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# WASTE MANAGEMENT & GREEN STAR REPORT

## Lend Lease SE Plot



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# 1. Introduction

This report supports a State Significant Development (SSD) Development Application (DA) submitted to the Minister for Planning pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Application (referred to as SSDA 9) follows the approval of a staged SSD DA (SSDA 2) in December 2013. SSDA 2 sets out a Concept Proposal for a new mixed use residential neighbourhood at Haymarket referred to as “Darling Square”, previously known as “The Haymarket”. Darling Square forms part of the Sydney International Convention, Exhibition and Entertainment precinct (SICEEP) Project, which will deliver Australia’s global city with new world class convention, exhibition and entertainment facilities and support the NSW Government’s goal to “make NSW number one again”.

More specifically this subsequent DA seeks approval for mixed use development within the South East development plot of Darling Square and associated public domain works. The DA has been prepared and structured to be consistent with the Concept Proposal DA.

## 2. Overview of Proposed Development

The proposal relates to a detailed (“Stage 2”) DA for a mixed use residential development in the South East Plot of Darling Square together with associated public domain works. The Darling Square Site is to be developed for a mix of residential and non-residential uses, including but not limited to residential buildings, commercial, retail, community and open space. The South East Plot is one of six development plots identified within the approved Concept Proposal.

Under the Concept Proposal, the South East Plot is planned to accommodate a mixed use podium and three residential buildings (SE1, SE2, and SE3) above and within the podium structure. More specifically, this SSD DA seeks approval for the following components of the development:

- Demolition of existing site improvements, including the existing Sydney Entertainment Centre (SEC);
- Associated tree removal and planting;
- Construction and use of a predominantly 5 storey mixed use podium, including:
- retail floor space, residential lobbies on Ground Level;
  - above ground parking;
  - residential apartments; and
  - communal facilities.
- Construction and use of three residential buildings above podium;
- Public domain improvements adjacent to the site;
- Provision of vehicle access to the development from Harbour Street;
- Landscaping works to the podium roof level; and
- Extension and augmentation of physical infrastructure / utilities as required.

## 3. Background

The NSW Government considers that a precinct-wide renewal and expansion of the existing convention, exhibition and entertainment centre facilities at Darling Harbour is required, and is committed to Sydney reclaiming its position on centre stage for hosting world-class events with the creation of SICEEP.

Following an extensive and rigorous Expressions of Interest and Request for Proposals process, a consortium comprising AEG Ogden, Lend Lease, Capella Capital and Spotless was announced by the NSW Government in December 2012 as the preferred proponent to transform Darling Harbour and create SICEEP.

Key features of the Preferred Master Plan include:

- Delivering world-class convention, exhibition and entertainment facilities, including:
  - Up to 40,000m<sup>2</sup> exhibition space;
  - Over 8,000m<sup>2</sup> of meeting rooms space, across 40 rooms;
  - Overall convention space capacity for more than 12,000 people;
  - A ballroom capable of accommodating 2,000 people; and
  - A premium, red-carpet entertainment facility with a capacity of 8,000 persons.
- Providing a hotel complex at the northern end of the precinct.
- A vibrant and authentic new neighbourhood at the southern end of the precinct, now called 'Darling Square', including apartments, student accommodation, shops, cafes and restaurants.
- Renewed and upgraded public domain that has been increased by a hectare, including an outdoor event space for up to 27,000 people at an expanded Tumbalong Park; and
- Improved pedestrian connections linking to the proposed Ultimo Pedestrian Network drawing people between Central, Chinatown and Cockle Bay Wharf as well as east-west between Ultimo/Pymont and the City.

On 21 March 2013 a critical step in realising the NSW Government's vision for the SICEEP Project was made, with the lodgement of the first two SSD DAs with the (now) Department of Planning and Environment. The key components of these proposals are outlined below.

### 3.1 Public Private Partnership SSD DA (SSD 12\_5752)

The Public-Private Partnership (PPP) SSD DA (SSDA 1) includes the core facilities of the SICEEP Project, comprising the new, integrated and world-class convention, exhibition and entertainment facilities along with ancillary commercial premises and public domain upgrades. SSDA1 was approved on 22 August 2013.

### 3.2 Concept Proposal (SSD 13\_5878)

The Concept Proposal SSD DA (SSDA 2) establishes the vision and planning and development framework which will be the basis for the consent authority to assess detailed development proposals within the Darling Square Site. SSDA2 was approved on 5 December 2013. The Stage 1 Concept Proposal approved the following key components and development parameters:

- Indicative staging of demolition and development of future development plots;
- Land uses across the site including residential and non-residential uses;
- Street and laneway layouts and pedestrian routes;
- Open spaces and through-site links;
- Six separate development plots, development plot sizes and separation, building envelopes, building separation, building depths, building alignments, and benchmarks for natural ventilation and solar access provisions;
- A maximum total gross floor area (non-residential and residential GFA);
- Above ground car parking including public car parking;
- Residential car parking rates;
- Design Guidelines to guide future development and the public domain; and
- A remediation strategy.

