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Chatswood Chase

Waste Management Plan for Main Scheme

June 2023

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1 Introduction

This report has been prepared by Waste Audit and Consultancy Services Pty Ltd (Waste Audit) for Compass Project Management and Vicinity Centres for the redevelopment of Chatswood Chase shopping centre.

The report provides details of strategies to be employed for the ongoing management of operational general waste and recycling, and compliance with the relevant requirements of Part C8 of the Willoughby Development Control Plan, including the following:

- Current and projected volumes of waste materials
- Dock layout and equipment
- Resource recovery objectives
- Tenant education programs
- Materials movement and handling
- Equipment collection frequencies

2 Project Background

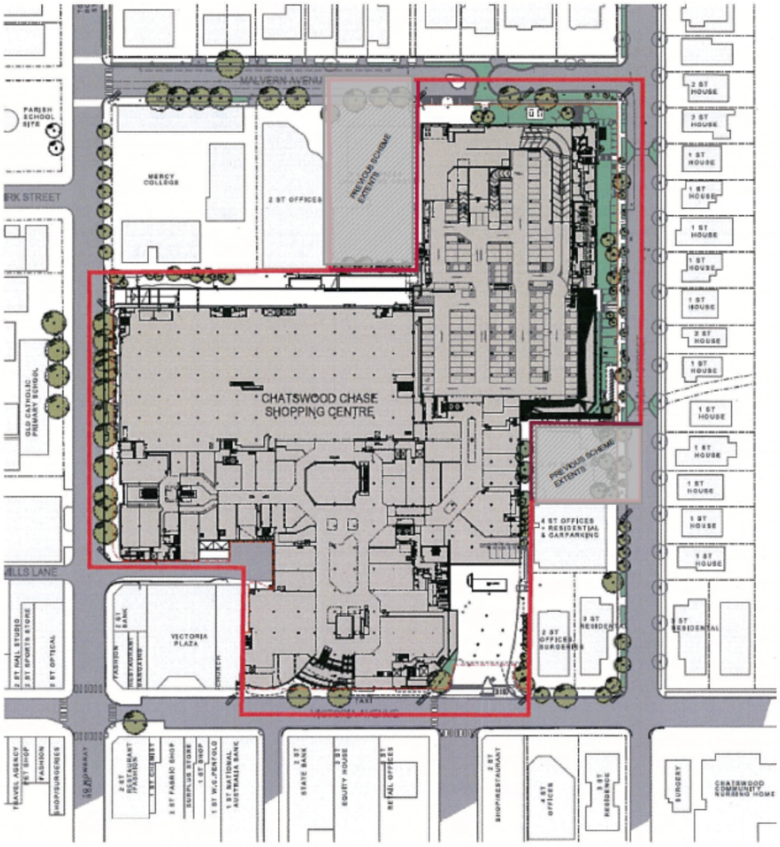
Chatswood Chase is a four-level major regional shopping centre owned and managed by Vicinity Centres, with major tenants David Jones, Kmart and Coles, over 200 specialty retailers including fashion, homewares and fresh food, and a floor area of around 57,400 m^2.

The current Development Application (DA-2022/305) covers the following works:

- Refurbishment of existing retail areas at Chatswood Chase
- New commercial/office space on Level 3
- Construction of two additional levels of car parking
- Amended trading hours, signage zone, external landscaping works and associated works

A plan of the development site is shown in Figure 1:

Figure 1: Site Plan



3 General Waste & Recycling Volumes

3.1 Current Volumes

Table 1 shows current daily volumes of general waste and recycling being generated by Chatswood Chase's existing tenants, excluding David Jones:

Table 1: General Waste & Recycling - Current Daily Volumes

Tenancy Type	Current Waste & Recycling Generation – Total m^3 per Day					
	General Waste	Cardboard & Paper Recycling	Commingled Recycling	Organics Recycling	Soft Plastics Recycling	Cooking Oil Recycling
Mini Major	8.7	10.7	1.0	0.0	3.9	0.0
Specialty	15.1	18.9	1.9	0.0	15.1	0.0
Food & Beverage	8.4	5.5	1.5	2.2	0	0.1
Total	**32.2**	**35.1**	**4.4**	**2.2**	**19.0**	**0.1**

3.2 New Tenancies

The new tenancies will have the following floor areas:

Level 3

Office: 9,312 m^2 + Cafe: 130 m^2 = 9,442 m^2

Level LG

Fresh food retailer = 1,462 m^2

These tenancies will produce general waste and recycling based on the generation rates shown in Table 2 below. These modified generation rates have been adapted from those provided in Willoughby Council's DCP using operational data from Vicinity and are based on implementation of the recycling programs listed.

