

# **Bankstown Capital Development**

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## **Operational Waste Management Plan**



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# 1. Introduction

This Waste Management Plan (WMP) has been prepared on behalf of Fioson Pty Ltd to accompany a Development Application for the Bankstown Capital Development.

This development essentially consists of (approximate NLA provided for commercial premises):

- 471 residential apartments
- Commercial (2,231 m<sup>2</sup>)
- Retail (5,057 m<sup>2</sup>)
- Council (4,426 m<sup>2</sup>)

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:

1. **Ensure waste is managed to reduce the amount of waste and recyclables to land fill** by assisting staff and visitors to the buildings to segregate appropriate materials that can be recycled; displaying signage to remind and encourage recycling practices; and through placement of recycling and waste bins to reinforce these messages.
2. **Recover, reuse and recycle** generated waste wherever possible.
3. **Compliance** with all relevant codes and policies.

This Plan has been developed with reference to Canterbury-Bankstown Council's *Development Control Plan 2015–Part B2* and the City of Sydney's *Policy for Waste Minimisation in New Developments*.

## 2. Waste Generation

### 2.1 Waste Streams

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

- Cardboard recycling;
- Paper recycling;
- Comingled (container) recycling (glass and plastic);
- Organics 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 e-waste, office furniture, toner cartridge recycling and other materials. Space will be provided for recycling of other streams such as.

### 2.2 Waste Generation Estimates

Calculations for the types and quantities of waste that will be generated 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). In addition as Canterbury-Bankstown Council does not have their own waste generation rates consideration of those published by the City of Sydney's *Policy for Waste Minimisation in New Developments*, and the NSW Office of Environment and Heritage, Model Waste Not Development Control Plan 2008 was also undertaken.

Tables 1 and 2 show the estimated waste generated from 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 Canterbury-Bankstown Council.

It is estimated that the development will generate a total of **11,136 kilograms** or **166,250 litres** of waste and recyclables per week.

In regards to the separate types of development, the following are the estimated waste generation levels per week:

- Residential – 4,004 kilograms or 56,520 litres per week (refer to Table 1)
- Commercial – 7,132 kilograms or 109,730 litres per week (refer to Table 2)

**Table 1 – Waste generation estimate (Residential)**

	kg/week	L/week
General Waste	3,014	37,680
Recycling	989	18,840
<b>Total</b>	<b>4,004</b>	<b>56,520</b>

**Table 2 – Waste generation estimate (Commercial and Other Non-Residential)**

	kg/week	L/week
Paper/Cardboard/ Co-mingled recycling	2,304	13,716
Food organics	1,536	41,149
General waste	3,292	54,865
<b>Total</b>	<b>7,132</b>	<b>109,730</b>

**Notes:**

- Calculations are based on the number of apartments and size and type of tenancies as advised
- The weights and volumes are based on correct segregation of waste and recyclables occurs
- The calculations allow for the commercial collection of food organics. However, an option could be to implement a system where there is on-site composting.
- If food organics system is not implemented, then this will be diverted to the general waste stream

### 3. Waste Management Storage Calculations

#### 3.1 Waste Systems and Bin Requirements

The following table show the recommended systems required to manage the estimated waste profile as detailed in the above table for the development. The systems refer to the dock/basement system rather than the internal bins that may be used within the development.

While 1100 litre mobile garbage bins have been used for the calculations, with 120 litre MGB for the organics. Other bins such as 240/660 could be utilised.

**Table 3 – Waste Systems Residential (weekly clearance)**

Waste Stream	Bin type	No. of Bins	Clearance Frequency/week	Capacity (weekly)	Estimated volume / week	Footprint per bin (m2)	Total Footprint
General Waste	1100	35	1	38,500	37,680	1.04	36.4
Recycling	1100	18	1	19,800	18,840	1.04	18.72
<b>TOTAL</b>		<b>53</b>		<b>58,300</b>	<b>56,520</b>		<b>55.1</b>