The Concept Proposal was modified on 26 November 2015 to increase the amount of non-residential GFA. This minor increase in GFA was allocated to the approved North-West Plot building to meet tenant requirements. In addition to the approval of SSDA2, the following approvals have been granted for various stages of Darling Square site:

- Darling Drive (part) development plot (SSDA3) for the construction and use of a residential building (student accommodation) and the provision of associated public domain works approved on 7 May 2014;
- North-West development plot (SSDA4) for the construction and use of a mixed use commercial development and public car park building and associated public domain works approved on 7 May 2014; and
- South-West development plot (SSDA5) – construction and use of a mixed use residential development and associated public domain works approved on 21 May 2014.
- North-East development plot (SSDA7) – construction and use of a mixed use residential development and associated public domain works approved on 16 April 2014.

Approval was also granted on 15 June 2014 for SSDA6 which includes the construction and use of the International Convention Centre (ICC) Hotel and provision of public domain works. Approval was also granted for SSDA8 on 16 October 2015 which comprised the ICC Hotel fitout, external lighting and subdivision.

This report has been prepared to support a detailed Stage 2 SSD DA for mixed use development and associated public domain works within Darling Square (SSDA 9), consistent with the Concept Proposal (SSDA 2).

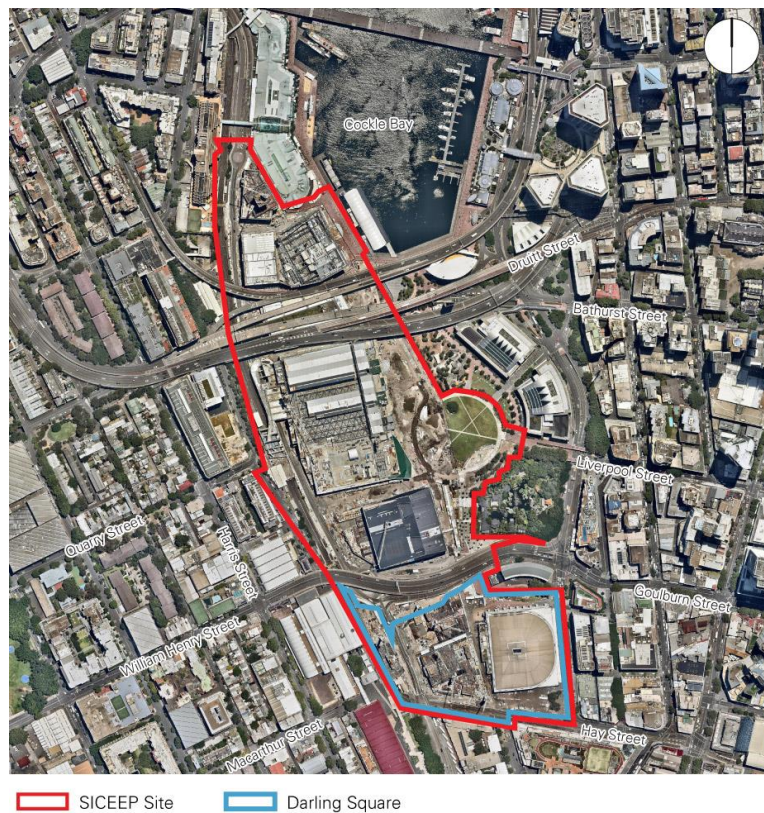
### 3.3 Site Description

The SICEEP Site is located within Darling Harbour. Darling Harbour is a 60 hectare waterfront precinct on the south-western edge of the Sydney Central Business District

that provides a mix of functions including recreational, tourist, entertainment and business.

With an area of approximately 20 hectares, the SICEEP Site is generally bound by the light rail Line to the west, Harbourside shopping centre and Cockle Bay to the north, Darling Quarter, the Chinese Garden and Harbour Street to the east, and Hay Street to the south (refer to Figure 1). The Darling Square Site is:

- located in the south of the SICEEP Site, within the northern portion of the suburb of Haymarket;
- bounded by the Powerhouse Museum to the west, the Pier Street overpass and Little Pier Street to the north, Harbour Street to the east, and Hay Street to the south; and
- irregular in shape and occupies an area of approximately 37,700m<sup>2</sup>.