Table 2: General Waste & Recycling Generation Rates - New Tenancies

Tenancy Type	General Waste & Recycling Generation Rates - Litres/100 m^2 per Day					
	General Waste	Cardboard & Paper Recycling	Commingled Recycling	Organics Recycling	Soft Plastics Recycling	Cooking Oil Recycling
Commercial	20	25	5	2	0	0
F&B Retail (Café)	200	250	60	80	0	2
Fresh Food	60	50	10	120	30	0

Daily additional volumes in cubic metres of general waste and recycling have been calculated by applying the waste generation rates from Table 2 to the new tenancies' floor areas (Table 3):

Table 3: General Waste & Recycling - New Tenancies

Expected Additional General Waste & Recycling - m^3 Per Day							
Level/Tenancy	**Area m^2**	**General Waste**	**Cardboard & Paper Recycling**	**Commingled Recycling**	**Organics Recycling**	**Soft Plastics Recycling**	**Cooking Oil Recycling**
L3-001 Café	130	0.3	0.3	0.1	0.1	0.0	0.003
L3-002 Commercial	5,511	1.1	1.4	0.3	0.1	0.0	0.0
L3-003 Commercial	3,801	0.8	1.0	0.2	0.1	0.0	0.0
B-56 Gourmet Grocer	1,462	0.9	0.7	0.1	1.8	0.4	0.0
Total	**10,904**	**3.0**	**3.4**	**0.7**	**2.0**	**0.4**	**0.003**

The new Level 3 commercial tenancies will have their general waste and recycling collected daily by commercial cleaning contractors, who will take all materials to Dock 3 for disposal into the correct streams.

The Level 3 Café will be responsible for movement of materials to Dock 3. The Café will operate only during normal business hours as it will service the commercial tenancies exclusively. All materials will be removed at the conclusion of the trading day to minimise lift usage.

All Level 3 tenancies will use Lift P07 for transporting waste and recycling to Dock 3. This lift will serve as a goods lift outside normal business hours (after 6 pm Monday-Friday).

Expected total daily volumes of materials, in cubic metres, upon commencement of the new tenancies' operations, will be as follows:

Table 4: General Waste & Recycling - Expected Total Daily Volumes

Expected Total Waste & Recycling Generation - m^3 Per Day						
Tenancy Type	**General Waste**	**Cardboard & Paper Recycling**	**Commingled Recycling**	**Organics Recycling**	**Soft Plastics Recycling**	**Cooking Oil Recycling**
Mini Major	8.7	10.7	1.0	0	3.9	0
Specialty	15.1	18.9	1.9	0	15.1	0
Food & Beverage	8.4	5.5	1.5	2.2	0.0	0.1
L3 Café	0.3	0.3	0.1	0.1	0.0	0.0
L3 Commercial	1.9	2.3	0.5	0.2	0.0	0.0
Fresh Food	0.9	0.7	0.1	1.8	0.4	0.0
Total	**35.2**	**38.5**	**5.1**	**4.2**	**19.4**	**0.1**

Section 4 lists equipment and collection frequencies for each Loading Dock for all materials.

4 Equipment & Collection Frequencies

Equipment and collection frequencies for general waste and recycling disposed of by tenants at **Docks 1-4** are shown in Tables 5-8. Collection frequencies may be adjusted by Vicinity based on volumes generated, changes in tenancy makeup, or seasonal factors.

4.1 Dock 1

Tenants will bring general waste and recycling to either Dock 1 or Dock 2 based on proximity. Of the total volume of daily material not disposed of by tenants at Docks 3 and 4 (see Sections 4.3-4.4 for details), we estimate that 60% by volume will be taken to Dock 2, and the remaining 40% to Dock 1.

The equipment and collection frequencies shown in Tables 5 and 6 for Docks 1 and 2 respectively are based on these ratios.

Table 5: Daily Volumes/Equipment/Collection Frequencies - Dock 1

Material Stream	**m^3 Per Day**	**Equipment/Bin Size**	**Qty.**	**Footprint m^2**	**Collections Per Week**
General Waste	5.3	1100-litre mobile bins	5	8.5	7
Cardboard Recycling	7.3	Baler	1	8	5
Commingled Recycling	0.7	1100-litre mobile bins	1	1.7	3
Soft Plastics Recycling	5.8	1 m^3 bales	1	4	1
Total	**19.1**			**22.2**	

4.2 Dock 2

Table 6: Daily Volumes/Equipment/Collection Frequencies - Dock 2

Material Stream	m^3 Per Day	Equipment/Bin Size	Qty.	Footprint m^2	Collections Per Week
General Waste	7.9	20 m^3 Compactor	1	32	1
Cardboard Recycling	10.9	Baler	1	8	5
Commingled Recycling	1.1	1100-litre mobile bins	1	1.7	3
Soft Plastics Recycling	8.8	1 m^3 bales	8	8	7
Cooking Oil Recycling	0.1	500 litre vessel	1	2	1
Total	**28.7**			**51.7**	

4.3 Dock 3

The following tenancies will use Dock 3 for general waste and recycling disposal:

Gourmet grocer
New Level 3 tenancies
All F&B tenancies

Total expected daily volumes of materials are shown in Table 7.

Table 7: Daily Volumes/Equipment/Collection Frequencies - Dock 3

Material Stream	m^3 Per Day	Equipment/Bin Size	Qty.	Footprint m^2	Collections Per Week
General Waste	11.4	Dual compactor	1	32	1
Cardboard Recycling	8.9				
Commingled Recycling	2.2	1100-litre mobile bins	6	6.8	7
Organics Recycling	4.2	Pendulum compactor	1	20	1
Soft Plastics Recycling	0.4	1 m^3 bales	8	8	4
Cooking Oil Recycling	0.1	500 litre vessel	1	2	1
Total	**27.3**			**68.8**	

4.4 Dock 4

Dock 4 will cater for the existing Level 2 Mini Majors and the David Jones tenancy. Please note that David Jones currently manages its own general waste and recycling and will continue to do so following the proposed development, with Vicinity providing a separate 45.6 m^2 storage area as shown in Appendix A.

