling
- General waste

Waste and recycling collection services for the commercial tenancies will be provided by a commercial waste contractor (TBA). Utilising a commercial waste contractor affords the tenants greater flexibility regarding collection schedules and the appropriate collection frequencies will be determined in consultation with the waste contractor once appointed – however once operational, collection schedules may need to be adjusted accordingly depending on actual waste generation.

The following illustrates the waste storage room for the commercial tenants



In addition, tenants will be provided with ad hoc recycling systems such as e-waste; batteries; mobile phones etc. Systems for these streams will be located within each tenancy or in common areas or be available upon request from building management.

Signage will be a crucial element of the waste management system. Appendix B contains examples of signage. These are the type of signs that should be used throughout the retail tenancies and waste storage area(s).

The commercial tenants will be required to transport their waste/recyclables to the holding room and deposit the materials into the correct bin. To assist this process, a hoist has been provided to transport retail waste in Stage 5 from Ground Level to Basement 01.

### 3.3 Collection Frequency

The residential waste bins are emptied twice weekly and recycling bins are emptied weekly by the contractors directly from the bin storage area<sup>1</sup>. However, as indicated above collection frequencies for the commercial tenancies may be adjusted once tenant's generation rates are reviewed.

### 3.4 Storage

In keeping with best practice sustainability programs, all waste areas and waste and recycling bins will be clearly differentiated through appropriate signage and colour coding to Australia Standards to reflect the materials contained.

There will be a need to ensure that there is sufficient space to allow for bin movement. As a general rule, it is recommended that an additional 30% of the estimated footprint for bins be allocated to this and this has been factored into the waste storage area space calculations.

The waste areas will be accessed by cleaning staff only.

The waste and recycling bins will be colour coded and clearly signed. Each stream will be located in a designated area. This will assist in easy identification of correct bins by those with authorised access.

#### Photographs 1 & 2 - Examples of waste room colour coding



The waste room will contain the following to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

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<sup>1</sup><https://www.penrithcity.nsw.gov.au/Waste-and-Environment/Waste/Bin-services/#About%20the%20C&R%20Service>

- waste room floor to be sealed with a two pack epoxy;
- waste room walls and floor surface is flat and even;
- all corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- a water facility with hose cock must be provided for washing the bins;
- any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board;
- tap height of 1.6m;
- storm water access preventatives (grate);
- all walls painted with light colour and washable paint;
- equipment electric outlets to be installed 1700mm above floor levels;
- the room must be mechanically ventilated;
- light switch installed at height of 1.6m;
- waste rooms must be well lit (sensor lighting recommended);
- optional automatic odour and pest control system installed to eliminate all pest types and assist with odour reduction – this process generally takes place at building handover – building management make the decision to install;
- all personnel doors are hinged and self-closing;
- waste collection area must hold all bins – bin movements should be with ease of access;
- conform to the Building Code of Australia, Australian Standards and local laws; and
- childproofing and public/operator safety shall be assessed and ensured.

Occupational Health and Safety issues such as slippery floors in waste rooms and the weight of the waste and recycling receptacles will need to be monitored. Cleaners will monitor the bin storage area and all spills will be attended to immediately by cleaners.

A similar design will be incorporated into the chute rooms located on each floor of each building.

## 4. Education

All tenants and cleaning staff will receive information regarding the waste collection systems including how to use the system, which items are appropriate for each stream and collection regimes.

Large and clear signage will be provided within all waste rooms room and other areas of the development (eg., lobby and on each floor), educating residents on how to recycle – this will be accompanied by a brochure located within each apartment. Appropriate signage and updated information will also be provided.

All waste receptacles will be appropriately signed and additional room signage is usually provided from most waste contractors during implementation of the waste contract. Examples of signage is included in Appendix B.

It is recommended that all signs should;

- Clearly identify the waste/recycling stream;
- Use correct waste/recycling stream colour coding;
- Identify what can and cannot be disposed of in the receptacle; and
- Include highly visual elements to accommodate for individuals with inadequate English literacy.
- As part of the staff induction process, a waste and recycling toolkit will be provided. This toolkit will include the details of each of the systems in place; acceptance criteria for each stream and how each stream is managed.

On a quarterly basis waste and recycling performance reports will be reported back to tenants so that they are aware of their performance and areas for improvement. An active waste monitoring program will be employed. The waste and cleaning contracts will ensure that contractors actively participate in the waste reduction program for the site and meet monthly to identify performance and new opportunities for diversion and avoidance.