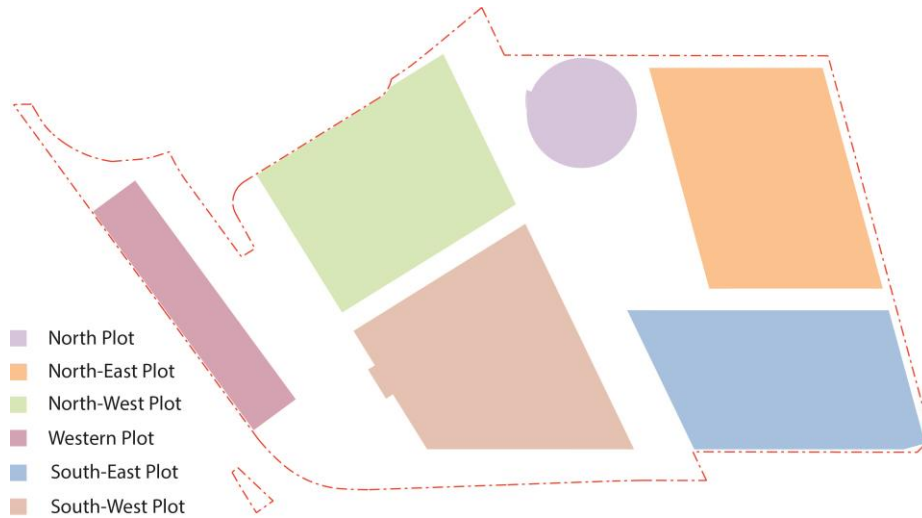


**Figure 1 – Aerial Photograph of the SICEEP Site**

The Concept Proposal DA provides for six (6) separate development plots across the Darling Square Site (refer to **Figure 2**):

1. North Plot;
2. North East Plot;
3. South East Plot;
4. South West Plot;
5. North West Plot; and
6. Western Plot (Darling Drive).

The Application Site area relates to the South East Plot and surrounds as detailed within the architectural and landscape plans submitted in support of the DA.



**Figure 2** – Concept Proposal Development Plots

### 3.4 Planning Approvals Strategy

The SICEEP Project has resulted in the lodgement of numerous SSD DAs for the various components of the redevelopment project. Future applications will continue to be lodged in accordance with the Concept Proposal SSD DA for the remaining development plots of Darling Square Site.

## 4. The Development

The proposal relates to a detailed ('Stage 2') DA for a mixed use residential development in the South East Plot of Darling Square together with associated public domain works. The Darling Square Site is to be developed for a mix of residential and non-residential uses, including but not limited to residential buildings, commercial, retail, community and open space. The South East Plot is one of six development plots identified within the approved Concept Proposal.

The total proposed development for which this report has been prepared consists of:

- Residential apartments
- Retail premises

These are summarised in Tables 1 and 2 below.

**Table 1 – Tenancy mix – Residential**

Apartment Type	Number of each Type
3B	13
2b2b	133
2b1b	55
1b	186
S	4
<b>Total Yield</b>	<b>391</b>

**Table 2 – Tenancy mix – Retail**

Retail Type	Space M <sup>2</sup>
Restaurant & Café	908
Non-Food	419
Supermarket	183
<b>TOTAL</b>	<b>1,510</b>

## 5. Waste Generation

Based on industry averages for quantity of waste generated and composition, it is estimated that the development will generate a total of **4,798 kilograms** or **65,332 litres** of waste and recyclables per week (this includes the residential and retail premises).

### 5.1 Waste Streams

Based on the estimated waste profile, the following waste streams would be expected:

- Cardboard recycling;
- Paper recycling;
- Comingled (container) recycling;
- Polystyrene recycling;
- Food organics recycling;
- General waste;
- Kitchen supplies reuse or take-back system e.g. milk crates;
- Cooking oil;
- E-waste recycling;
- Toner cartridge recycling; and
- Fluorescent light tube recycling.

### 5.2 Total Waste Generation

The following tables summarise the expected quantities of waste and recyclables generated for the development in terms of weight and volume per day and week.

#### 5.2.1 Residential

Based on apartment numbers (and averaging out waste/recycling generation rates between the 1, 2 and 3 bedroom apartments), it has been estimated the following quantities of waste and recyclables will be generated.

**Table 3 – Residential**

Waste Type	Est. waste/unit/week		Est. waste/week (based on 391 units)	
	kg	L	kg	L
General Waste	6.4	80	2,502	31,280
Paper/Cardboard Recycling	1.05	25	411	9,775
Commingled Recycling	1.05	15	411	5,865
<b>TOTAL</b>	<b>8.5</b>	<b>120</b>	<b>3,324</b>	<b>46,920</b>

### 5.2.2 Retail

Based on the number and type of retail premises, the following is the estimated waste/recycling generation rates per material type. The estimated retail waste generation profile is based on the indicative retail mix provided by Lend Lease using WACS' retail waste model derived from extensive current and historical data from Lend Lease national retail portfolio.