Daily volumes of materials generated by the existing Level 2 Mini Majors are shown in Table 8.

Table 8: Daily Volumes/Equipment/Collection Frequencies - L2 Mini Majors

Material Stream	m^3 Per Day	Equipment/Bin Size	Qty.	Footprint m^2	Collections Per Week
General Waste	8.7	Dual compactor	1	32	1
Cardboard Recycling	10.7				
Commingled Recycling	1.0	1100-litre mobile bins	4		3
Soft Plastics Recycling	3.9	1 m^3 bales	8	8.0	3
Total	**24.3**				

Based on information provided by David Jones[1], the following daily volumes of materials will be generated by this tenancy:

Table 9: Daily Volumes/Equipment/Collection Frequencies - G/L1 David Jones

Material Stream	m^3 Per Day	Equipment	Footprint m^2	Collections/ Week	Comments
General Waste	1.9	4 x 1100-litre bins	6.8	5	
Cardboard Recycling	0.8	Baler	12.0	2	Area includes bale storage
Soft Plastics Recycling	0.5	8 x Bale/Frame	5.0	1	
Commingled Recycling	0.1	2 x 240-litre bins	0.9	1	Optional – tenancy may introduce in future
Paper Recycling	0.1	2 x 240-litre bins	0.9	1	
Bulky Wastes	0.2	Storage Cage	12		
Space for Access and Bin Movement	N/A	N/A	7.8	N/A	
Total	**3.6**		**42.5**		

The three primary streams that will be generated will be General Waste, Cardboard Recycling, and Soft (LDPE) Plastics. Allowance has also been made for small volumes of Commingled Recycling and Paper Recycling should David Jones add these streams in future.

Space has also been allotted in the David Jones storage area for bulky waste items (obsolete displays, furniture, etc.) that are too large to fit into the 1100-litre general waste bins or are suitable for reuse or repurposing.

6 Waste Storage Facility Design

The design of the waste storage facilities will conform to the following standards:

- Ensuring the loading dock and waste loading areas are level and free of kerbs, steps, etc.
- Clear delineations and/or line markings indicating positions of bins and equipment
- Highly visible signage as per the examples in Appendix D

Indicative drawings showing dock layouts and proposed compaction equipment are provided in Appendix A. Swept path diagrams for waste collection vehicles are provided in Appendix C.

[1] David Jones provided information on average annual waste production from a typical store. For this report, Waste Audit converted these annual data to daily quantities to calculate storage space requirements as shown in Table 6.

7 Resource Recovery Objectives

All demolition and construction works associated with the development will be carried out with the aim of maximising resource recovery in line with Vicinity's policies and the following objectives:

- Meeting all waste management standards while ensuring the health and safety of all workers on the project during demolition and construction
- Maximising the quantities of materials diverted from landfill by reusing materials on-site and offsite, and recycling/reprocessing materials off-site
- The diversion from landfill of 80% of construction waste by weight, to meet the criteria of the NSW State Government's waste legislation, policy settings and regulatory regime
- Disposal of no more than 20% of residual waste materials to a licensed landfill in accordance with both regulatory and legal requirements

8 Monitoring, Reporting, & Target Setting

Vicinity has a comprehensive reporting system for recording the weights, volumes, and costs of all materials collected by Cleanaway or subcontracted to third parties. This process enables accurate tracking of diversion from landfill and informed decision-making based on actual operational performance data.

Vicinity will provide a Dockmaster to manage general waste and recycling on a daily basis and ensure all equipment is kept in good working order and that there are sufficient bins for the daily quantities of materials generated.

Chatswood Chase's diversion from landfill target post-development is 80% by weight. This will be reviewed and adjusted based on performance data once operations have stabilised following completion of the development works.

The David Jones tenancy will be responsible for their own waste management and reporting and their data will not be included in Chatswood Chase's diversion figures.

9 Stakeholder Education

Vicinity will provide the new commercial and retail tenancies with comprehensive information on waste management, minimisation, and recycling on occupancy of their premises.

Tenancy leases will contain clauses requiring compliance with these systems, and Vicinity will implement continuing tenant education programs on an ongoing basis. New tenant leasing documentation will contain detailed information on waste management and recycling.

Specific waste management clauses will also be written into cleaning contract specifications, including requirements for cleaning contractors to monitor contamination of recycling streams and the condition of bins and compactor equipment, and provide Vicinity with feedback on the ongoing performance of the waste management and recycling programs.

10 Tenancy Bins

The new Level 3 commercial tenancies will be equipped with 4-stream bin hubs for:

- Paper/Cardboard Recycling
- Commingled Recycling
- Organics Recycling
- General Waste

Bin hubs will be evenly spaced throughout office areas, with no bins at desks or workstations; this improves cleaning efficiency by reducing the number of bins to be emptied as well as the number of bin liners required. Offices with these types of systems achieve measurably higher recycling rates than those with bins at individual desks or workstations.