**Table 4 – Waste Systems Commercial and Other Non-Residential (five/week clearance)**

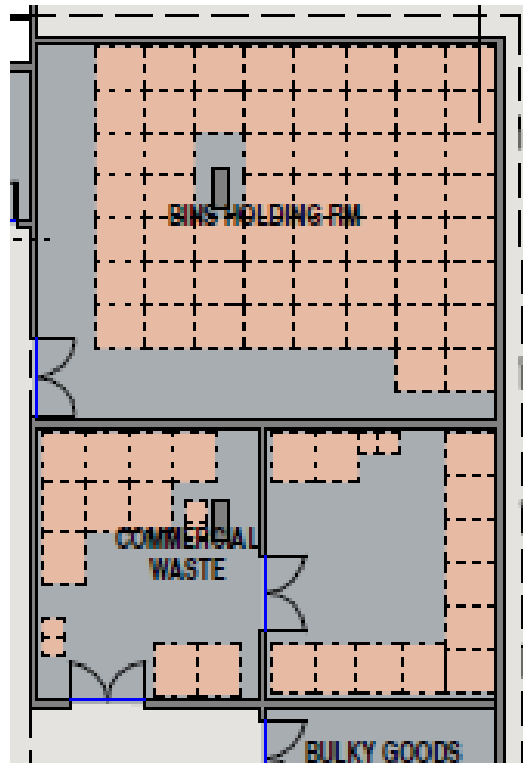
Waste Stream	Bin type	No. of Bins	Clearance Frequency/week	Capacity (weekly)	Estimated volume / week	Footprint per bin (m2)	Total Footprint
Paper/Cardboard/Co-mingled recycling	1100	10	5	55,000	52,122	1.04	10.4
Organics	120	5	5	3,000	2,743	0.28	1.4
General Waste	1100	10	5	55,000	54,865	1.04	10.4
<b>TOTAL</b>		<b>25</b>		<b>113,000</b>	<b>109,730</b>		<b>22.2</b>

Based on the estimates of waste generation and the number of bins required (with a five/week collection schedule), as well as allowing 30% space for bin movement, the minimum size of this storage facility (ie., commercial) should be approximately 30 m<sup>2</sup>.

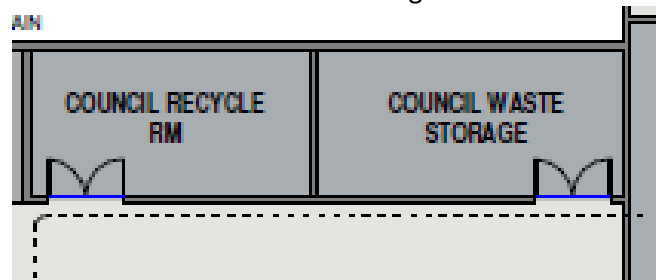
## 3.2 Waste Storage

The following diagrams illustrate the waste storage areas.

- Basement Level 1 - Commercial waste room and bin holding room (where bins are collected by the contractor)



- Basement Level 1 – Building D waste room

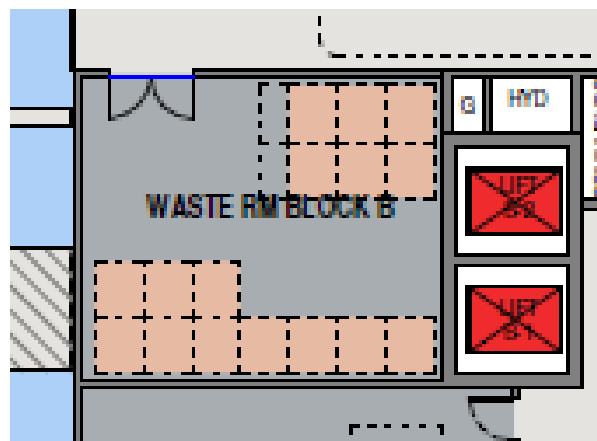




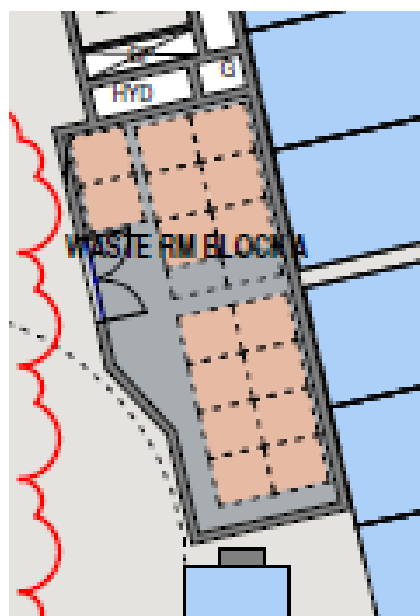
- Basement Level 1 – Building C waste room



- Basement Level 1 – Building B waste room



- Basement Level 1 – Building A waste room



Based on the calculations for bin requirements (and space for bin movement), this space allocation is sufficient for bin storage and bin washing (including spare bins). In addition, there is space for additional waste materials should they be generated, as well as contingencies should a collection be missed.