**Table 4 – Retail**

	kg/week	%	L/week	%
Paper Recycling	111.3	7.5%	1,392	7.6%
Cardboard Recycling	401.6	27.2%	6,693	36.4%
Comingled Recycling	115.7	7.8%	1,653	9.0%
Organics	531.9	36.1%	2,128	11.6%
Soft Plastics	42.4	2.9%	2,021	11.0%
General Waste	271.5	18.4%	4,526	24.6%
<b>Total</b>	<b>1,474.5</b>	<b>100.0%</b>	<b>18,412</b>	<b>100.0%</b>

## 6. Bin Requirements

The number of bins required for the development is estimated (the assumptions for the calculations are that 240 litre bins would be used for general waste, 660 litre bins for recyclables and 120 litre bins for organics, with the servicing frequency being 5/week for general waste, recyclables and organics, with soft plastics serviced weekly), as:

**Table 5 – Waste and recycling bin requirements and footprint (no compaction)**

Waste Stream	Bin Type	No. of Bins	Clearance Frequency	Capacity - Litres (weekly)	Estimated volume / week (litres)	Footprint per bin (m2)	Total Footprint
Paper & Cardboard Recycling	660L MGB	6	5	19,800	17,860	0.98	5.88
Comingled Recycling	660L MGB	3	5	9,900	7,518	0.98	2.94
Organics	120 MGB	4	5	2,400	2,128	0.28	1.12
Soft Plastics	660L MGB	4	1	2,640	2,021	0.98	3.92
General Waste	240 MGB	30	5	36,000	35806	0.98	29.40
<b>TOTAL</b>	660L MGB	<b>47</b>		<b>70,740</b>	<b>65,332</b>		<b>43.26</b>

Consideration of the footprint required for bins with a recommended rate of 2:1 compaction for general waste, and the carousel to service general waste from the chutes results in the following total footprint required within the waste storage areas

**Table 6 – Storage requirements with compaction, chutes and carousel**

Waste Stream	Bin Type	No. of Bins	Footprint per bin (m2)	Total Footprint
Paper/Cardboard Recycling	660L MGB	6	0.98	5.88
Comingled Recycling	660L MGB	3	0.98	2.94
Organics	120 MGB	4	0.28	1.12
Soft Plastics	660L MGB	4	0.98	3.92
General Waste	660L MGB	15	0.98	14.70
Carousel (x 3)	240 MGB		3.00	9.00
<b>TOTAL</b>	660L MGB	<b>32</b>	-	<b>37.56</b>

## 7. Collection and Management Practices

For the purposes of this report it has been assumed that a commercial contractor will offer general waste and recyclable collections five times per week and soft plastic recycling collections once per week to assist in reducing the number of bins required to manage the expected waste from a development of this size.

Waste from retailers 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.

### 7.1 Systems

Due to the size of the development, and the objective to maximise diversion from landfill, the waste systems will be predominantly managed by site cleaners. Cleaners will be responsible for transporting all waste and recycling from the retail tenant's points of generation to the waste storage areas. This will enable greater management of each stream and avoid contamination being disposed into recycling streams.

Within the retail areas, recycling hubs have been provided where waste and recycling bins will be stationed. This allows retailers easy access to bins. These areas will be colour coded and signed. They will be serviced throughout the day by cleaners to ensure bins do not overflow.

For residents in the apartments, chutes have been provided that will be used to dispose materials. These are dual chutes with a separator at the base to divert general waste and recyclables into separate bins.

Residents select the stream they are disposing of via a button on the chute opening, and then deposit the materials into the chute. This is then transported to the appropriate bin in the waste storage areas. After a set time, the chute defaults to the general waste setting – this is so contamination of the recycling stream is avoided as much as possible.

In the waste storage areas, carousels are located for the disposal of general waste. As the waste arrives in the storage area, the general waste flows into a 240 litre MGB located on the carousel as the bin fills, it then rotates and an empty bin is then available. Cleaners are then responsible for removal of full bins and then replacing with empty ones (indicative designs for the chute and carousel are provided in Appendix B). Recyclables flow directly into a 660 litre bin.

Cleaners will be trained to ensure they are fully aware of acceptance criteria. A system of monitoring and reporting will be established that allows any non-compliant tenant (in terms of correct segregation) to be identified to enable review and education.

The retail tenancies will be designed so as to allow effective segregation of recyclables. The commercial spaces will be established in line with current best practice protocols.

The commercial areas will have provision for the following streams:

- Paper and Cardboard recycling
- Comingled recycling

- Soft plastics
- Organics
- General waste

Used cooking oil will be stored in the original containers and stored in the waste room for collection. Measures will be taken to ensure safe transportation to the waste room and safe storage. Any spillages will be cleaned immediately.

In addition, retail 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.

Fluorescent tubes will be kept separated when changed and recycled.

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 7: 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

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

## 7.2 Residential Collection

Residential waste and recycling collection services will be provided by the City of Sydney.