Figure 4 shows an example of bins commonly used in office and retail tenancies. Colour-coded translucent bin liners are recommended to assist cleaning staff to distinguish the three recycling streams from general waste and from each other and enable them to identify contamination prior to final disposal in the bins in the central storage room.

Figure 4: Four Stream Stand-Alone Bin Setup

For tenancies wishing to have bins within pull-out drawers in kitchens and central areas, care must be taken to ensure these systems are properly designed to ensure correct separation of recycling and general waste. Figure 5 shows examples of effective design and colour-coding.

Figure 5: Two and Four Stream Pull-Out Drawers

The new Level 3 café will be responsible for the separation of general waste and recyclables within their tenancy, using suitable receptacles for a food and beverage operation. The tenancy fitout will be designed with sufficient dedicated space to accommodate separate bins for general waste and the designated recycling streams:

- Paper/Cardboard Recycling
- Commingled Recycling
- Organics Recycling

11 Waste Storage & Loading

Tenants and/or cleaning staff will take all general waste and recycling to the designated docks for separation and disposal into the correct streams as detailed in Section 4 and Appendix A.

All general waste and recycling containers will be clearly differentiated through suitable signage and colour coding to reflect the materials contained, with each stream located in a designated area within storage rooms and large and clear signage as detailed in Appendix E to assist in easy identification by users.

Other best practice standards for waste storage and handling areas will include:

- Ensuring all loading docks and waste loading areas are level and free of kerbs, steps, etc.
- Line markings showing the loading area and positions of bins within storage areas
- Maintenance of cleanliness levels to a high standard, particularly with regard to spills and litter in areas surrounding compactors

12 Compliance with Council Requirements

Table 10 lists Willoughby Council's compliance requirements for the development:.

Table 10: Compliance Requirements

Storage Space and Location	Proposed Arrangements
Service requirements discussed with collection service provider/s	These have been discussed with the site's private collection contractor
Space allocated inside premises for source-separation of waste (minimum separation into recycling, organics and garbage) using appropriate receptacles Waste cupboards provided in eating areas.	These will be shown on detailed site drawings to be provided.
Bin storage area designed to allow for all bins allocated in the waste service and for the manouevring of bins, etc. (with future requirements catered for)	See Appendices A-C
Bin storage area constructed to fit in with the aesthetics of the commercial/industrial development with the following features (refer to example diagrams of bin storage areas): • Roof over bin area • Face brickwork to match main building • Concrete floor graded and drained to sewer	Existing loading dock to be used for all bin storage
High-pressure hose for washing bins and bin storage area with drainage to sewer	The existing loading dock already has this in place
Floor flush with outside path/driveway - no steps	Complies
Space, access, noise and security have been considered in locating the waste storage area	Bin storage is indoors in a secure area accessible only to authorised users
Bin storage area located in a high pedestrian-traffic area, close to both the commercial/industrial unit and the kerb, for ease of access	Not applicable
Bins are stored out of sight from the street	Bin storage is indoors
Refrigerated storage is provided for large amounts of putrescibles	The site's organic waste will be disposed of in a sealed compactor
Potential noise problems during bin use and waste collection are minimised as the need for collection vehicles to reverse has been eliminated	Complies
Potential odour problems are minimised as: The bin storage area is well ventilated	Complies
Good housekeeping will be enforced (e.g. by appointed caretaker and signage posted in the bin storage area.)	See Section 9 and Appendix D
Bin storage area is protected from theft and vandalism as it is: • Out of sight from the street • Able to be locked	Bin storage is indoors in a secure area accessible only to authorised users
Features are included in the bin storage area to prevent ingress of vermin into waste storage areas	The bin storage area and surrounds has a pest control regime in place
The building caretaker is able to wheel all MGBs to the kerbside on collection day	Not applicable
MGBs should not need to be wheeled more than 15m.	Not applicable
Slope - bin-carting grade is at a maximum of 1:14.	Not applicable
Bins do not have to be wheeled over steps or through the commercial/industrial unit to get them from where they are stored, to the kerbside	Not applicable

Access for Collectors	Proposed Arrangements
Collection from storage area (Bulk bins):	
Collectors can move bins from the collection point to the vehicle as quickly as possible, with a minimal amount of manual handling over an even, hard surface	All collections will take place from grade level in the Centre's existing loading dock
If the storage area is located within the building the height of the area allows for the collection vehicle to access and empty bins. A minimum height of 6m is required.	The existing dock height is sufficient for servicing the Centre's existing equipment.
Driveway access is suitable for the collection vehicle in terms of its strength and geometric design (Refer to Attachment 20 for technical specifications)	Existing dock handles full compactor trucks with over 20 tonnes net weight
Collection from Kerbside (MGBs):	Not applicable – all bins will be stored in internal loading dock
Management	**Proposed Arrangements**
Responsibility will be assigned for washing bins, cleaning bin storage areas, and keeping them free of clutter and dumped rubbish	Cleaning staff responsibility
All bins (organics, recycling and garbage and others) display appropriate signage to encourage the correct use of bins	See Appendix D
Responsibility has been assigned for liaison with waste collectors and ensuring all staff are informed of the waste and recycling arrangements (e.g. through staff meetings and a Waste Management Policy)	See Sections 8 & 9
Management is committed to waste reduction and recycling, and provides incentives for staff to manage waste correctly	See Sections 8 & 9
Education on source separation and use of waste facilities is re-enforced every 3 months	See Sections 8 & 9