## 5. Ongoing Management

Having suitable systems in place is only one element of an effective waste management system. Compliance by all stakeholders is essential.

Cleaners are a key element in the effectiveness of the systems in place. Prior to acceptance of the cleaning contract, the contractor will be required to demonstrate how the management of waste and recycling will be carried out so as to ensure that segregated materials are placed in the correct systems. This process will be agreed and a training program implemented by the cleaning contractor to ensure full understanding by all cleaners. Monitoring of the system will be carried out by the cleaning supervisor and site management throughout the term of the contract.

In addition, cleaners will be required to feed back to site management any non-compliance issues they observe during their cleaning activities. This may include contamination of recycling; non-participation in the recycling system, or missing or damaged bins. In this way issues can be promptly dealt with by management.

Waste and recycling contractors will be required to report actual volumes collected by stream so that site management can monitor performance and feed this back to stakeholders.

It is highly recommended that a reporting program be set up at the site which would include bin tally sheets that detail the number of bins collected and how full they are at the time of collection, in addition to communication procedures to allow waste contractors to provide feedback regarding contamination and leakage.

All tenants/staff should be educated and made aware of any changes to the existing waste systems.

If a public place recycling system was implemented it would need to be accompanied by clear signage and colour coding to help differentiate the systems. It is likely that staff would also be required to inform the public about the systems and to guide their waste disposal practices.

## 6. Public Place Recycling

With public open spaces, consideration needs to be taken regarding public place recycling (PPR). General waste and recycling facilities will be provided in public realm areas throughout the precinct. The final number of bins will be determined in consultation with the City of Penrith and Building management.

Simple, colour-coded and consistent representation of common recycling and waste streams makes it easier for people to know how and what to recycle - whether at work, school or a public event. Introducing a public recycling system has environmental, social and financial benefits including:

- Responding to community expectations to 'Do the Right Thing'.
- Reducing the amount of waste sent to landfill and recovering valuable resources to be made into new products.
- Financial benefits over time as materials are diverted from landfill and into recycling.
- Contributing to triple bottom line reporting.

It is important that general waste and recycling bins are always located together in order to make recycling as accessible as general waste disposal. Recycling bins should never be located on their own in isolation from a general waste bin as patrons are likely to contaminate the recycling bin with general waste if there is no other option to dispose their general waste.

The implementation of organics recycling bins is not recommended in public places due to the high levels of contamination commonly observed in such systems.

All bins should be clearly signed and appropriately colour-coded to ensure the streams are readily identifiable. Signage for PPR should be:

- Colour-coded: red for general waste and yellow for recycling
- Large and easily viewed from all angles: this may mean that signs are placed on all sides of the bin or above the bin.
- Simple: don't use jargon (words such as PET, comingled, HDPE and even the recycling triangle can be confusing as this symbol can appear on a number of items that are not necessarily recyclable.
- Unambiguous and uses visual imagery

All public domain waste and recycling bins will be managed and collected by the appointed waste contractor as part of their existing waste and recycling operations (if not specifically addressed in site cleaning/maintenance contracts).



# Appendix A – Waste Management Equipment

The following diagrams illustrate colours and sizes of different bins that could be used within the development.

Figure 1 – MGB bin



Figure 2 – MGB bin



Figure 3 – Indicative size of MGB



Figures 4, 5, 6 and 7 – Bin movers and tugs





# Appendix B – Example Signage

## LANDFILL

✓

- Plastic Bags
- Ceramics
- Polystyrene
- Window glass, mirror & pyrex
- Chip packets & wrappers



NO HOUSEHOLD APPLIANCES  
NO REFRIGERATORS  
NO FREEZERS

Don't waste YOUR future

## MIXED RECYCLING

✓

- Aluminum & steel cans
- Plastic milk & Juice containers
- Plastic soft drink & water bottles
- Glass bottles & jars
- Paper & Cardboard



NO HOUSEHOLD APPLIANCES  
NO REFRIGERATORS  
NO FREEZERS

Don't waste YOUR future

## PAPER & CARDBOARD

✓

- Newspaper, junk mail & magazines
- Office, computer paper & envelopes
- Cereal & food boxes
- Telephone books
- Cardboard