Prior to each collection, building management/onsite cleaning staff will transfer all bins from each individual waste storage room to the central waste collection area within the loading dock. Council's vehicle will service the bins from the loading zone and it will be the responsibility of building management/onsite cleaning staff to return the bins to their respective waste rooms after collection.

Due to the use of compacted 240L MGBs in the residential waste rooms, a power-assisted tug and trailer will be implemented for use by cleaning staff to assist in transferring multiple bins in one movement to the central waste collection area (Appendix D contains examples of power assisted tugs).

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. Alternatively, City of Sydney offers a bulky goods collection service, however this must be booked by building management as required. Residents will liaise with building management to organise access and disposal of bulky items in the storage area.

### **7.3 Residential Management Practices**

Chute access will be provided for residents on each floor. 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.

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 the contractor 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.

#### **8.2.1 Retail Collection**

Retail waste and recycling collection services will be provided by a commercial waste contractor (TBA). Utilising a commercial waste contractor affords the retail manager 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 waste contractor will be engaged to retrieve the bins from the waste rooms and load them from the central loading zone within the basement level loading dock. Once emptied, the waste contractor will return the bins to the retail waste room for use. The only exception is the oil caddy which will be emptied via a hose connected from the tanker truck directly to the oil unit within the waste room.

Retail management will liaise with the appointed waste contractor to advise on the most suitable collection times for all streams to ensure traffic congestion is limited in the loading area.

### **7.4 Retail Management Practices**

Retailers will separate general waste and recyclables from within their tenancies and have them contained for transfer them to the waste room periodically throughout each day or as required to be disposed into the relevant bin in the waste room by cleaning staff. It will be the responsibility of the individual retailer to maintain the separation of

recyclables from general waste from the point of generation to disposal in the systems provided.

The waste and recycling area and loading zone is level with no raised platforms or steps. This allows cleaners and contractors to easily manoeuvre waste bins throughout these areas.

Retail Management will work with tenants directly to ensure they are equipped with appropriate Back Of House systems to effectively manage their waste and maximize the diversion of recyclables from the general waste stream.

The cleaning contractor will be responsible for cleaning all the waste handling areas and ensuring they stay litter free.

## 8. Waste Storage Areas

There will be a total of three waste rooms (one servicing each individual residential tower). The e-diverter split chute system will terminate in each waste room, depositing general waste and recyclables into 240 litre mixed bins stored within the rooms.

In keeping with best practice sustainability programs, all waste areas; reuse areas and waste and recycling bins will be clearly differentiated through appropriate signage and colour coding to Australia Standards to reflect the materials contained. Each chute access point should be clearly signed as well.

Based on the plans provided on the current space allocated for storage of waste/recyclables is; 32.33m<sup>2</sup>, 35.21m<sup>2</sup> and 26.5m<sup>2</sup>. This is a total of 94.04m<sup>2</sup>. Based on the footprint of required bins (28.56m<sup>2</sup>), and the three carousels (9.0m<sup>2</sup>) should they be installed, leaves 56.48m<sup>2</sup> spare.

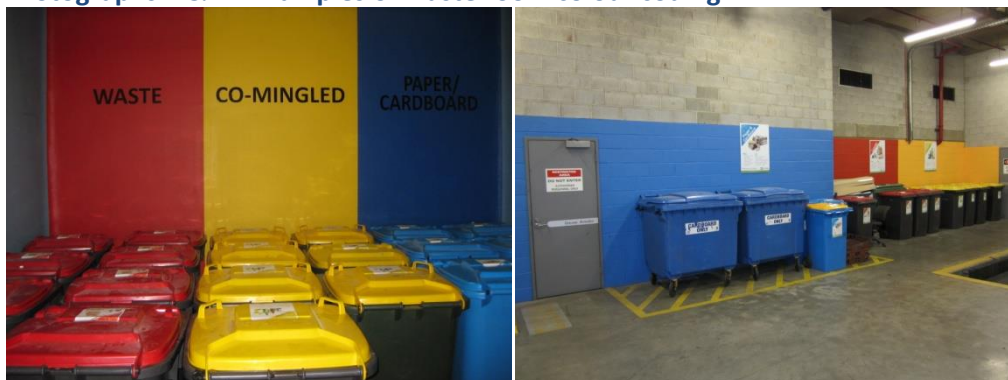
Note that this is only the actual bin and carousel footprint data. There will be a need to ensure that there is sufficient space to allow for bin movement. As a general rule, it is recommended that an additional 25% of the estimated footprint for bins/ carousel be allocated to this. This would mean that a total of 47m<sup>2</sup> of storage is required.

The waste areas will be accessed by the site cleaning staff only, tenants and residents will not have access to these areas as they will either dispose of wastes/recyclables via the chute system or be removed by the cleaning staff (for the retail tenants)..