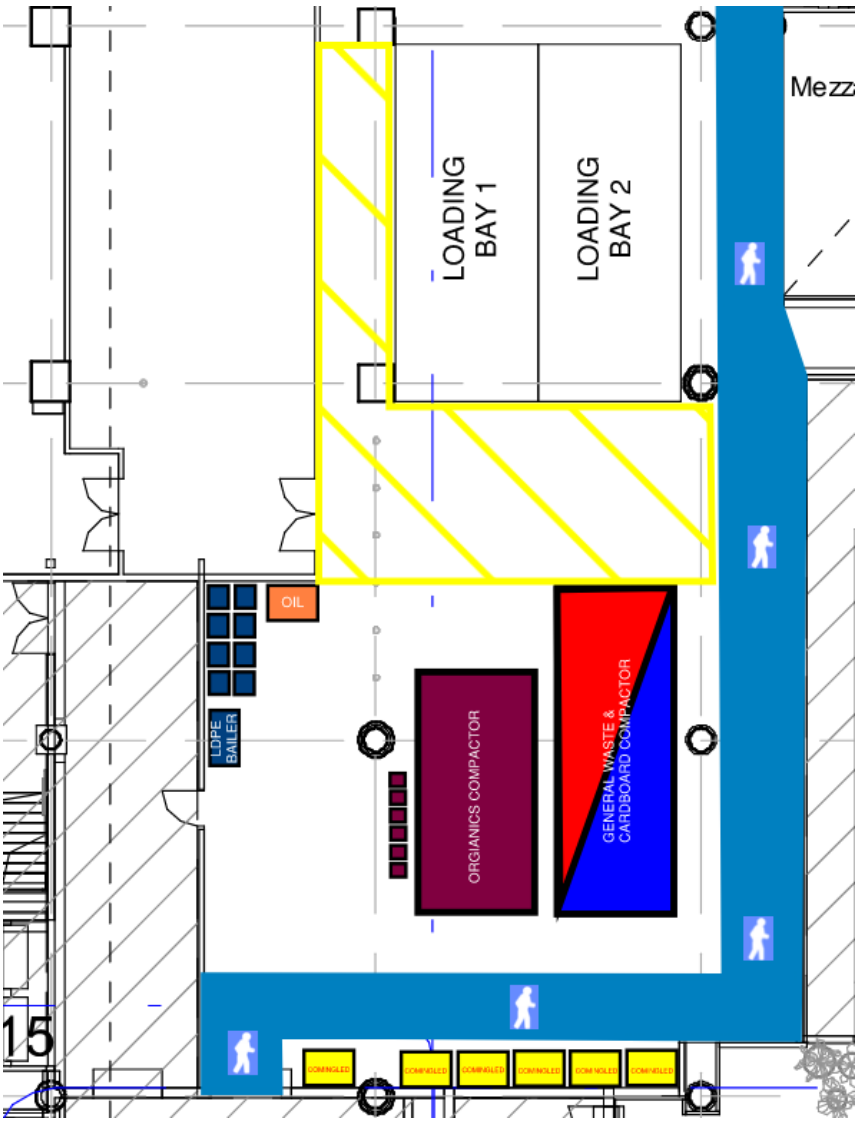
13 Reference Documents

The following documents were consulted in the course of preparing this report:

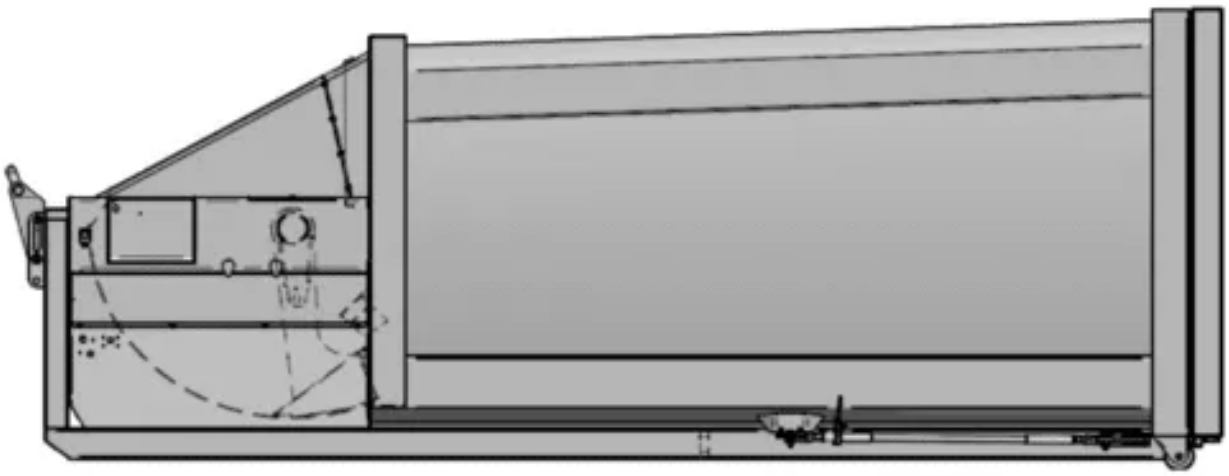
- Operational Waste Management Plan July 2018 (Compass Project Management)
- ENV-04-060-F03 Operational Waste Management Plan October 2019 (Vicinity Centres)
- Chatswood Chase Loading Dock Management Plan July 2022 (Stantec)
- WIlloughby Development Control Plan – C.8 Waste Management and Attachment 11
- Chatswood Chase Operational Waste Management Plan [S4.55]_July 2022 (Waste Audit)
- Chatswood Chase E4 Operational Waste Management Plan_221116 (Waste Audit)