NO HOUSEHOLD APPLIANCES  
NO REFRIGERATORS  
NO FREEZERS

PLEASE USE UNWEIGHTED SCALE  
FOR ALL OTHERS PLEASE LABEL  
PACKS IN THE RECYCLING BIN

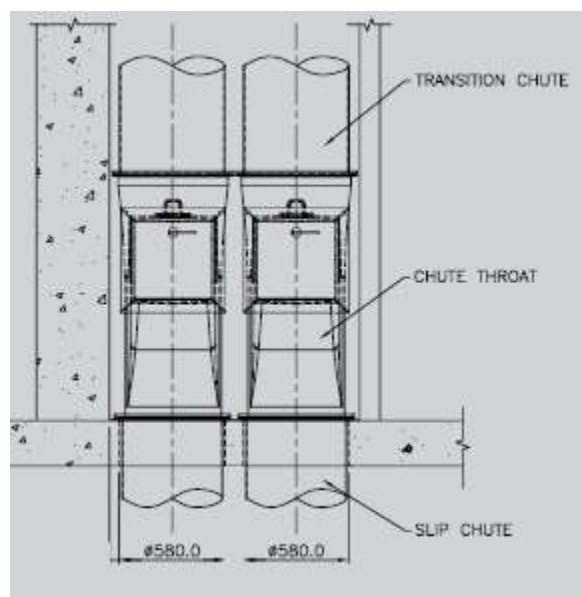
Example wall posters

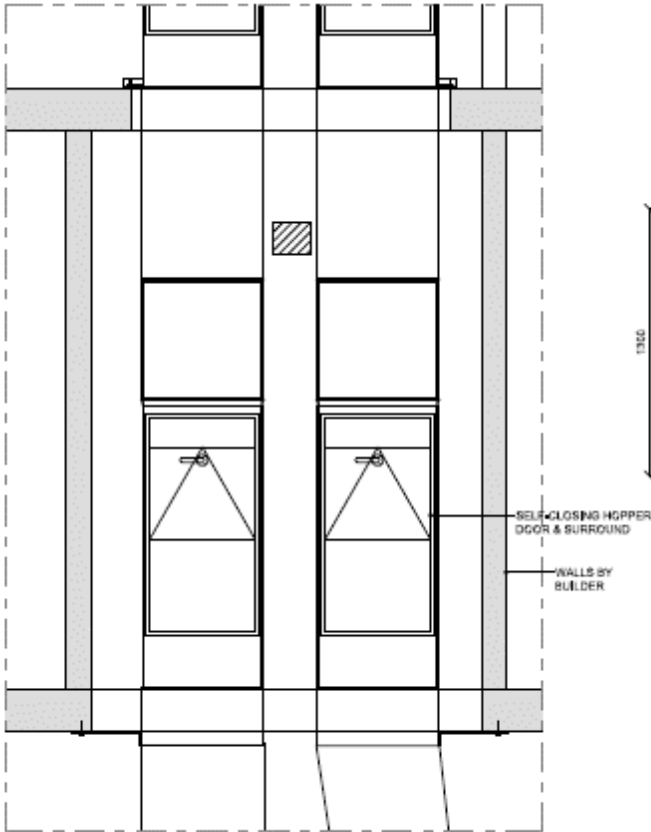


Example bin lid stickers

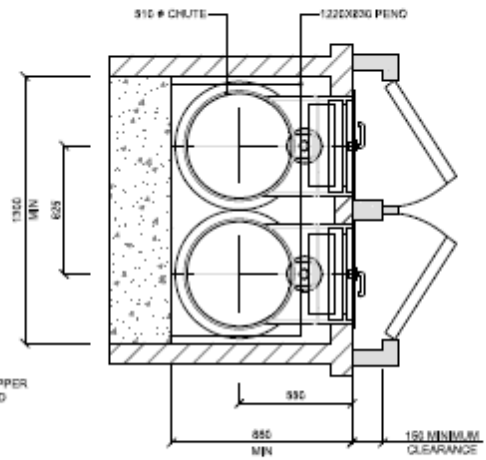


# Appendix C – Indicative Dual Chute Designs





TYPICAL DUAL CHUTE LAYOUT  
(5102)  
SCALE 1/20



TYPICAL LLDPE PLASTIC TWIN CHUTE LAYOUT  
w/ADDED ENCLOSURE (5102) (STEEL SIMILAR)  
SCALE 1/20

NOTE: ENCLOSURES ARE REQUIRED IF THE CHUTE OPENS  
DIRECTLY TO A CORRIDOR OR IS NOT LOCATED IN A WASTE ROOM.