While waste and recycling systems will be housed in each of the three storage areas, each system will be clearly signed and colour coded so as to ensure correct system use. All cleaners will be provided with waste specific education and ongoing toolbox sessions.

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 cleaners and staff.

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



## 9. Compliance Criteria

Two points are awarded where a dedicated storage area for the separation and collection of recyclable waste is provided and:

- Recycling is as convenient as general waste disposal (e.g. e-diverter or dedicated recycling chute)
- 2m<sup>3</sup> storage area provided for re-use of oversized items.
- Storage sizes and access requirements to be confirmed by qualified waste auditor.

The development should also meet the requirements of “*Policy for Waste Minimisation in New Developments*” (Council of the City of Sydney, 2005)

Notes:

- The waste and recycling storage area addressed in this report refers to the waste and recycling areas within the development boundary, designed specifically for the storage of waste and recycling generated from both areas.
- Waste/recyclables from apartments will be disposed of to the storage areas via chutes and the materials from retail areas will be collected by cleaners and wheeled by cleaners to the waste and recycling storage area through a direct pathway staff.

**Table 8 - Compliance with the City of Sydney criteria**

Reference	City of Sydney Requirement	Compliance Status
A-6	Waste and recycling storage containers must be stored at all times within the boundary of the subject site unless formally approved by Council under a Local Approvals Policy (LAP) for the storage of waste in a public place.	Complies – no storage will occur outside the development’s boundary
A-10	Sufficient space must be provided for equipment to handle or manage all waste and recycling likely to be generated on the premises between collections	Complies
A-11	Space must be provided within the premises in close proximity to the vehicle entrance and no lower than one level below street level for the storage of waste and recycling. The space allocated must be sufficient to store, in separate containers, the volume of waste and recycling likely to be generated during the period between collections.	Complies
A-12	The room/s for storing waste and recycling must be located in a position that is convenient for both users and waste collection staff.	

Reference	City of Sydney Requirement	Compliance Status
A-24	The walls, floors and ceilings of the waste room(s), recycling room(s) and service compartment(s) must be finished with a light colour.	Complies - Waste storage area will be painted in a light colour.
A-25	The waste and recycling room(s) must be provided with an adequate supply of hot and cold water mixed through a centralised mixing valve with hose cock. This does not include waste and recycling service compartments located on residential floors of multi-occupancy dwellings.	Complies – There is hot and cold water provided to the storage room.
A-28	Waste rooms and recycling room(s) must be constructed in such a manner as to prevent the entry of vermin.	Complies – The construction is designed to prevent vermin access and in addition no waste/recyclables will be stored on the floor or outside a bin.
A-29	Waste and recycling rooms must be ventilated by either: <ul style="list-style-type: none"> <li>• Permanent, unobstructed natural ventilation openings direct to the external air, not less than one-twentieth i.e. 5% of the floor area.</li> <li>• A mechanical exhaust ventilation system exhausting at a rate of 5L/s.m<sup>2</sup> floor area, with a minimum rate of 100L/s min; or (A-30).</li> </ul>	Complies – Natural ventilation is provided.
A-30	Waste and recycling rooms must be provided with artificial light controlled by switches located both outside and inside the room.	Complies – Light switches are provided outside and inside the waste storage area.
A-35	The refrigerated waste room must comply with Section G.1 of the Building Code of Australia as well as being provided with artificial light controllable from within the room.	Partial Compliance - As there is no refrigerated storage, however, Section A-30 in relation to lighting does comply.
A-36	Noise from the use of the refrigeration equipment associated with the waste room must not give rise to “offensive noise” as defined under the Protection of the Environment Operations Act 1997.	Complies - Noise will be managed also in accordance EPA Victoria noise management requirements, however, there will also be no noise from refrigeration as this will not be provided.
A-37	Clear and easy to read “NO STANDING” signs and “DANGER” warning signs for children must be fixed to the external face of each waste and recycling room where appropriate.	Complies - Will be provided.