Appendix A: Dock Layouts & Equipment

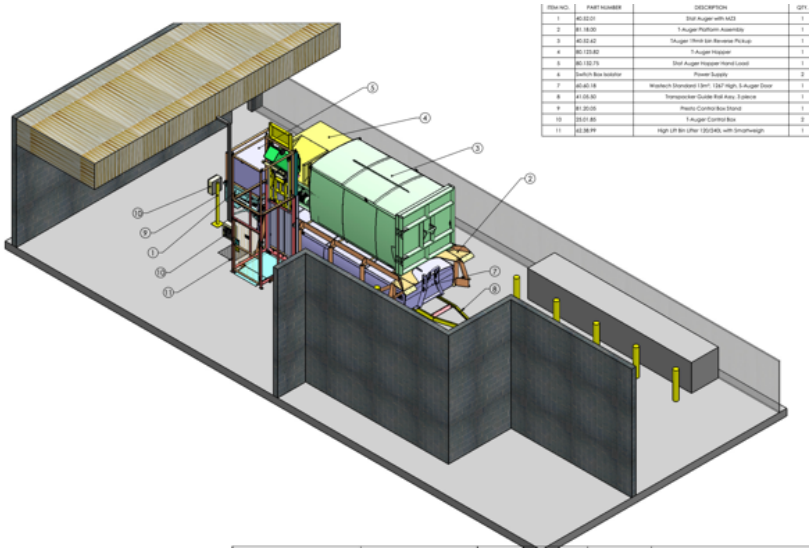
The proposed new layout of **Dock 3** is shown below:



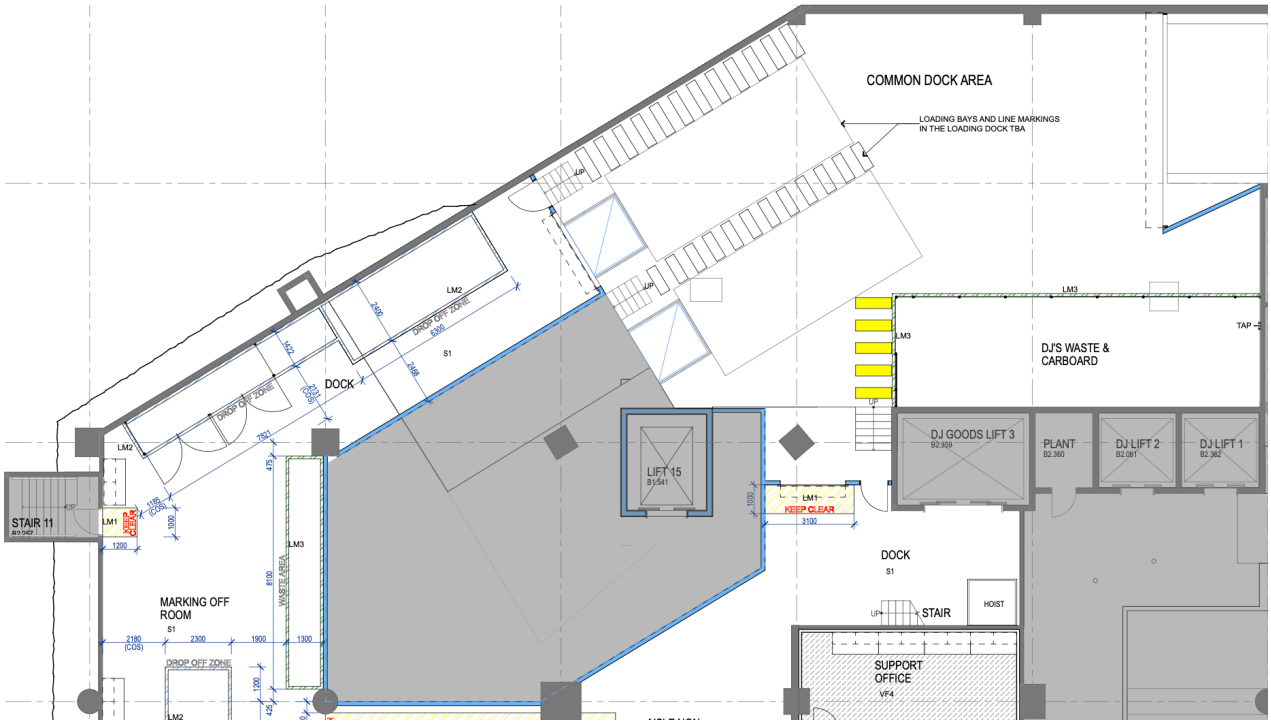
Organics Compactor



Dual Cardboard & General Waste Compactor



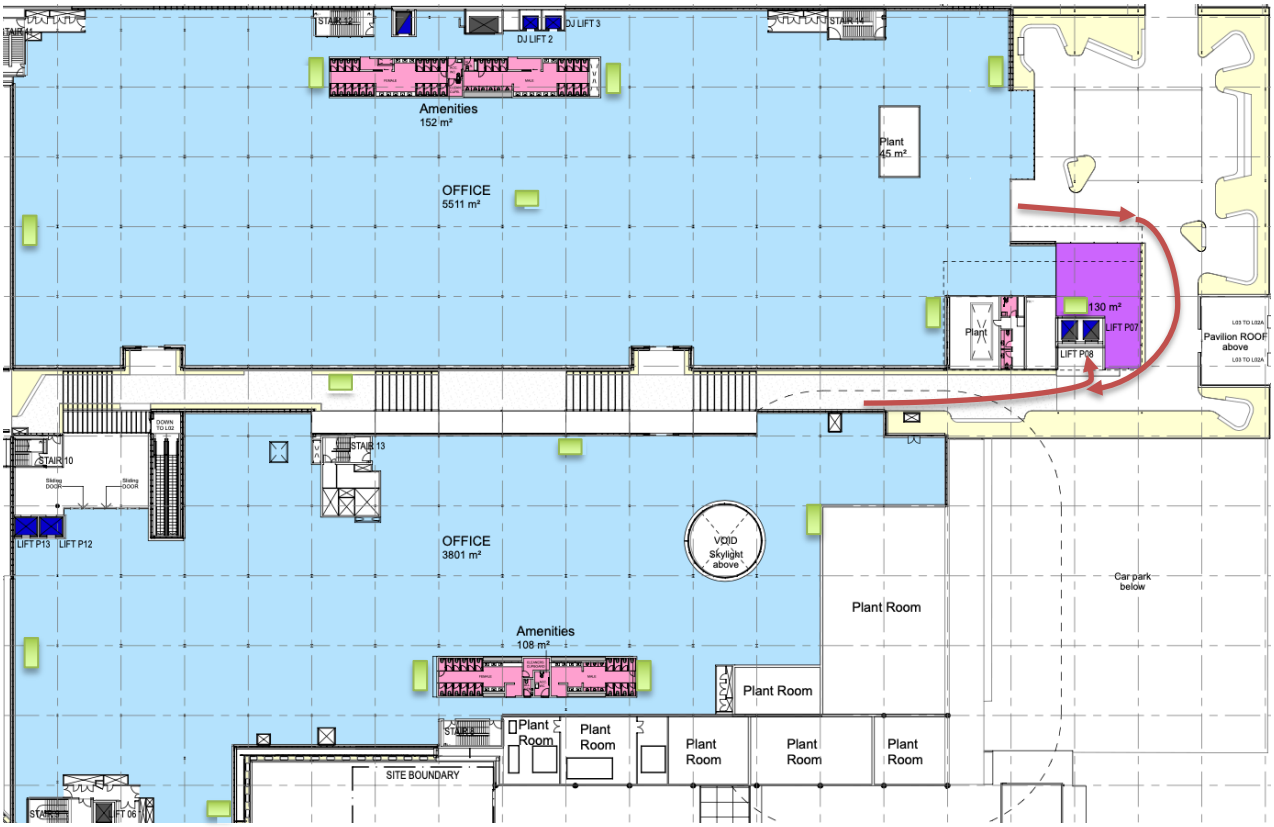
The proposed new layout of **Dock 4** below shows the location of the waste and recycling area set aside for David Jones. Please note that the final detailed configuration of Dock 4 is still under development by Vicinity.