## 4. Waste Management Systems

The following summarises the recommended waste and recycling systems that will be implemented for the buildings. These recommendations are based on the Canterbury-Bankstown Council'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).

Note that the commercial tenancies include the office space allocated to Canterbury-Bankstown Council.

### 4.1 Residential Apartments

The buildings will utilise a split chute which will be accessible from each level and will terminate in one of the Level 1 Basement waste storage rooms. The split chute provides for the disposal of general waste and mixed recycling from each apartment.

Waste from commercial premises will be kept separate from residential waste and a commercial waste contractor will be engaged to collect and dispose of all waste and recycling streams from the commercial premises.

General waste will be collected under the e-diverter chute into 240 litre MGB. These bins will be collected by the appointed contractor once per week.

Recycling collected under e-diverter chute into 240 litre MGB. These bins will be collected by the appointed contractor once per week.

Chute access will be provided for residents on each floor of the buildings. The split chute system allows general waste and recycling to be deposited in the one chute – residents must select which stream they are depositing and the diverter at the base of the chute will direct the material into the appropriate bin in the waste storage room at the base of the chute (refer to Appendix C for indicative chute information).

A linear track will be located in each waste room (where cutes empty), so that bins will move automatically as they are filled.

Residents will be briefed on the proper use of the split 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 central bin consolidation area. The contractor 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 after collection.

Items such as furniture/whitegoods stored within the bulky items storage cage/room 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.

## 4.2 Commercial Tenants

### 4.2.1 Overview

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
- Soft plastics
- Organics
- General waste

These bins will be transported to the dedicated storage area located on the Basement Level 1, by commercial tenant staff for collection by the appointed contractor.

Commercial waste and recycling collection services will be provided by a commercial waste contractor (TBA). Utilising a commercial waste contractor affords the commercial sites 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.

Prior to each collection, building management/onsite cleaning staff will transfer all bins from the waste storage room to the central waste collection area within the loading dock. The contractor truck will service the bins from the loading dock and it will be the responsibility of building management/onsite cleaning staff to return the bins to the waste room after collection.

**Table 7 – Commercial tenant waste systems**

Stream	System	Comment
Cardboard recycling	240L MGBs	Tenants separate paper/cardboard materials to deposit directly into bins. Cleaners to transfer bins from waste storage room to the consolidation room for collection.
Food organics	120L MGBs	Tenants separate food waste materials in BOH/kitchen areas and then deposit material directly into 120L MGBs. Alternatively, a high organics generator such as a café may prefer to use a 120L MGB in their BOH area and then take it to the waste storage room when full. Cleaners to transfer bins from waste storage room to the consolidation room for collection and then return empty bins to waste storage room for use.
Comingled Recycling	240L MGBs	Tenants separate comingled materials in BOH area and then deposit directly into 240L MGBs. Cleaners to transfer bins from

Stream	System	Comment
		waste storage room to the consolidation room for collection and then return empty bins to waste storage room for use.
General Waste	240L MGBs	Tenants separate general waste in BOH areas and then deposit directly into 240L MGBs. Cleaners to transfer bins from waste storage room to the consolidation room for collection and then return empty bins to waste storage room for use.

All tenant's staff will be briefed on the proper use of waste management system and the recycling streams 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 Canterbury-Bankstown Council's and/or contractor collection protocols. Tenants will be encouraged to maximise the separation of general waste and mixed recyclables to aid the proper disposal of all materials.

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

Appendix A contains illustrations of bins (and 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 office 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>.

#### 4.2.2 Bin Servicing Frequencies

The public areas will be provided with sufficient litre bins for general waste and commingled recycling. Cleaning staff will circulate circulating the public areas cleaning tables and removing waste/recyclables into their trolleys as well as collecting wastes/recyclables from the tenancies. Therefore, it is difficult to provide with any accuracy as to the number of times that the provided bins will need to be serviced each day.

However, bins would need to be serviced approximately twice per day (assuming once during the day and another service on completion of the day's trading).

In regards to the tenancies, the servicing regime will depend on the type of product sold, levels of food preparation, numbers of customers etc. As per the development of other similar developments, the servicing schedule is undertaken in liaison with the tenants and the cleaning staff.

### 4.3 Storage

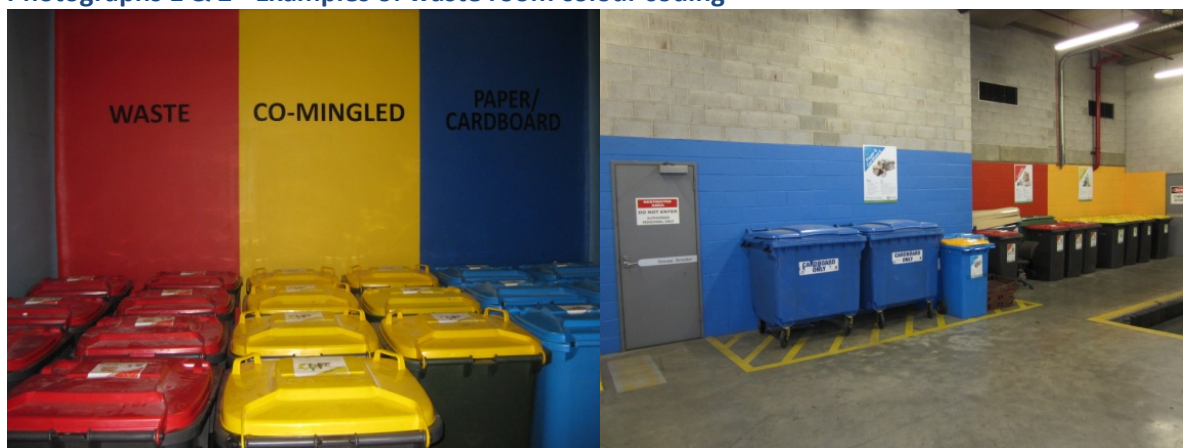
In keeping with best practice sustainability programs, all waste areas and waste and recycling bins will be clearly differentiated through appropriate signage and colour coding to Australia Standards to reflect the materials contained.

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:

- 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.

## 4.4 Bin Requirements

Containers located within the development for waste and recycling should be consistent. The following table outlines the colour coding that has been developed by Standards Australia.

**Table 8: Standards Australia waste/recycling container colour coding**

Waste Stream	Bin Body Colour	Lid Colour
Paper Recycling	Blue	Blue
Cardboard Recycling	Green	Blue
Food Organics	Burgundy	Burgundy
Commingled Recycling	Green	Yellow
Used Cooking Oil Recycling	NA	NA
General Waste	Green	Red

## 5. 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. 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 monthly 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.



## 6. 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 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.

## 7. 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 Canterbury-Bankstown Council 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.
- Improving the competitive edge of the buildings (and tenants – specifically the commercial and cafes), in the eyes of users and other stakeholders.
- 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.

## 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



Example wall posters



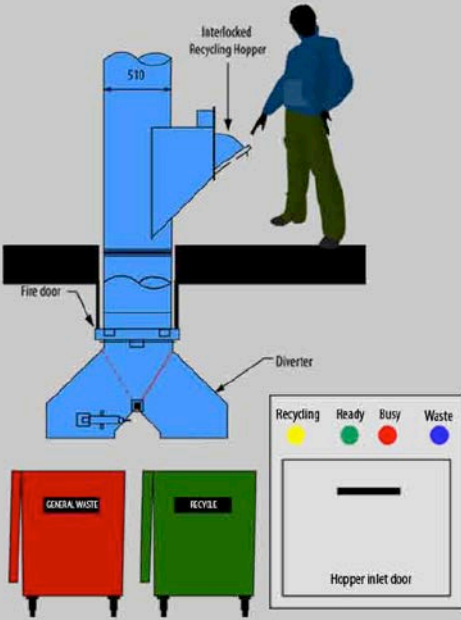
Example bin lid stickers





## Appendix C – Indicative Chute Design

Get a higher star rating for your projects with the new **eChute**




**THE WAY INTO THE FUTURE!**


LINEAR NO COMPACTOR
Built to minimise strata cost
Can be fitted with 240, 660 or 1100 litre bins
Fully automatic
Designed for building where no compaction required
Minimises bin movement
Low maintenance
415 Volts - 10Amp

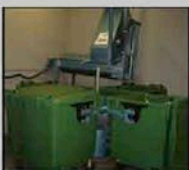
BIN COMPACTOR + CAROUSEL OR LINEAR
Built for under chute systems in high rise building
Waste falls directly into bins
Fits over carousel or linear system
Compacts into, 240, 660, 1100 standard bins
Fully automatic, compaction ratio 2:1
Minimise strata cost
Low cost maintenance
415 Volts - 10Amp



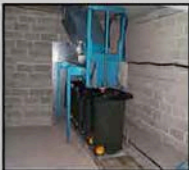
**240 LITRE**



**660 LITRE**



**1100 LITRE**



**LINEAR**