Reference	City of Sydney Requirement	Compliance Status
A-38	Clear and easy to read sign(s) designating the storage of RECYCLABLES must be fixed to the internal wall(s) or on any racks provided.	Complies - Will be provided and the signs will be developed from those provided for on the Sustainability Victoria website.
A-39	Any compactors or mechanical devices for the storage of waste must be child proofed.	Complies - No compactors or mechanical devices will be provided.
A-40	Vermin must be prevented from entering waste areas and containers.	Complies - Refer to Section A-28.
A-41	Equipment must be protected from theft and vandalism.	Complies - The waste storage area will be locked whenever not being accessed for depositing or collection of materials.
Section C – C-12	Waste and recyclables from the waste service compartment or waste and recycling holding area on each floor must be transferred to the centralised waste and recycling room or holding area daily or more frequently as required.	Complies - There is no holding area. All materials will be transported directly to the waste storage area.
Section C – C-14	Where collections takes place inside a building, appropriate clearances need to be allowed for the collection vehicle to enter the premises, clear the waste container and exit the premises. It must be noted that some systems require the waste container to be lifted above the collection vehicle to be emptied (front lift-bulk bin) or loaded (waste compactor).	Complies – collection takes place outside. Note that the proposed systems do not involve front lift bins or compactors.
C-15	If clearance proposed is less than 3.8m, then vehicle specifications will be required from the waste provider that conforms with the proposed development.	Complies – not applicable as there are no height restrictions.
C-16	For premises, <ul style="list-style-type: none"> <li>• Whose waste generated contains 20% by weight or volume of fish, poultry or meat,</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Which generates 50 litres of seafood, poultry or meat waste per day, Waste must be collected daily or refrigerated whilst awaiting collection.</li> </ul>	Complies - The percentages for organic materials will not be exceeded.

Reference	City of Sydney Requirement	Compliance Status
C-17	Storage of paper and cardboard must be in a dry, vermin-proof area. Paper and cardboard must not be stored for more than 2 weeks to prevent breeding of pests in the stored material.	Complies - Refer to Section A-28. Collections will be daily to weekly depending on the materials.

## 10. Tenant Education

All residents will receive information regarding the waste collection systems including how to use the system, which items are appropriate for each stream and collection times. 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 are included in Appendix C.

Waste Audit recommends 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.

## 11. Other Systems

In addition to the diversion system that will be implemented, other waste diversion and minimisation practices may also be implemented.

### **Fluorescent Light Tubes**

A fluorescent light tube recycling stream may be required depending on the contractual arrangements for replacing light tubes. Recycling of used fluorescent light tubes could be a contractual requirement of the electrician responsible for servicing the lights. Alternatively if lights are services using in-house staff a fluorescent light tube recycling receptacle should be located in the recycling area.

### **Toner Cartridges**

A toner cartridge recycling bin/box should be placed in key printing areas to capture used cartridges. These can be recycled on an as-needed basis.

### **E-Waste**

Electronic equipment should be recycled on an as-needed basis.

### **Mobile Phones**

Mobile phones can be collected in secure receptacles at centralised collection points. Alternatively, boxes containing postage satchels can be placed in centralised areas for use as needed.

## 12. 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 basic 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 residents and staff should be educated and made aware of any changes to the existing waste systems. Given the culture within the staff there should not be any obstacles in conveying the protocols of new recycling systems to the staff.

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. Additionally, notices and information sheets could be placed on public notice boards informing the public of the changes at the centre.

## 13. Retail Tenant Communication

As part of the retail tenant 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. A visual communication aid such as short video will also be provided to enable tenants to educate their employees.

On a monthly basis waste and recycling performance reports will be reported back to retail 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.

## 14. 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 Sydney.

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 centre in the eyes of shoppers and tenants.
- 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.

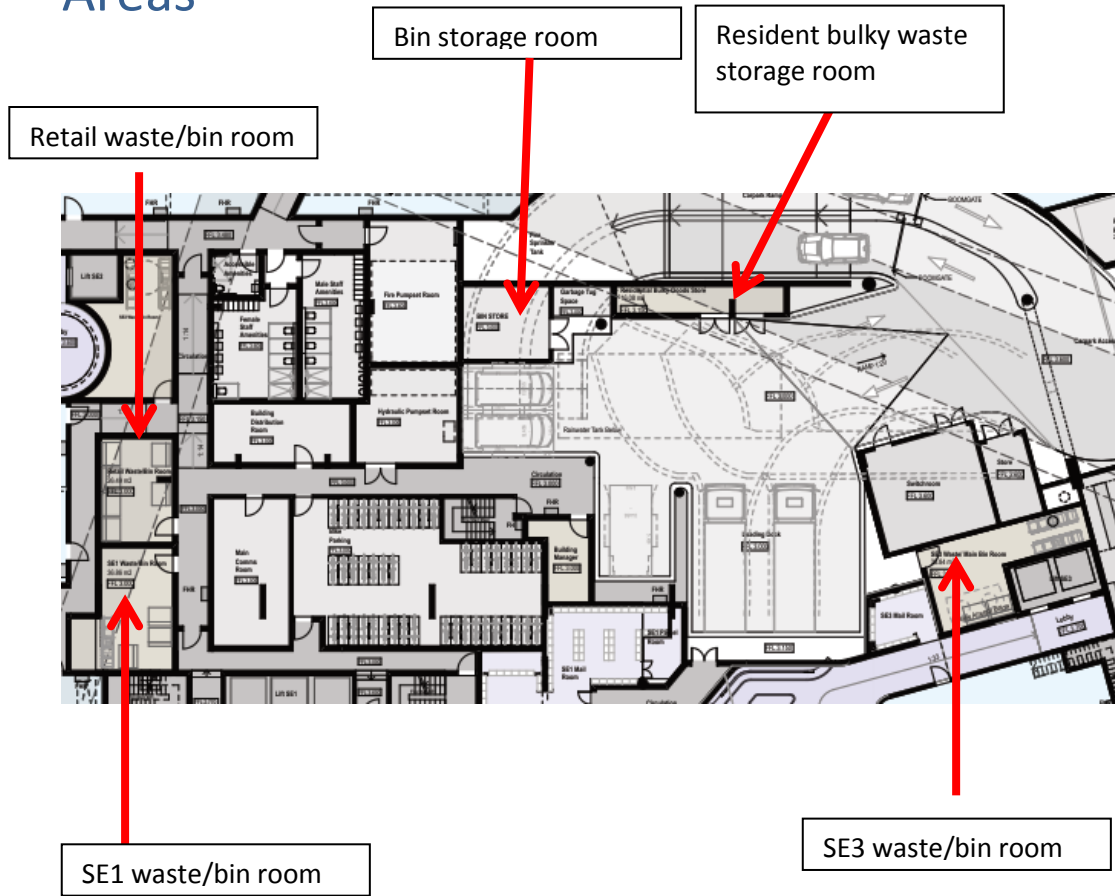
The implementation of organics recycling bins is not recommended in public places due to the high levels of contamination commonly observed in such systems.

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 – Location of Waste Storage Areas



# Appendix B – Indicative Chute Design and Carousel Space Requirements

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

The diagram illustrates the eChute system's components: an interlocked recycling hopper at the top, a fire door in the middle, a diverter at the bottom, and two bins labeled 'GENERAL WASTE' (red) and 'RECYCLE' (green). A control panel with four buttons (Recycling, Ready, Busy, Waste) and a hopper inlet door is also shown.

**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

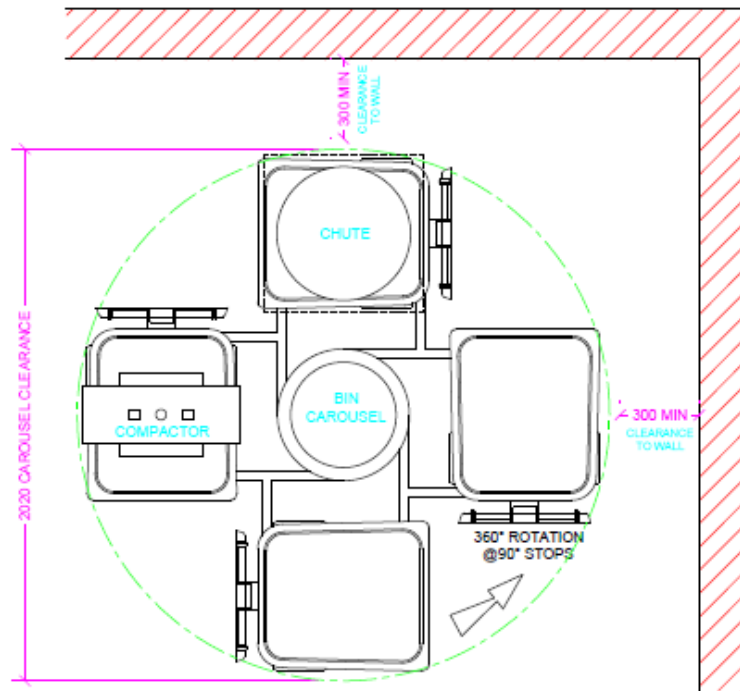
**240 LITRE**

**660 LITRE**

BIN COMPACTOR + CAROUSEL OR LINEAR
Built for under chutes 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

**1100 LITRE**

**LINEAR**



## Appendix C – Example Signage



Don't waste YOUR future



Don't waste YOUR future

# PAPER & CARDBOARD



A blue recycling bin sign with white text and graphics. The title 'PAPER & CARDBOARD' is at the top. A large white checkmark is on the left. Below it, a list of accepted items is provided. In the center, there is a photograph of various paper and cardboard items, including a cereal box, a newspaper, and an open cardboard box. To the right of the photo are two circular icons with a diagonal slash through them, indicating prohibited items: 'NO WAXED CARDBOARD' and 'NO PLASTIC FILM'. At the bottom right, there is a small instruction: 'Please cut oversized boxes into smaller pieces before placed in the recycling bin'.

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

NO WAXED CARDBOARD

NO PLASTIC FILM

Please cut oversized boxes into smaller pieces before placed in the recycling bin

## Appendix D – Examples of Tugs

The following provides examples of tugs and trailers that could be utilised for the transport of waste and recycling bins to the adjacent building should there be a need.

**Figures 2, 3 and 4 – Bin movers**