Appendix B: Level 3 Tenancies

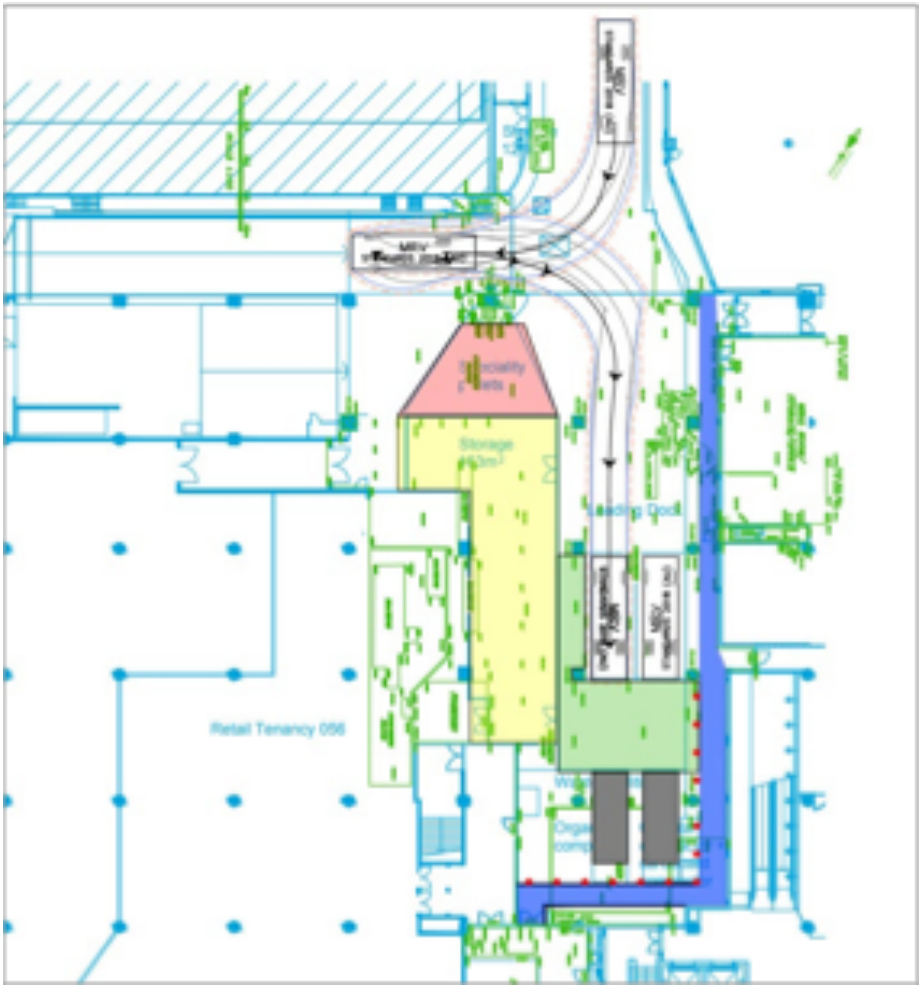
Indicative bin hub locations for each Level 3 commercial tenancy and the Café (see Section 11 for tenancy bin details) are shown as green rectangles in the drawing below. Actual locations will depend on the final fit-out designs for each tenancy.

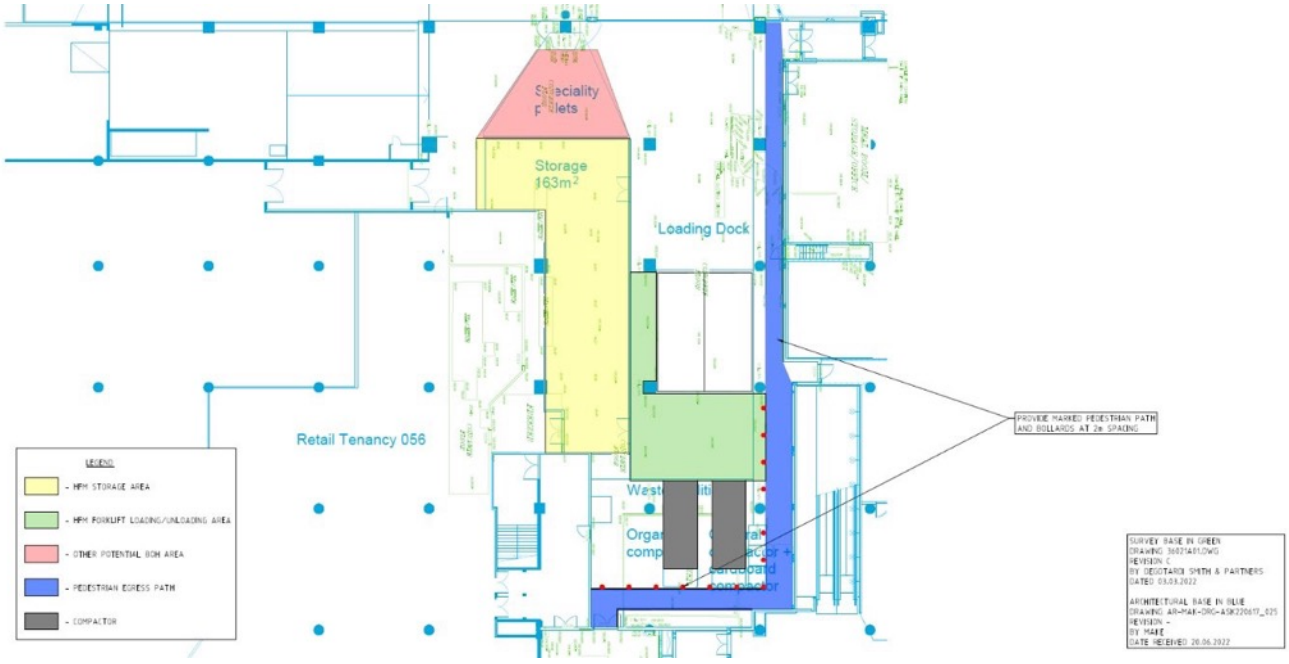
The red arrows show waste movement paths from each commercial tenancy to the lift that will be used to transport materials to **Dock 3**.



Appendix C: Dock 3 Swept Paths & Linemarking

The following diagrams are taken from Stantec's July 2022 report:





Appendix D: Loading Dock Signage

The examples below are based on existing signage at Chatswood Chase: