Appendix K
Operational Waste Management Plan (Lot 5001), prepared by TTM

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2023/1468

Date: 19 September 2024

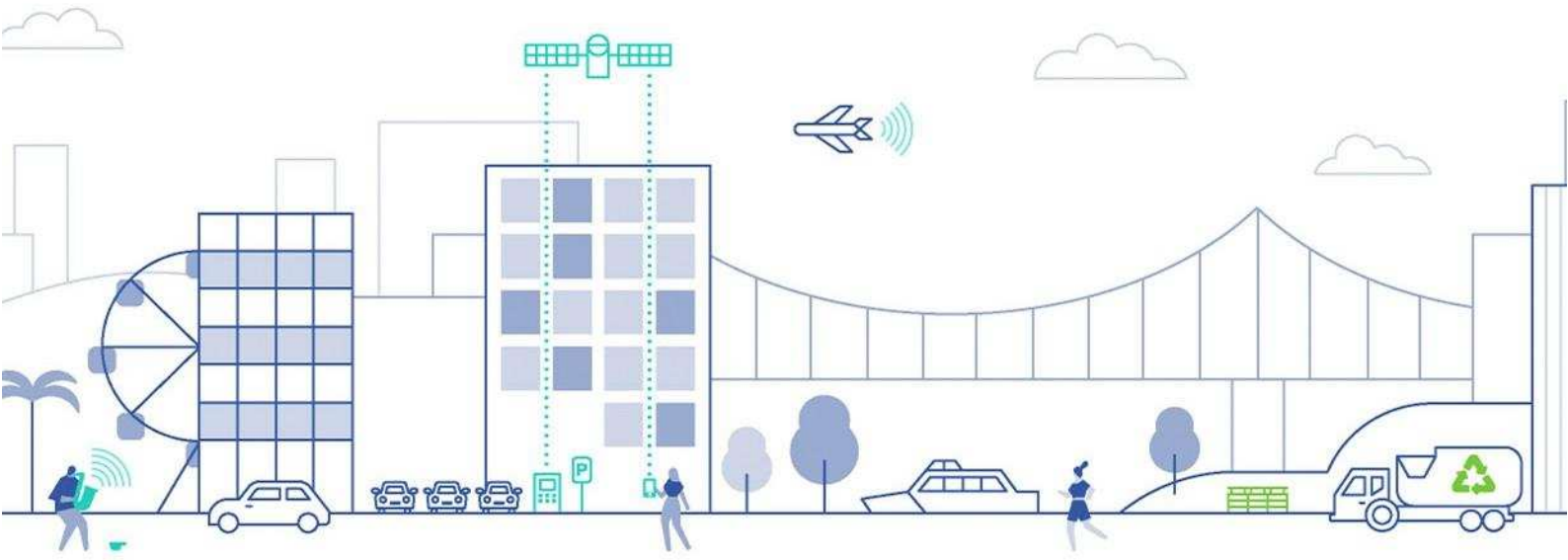
Queensland Government

Operational Waste Management Plan

Proposed Retail Centre Development

At Carseldine Urban Village, Fitzgibbon PDA

On behalf of De Luca Corporation



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Revision Record

No.	Author	Reviewed/Approved	Description	Date
1.	N. Lee	S. Kenny	OWMP – Draft	23/11/2023
2.	S. Baker	N. Lee	OWMP – Final	14/12/2023
3.	N. Lee	S. Kenny	OWMP – RFI Amendment	22/03/2024
4.				

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1 Introduction

1.1. Background

TTM Consulting has been engaged by De Luca Corporation to prepare an OWMP to support the proposed retail centre development located at Carseldine Urban Village within the Fitzgibbon Priority Development Area (PDA). It is understood that a Development Application has been lodged with Economic Development Queensland (EDQ) and is required to satisfy the requirements of the Brisbane City Council (BCC) Refuse Planning Scheme Policy.

This OWMP has been amended to address the waste management items of the Further Issues Letter dated 15 February 2024, issued by EDQ. Details addressing the Further Issues are provided commencing in Section 1.3.2.

1.2. Scope

The content of this OWMP is intended to provide information in reverse order to the typical movement of waste streams from disposal to collection. The reverse order provides context for refuse collection, storage, and transfer.

The recommendations in this report relate to the operational phase of the development only. Additional requirements for refuse management during or after demolition or construction phases are not included and require a dedicated plan. Items covered within the report are explained in Table 1.1.

Table 1.1: Scope Items

Item	Explanation
Refuse streams	Identification of refuse streams & anticipated refuse volumes likely to be produced
Refuse separation	Recommendations for appropriate segregation methods for each refuse stream
Refuse collections	Assessment of refuse collection vehicle (RCV) access and manoeuvring
Refuse storage	Detailed analysis of refuse storage facilities and design
Refuse transfer	Assessment of refuse transfer between refuse storage and collections areas
Refuse disposal	Recommendations for refuse disposal within the development
Refuse management equipment	Identification of recommended and optional refuse management systems and equipment
Refuse management operations	Recommendations for operational efficiency and ongoing management, including refuse minimisation, tenant education and safety
Building design	Recommendations for design of refuse management facilities

Detailed information including site plans and drawings, specified and recommended refuse management equipment, common refuse signage as well as a list of terms and abbreviations are provided in the appendices.

1.3. Regulatory Considerations

1.3.1. Council's Refuse Planning Scheme

The plan satisfies BCC's and subsequently EDQ's requirements by providing the following information:

- Type and quantity of refuse materials to be generated during the occupancy of the proposed site.
- Refuse collection, storage, transfer, and disposal arrangements during occupancy of the completed development.
- Recommended operational requirements for the operational phase of the development, and design requirements for the building and refuse management facilities.

As a non-residential development, TTM has referred to BCC requirements as outlined in the Refuse PSP under section 2, 3 and 5 as these sections relate to Non-residential Uses and the acceptable outcomes described with AO2, AO63.1 and AO63.2 of the Centre or mixed use code. Table 1.2 demonstrates the refuse management items addressed to align with the BCC's Refuse PSP requirements.

Table 1.2: OWMP Compliance Checklist

BCC SC6.26 Refuse Planning Scheme Policy		
Item	**Requirement**	**Compliance / Comment**
Section 2 – General Requirements		
(1)	A written design proposal for waste collection is to be provided giving full details of the proposed solution, bin sizes, number of bins and the storage and collection areas, frequency of collection and the refuse collection vehicle size. Table 1 provides the dimensions and types of bins. Table 3 provides the specifications and types of collection vehicles.	Details provided in this OWMP
(2)	The collection of refuse is to be considered during the planning phase of development. This includes the physical manoeuvring area for the refuse collection vehicle and the bin storage areas and collection points. Access for other road users including pedestrians, cyclists, motorists and other service providers (e.g. postal) is to be maintained.	Considerations provided within this OWMP
(3)	The type of refuse service that is to be used (domestic or commercial) is identified, including whether the refuse collection vehicle is to be front loading, side loading or rear loading (sufficient height must be available).	Commercial refuse serviced by front loading RCV.
(4)	Uses with high trip-end densities provide a transport impact assessment report in accordance with the Transport, access, parking and servicing planning scheme policy with an assessment of refuse storage and collection included.	Refer to Traffic engineering documentation for details.
(5)	Where a Refuse Collection Vehicle (RCV) is required to manoeuvre from an on-site position, allow an additional 500mm clearance for vehicle turning dimensions (swept paths) and servicing. Three clear swept path lines must be demonstrated for the RCV, namely wheel path, vehicle body path and 500mm clearance path.	Refer to Traffic engineering documentation for details.
(6)	The waste collection system is to achieve the following outcomes: a. both the customer and service provider can access the bin storage area and collection point conveniently; b. the location, design and operation of the bin storage and collection system do not have unreasonable adverse acoustic, odour or visual impacts on the development, surrounding properties or the streetscape; c. the supply and servicing of either mobile garbage bins or bulk bins or refuse compactors complies with the requirements of this planning scheme policy.	 Complies Complies – Collection service will be undertaken wholly on site. Complies

	Note— Where alternative waste servicing solutions are proposed, advice may be sought directly from Council's waste service area prior to lodgement of the development application.	
Section 3 - Access and Manoeuvrability		
(1)	The manoeuvring of the refuse collection vehicle is undertaken in a safe and efficient manner, without detrimental impacts to pedestrian amenity or safety, Council or private infrastructure or the function of the road network.	Refer to Traffic engineering documentation for details.
(2)	For multiple dwelling development accessed via a local, neighbourhood, district or suburban road, the refuse collection vehicle may enter the site in a reverse gear in a single movement.	N/A
(3)	For multiple dwellings development accessed via an arterial road, or where the refuse collection vehicle cannot reverse onto the site in a single movement, the refuse collection vehicle must enter and leave the site in a forward gear.	N/A
(4)	For development (other than a multiple dwelling) accessed via an arterial, suburban, district or minor road adjacent to an intersection with a major road, the refuse collection vehicle must enter and leave the site in a forward gear.	Forward-in, forward-out manoeuvring provided.
(5)	Where refuse collection is from an on-site position, the area trafficked by the refuse collection vehicle must comply with requirements under the Transport, access, parking and servicing planning scheme policy including a minimum aisle/carriageway width of 6.5m wide. *Note—Service area design standards, including maximum gradients, minimum aisle widths, minimum vertical clearance and bay design are contained in the Transport, access, parking and servicing planning scheme policy.*	Complies – Refer to Traffic engineering documentation for details.
(6)	For detached dwellings on rear lots, pavements/carriageways trafficked by a refuse collection vehicle have a minimum width of 5.5m.	N/A
(7)	All entry and exit points are of a width and design that allows for sufficient ingress and egress for the refuse collection vehicle, including a minimum 6.5m crossover which is free from overhead projections inclusive of gardens or trees.	Complies
(8)	To maximise safety, the distance required for refuse collection vehicles to reverse on-site is minimised. Where on-site turnaround of the refuse vehicle cannot be achieved, the bin storage area and collection point is located within 20m of the street frontage.	Complies
(9)	Turnaround facilities for a refuse collection vehicle exist or are provided for where involving staged subdivision developments or where development is located on a no through road. Turning and manoeuvring facilities for refuse collection vehicles are provided to meet design requirements for the vehicles identified in Table 3.	N/A
(10)	Subdivision layouts are to provide for the safe and efficient operation and manoeuvring of a side-lift loading refuse collection vehicle. Layouts that require a refuse collection vehicle to reverse more than 20m are to be avoided. Where the provided transport network results in a stub road for a proposed future road connection, interim turnaround facilities must be provided in compliance with the Transport, access, parking and servicing planning scheme policy and the Infrastructure design planning scheme policy.	N/A
(11)	Adequate lift clearances are provided to overhanging trees and wires in accordance with Table 3.	Complies
(12)	The required vertical and horizontal clearances are provided for the service to operate safely and efficiently. Operational clearance dimensions are shown in Table 3 for various types of collection arrangements.	Complies
(13)	Access for a refuse collection vehicle to the collection point is maintained at all times.	Complies – Shared Loading Bay managed by operations staff

(14)	Where non-residential development is proposing to use an alternative design vehicle other than those named in Table 3, written confirmation from the proposed licensed waste collection contractor giving full details of the bin size and the refuse collection vehicle size must be provided.	N/A
(15)	In instances where the gradient of the on-site manoeuvring area is greater than 5% (1:20), the pad that the collection vehicle will stand on while accessing refuse bins at the collection point, is to have a maximum gradient of 2% (1:50). *Note—Access arrangements, including maximum gradients are contained in the Transport, access and parking planning scheme policy*.	N/A
Section 4 - Residential Refuse Collection – N/A Non-residential site only		
Section 4.1 - Kerbside Collection (MGB's) – N/A Non-residential site only		
Section 4.2 – On-site Collection (Bulk Bins) – This section applies to Residential services – N/A Non-residential site only		
Section 5 – Non-Residential Refuse Collection		
(1)	Non-residential development is to provide sufficient capacity to achieve low-frequency servicing in line with Table 2.	Three services per week proposed as an accepted performance solution.
(2)	Refuse generation rates for specific uses are provided in Table 4. These figures are to be used to calculate the refuse and recycling capacity required. *Note—Where a refuse generation rate is not defined in Table 4, the applicant is responsible for providing evidence in support of the refuse generation proposed.*	Complies
(3)	Sufficient information is provided to demonstrate that refuse collection can occur in an efficient and safe manner on site without adverse impact on amenity (acoustic, odour or visual impacts) and pedestrian and vehicular traffic.	Complies – Services are performed in the designated loading area.
(4)	This information may include evidence from a refuse collection contractor to demonstrate that collection will occur outside normal service/delivery or business times, where seeking permission to allow a refuse collection vehicle to use service bays or parking spaces on the site for access.	N/A – Commercial contractor engagement hasn't been completed at this stage as this site is undergoing development assessment.
(5)	Bulk bins of 1.1m3 or less are positioned so that collection personnel do not have to move them more than 5m. If a gradient is evident, speed bumps are provided to stop bulk bins from rolling away from the collection point. *Note—Standard design arrangements, including gradients, are contained in the Transport, access, parking and servicing planning scheme policy.*	N/A
(6)	Bulk bins of 1.5m3 or more are positioned so that front-lift refuse collection vehicles can drive directly to the container without relocating the bulk bin. If this cannot be achieved due to physical constraints, then the bulk bins are not moved more than 3m from the storage area to the collection point.	Bins located within 3m of the RCV, shared use of loading bay prevents drive-on servicing.

(7)	The storage area for refuse bins are: a. contained either within a building or a roofed and wholly screened enclosure of sufficient size for the bin quantity required. Table 1 provides the bin types and dimensions; *Note—Where screening is utilised to form part or all of a refuse storage area, the screening is to have a maximum of 25% openings, with a maximum opening dimension of 50mm, and are to be permanently fixed, durable and maintainable.* b. easily accessible for occupants and for the required servicing of bins; *Note—Allow for at least an additional 0.5m clearance surrounding each container, or for the storage of multiple bins, 1.5m clearance around the combined bin area (whichever is lesser).* c. screened from neighbouring properties to mitigate impacts from odour, amenity and noise; d. of a design to mitigate the harbourage of vermin or attraction of scavenging animals; e. provided with natural or temperature-controlled ventilation if in an enclosed room; f. of a design which maintains a minimum internal vertical clearance of 2.1m; g. kept clear of obstructions, such as fixed bay separators, that impede the ability to change from existing bin sizes or which otherwise limit future refuse collection options; h. are not to contain other amenities such as air-conditioning compressors, hot water systems or electrical hubs.	Complies – Storage provided within enclosed loading bay

1.3.2. Economic Development Queensland – Further Issues

Table 1.3 details the Waste management comments from EDQ's Further Issues Letter and outlines where additional information is provided within this OWMP.

Table 1.3: EDQ Further Issues Items

EDQ Further Issues Letter			
Item	**EDQ Comments**	**Project Team Comment**	**Location of Further Information**
Lots 5001			
(13)	The refuse storage areas within the 'Shared Loading' area are to be increased to a sufficient size to allow convenient access to a minimum 10 x 4,500L bulk bins (2,080mm x 1,845mm per bin). The bin storage area is to allow for an additional 0.5m clearance surrounding each container, or for the storage of multiple bins, 1.5m clearance around the combined bin area (whichever is lesser). This capacity is based on the Food and drink outlet use being limited to 1,378.3m2. Where flexibility of use is sought, the refuse area will need to be further increased to cater for the increased demand. The 'Shared Loading' area is to demonstrate sufficient vertical clearance to the roof above, noting a front lift collection vehicle has an operational height of 7m and length of 10.52m2, not including bin dimensions.	The refuse calculations contained within the original OWMP were based on a client brief targeting 520m^2 GFA of retail as food and beverage tenancy. To introduce further flexibility in potential tenant options, refuse calculations have been amended to include 1176m^2 GFA as retail food and beverage tenancy. This represents all ground floor tenancies identified as 'retail', 'Dental' and 'GP Clinic and Pathology' and is considered extremely conservative from a refuse planning perspective. Refuse storage will be roofed however, the standing position of the RCV will be open air, with no overhead obstructions. Specified clearances around bins are provided	Detailed refuse calculations provided in Section 2.1. Revised bin quantities addressed in Section 2.2. Amended refuse storage arrangements detailed in Section 2.3.

1.4. Site Location

The site is located within the Fitzgibbon PDA and is known as 7003, V001, Lot 5001 or Carseldine Village.

The site has frontages on Beams Road, Plaza Place and Meander Street. All vehicular access will occur via Meander Street.

Figure 1.1: Site Location

Source: Fitzgibbon Urban Development Area Development Scheme, Map 1 Fitzgibbon Urban Development Area

1.5. Development Summary

Table 1.4 provides a summary of the refuse generating areas of the development as context for the volume information provided in Section 2.

Table 1.4: Development Area Summary

Level	Description	Measure *
Ground	Lifestyle / Sport and Recreation	680m^2
	Retail 01A	61.8m^2 GFA
	Retail 01B	52.4m^2 GFA
	Supermarket	804.3m^2 GFA
	Retail 02A	74.7m^2 GFA
	Retail 02B	80.6m^2 GFA
	Retail 02C	74.8m^2 GFA
	Retail 02D	74.5m^2 GFA
	Retail 02E	80.4m^2 GFA
	Retail 02F	74.6m^2 GFA
	Retail 03	136.6m^2 GFA
	Pharmacy	204.5m^2 GFA
	Dental	160.9m^2 GFA
	GP Clinic & Pathology	302.3m^2 GFA
Level 1	Lifestyle / Sport and Recreation	458m^2 GFA
	Medical / Allied Health / Lifestyle	325.6m^2 GFA
	Medical / Allied Health / Lifestyle	289.9m^2 GFA
	Medical / Allied Health / Lifestyle	156.4m^2 GFA
	Medical / Allied Health / Lifestyle	308.6m^2 GFA
	Medical / Allied Health / Lifestyle	187.4m^2 GFA
Total		**4,588.3m^2 GFA**

* Areas relevant for refuse calculations only and may differ to total GFA that include areas that do not specifically produce waste such as lobbies and corridors.

2 Refuse Management

This section provides the detailed refuse calculations and describes the arrangements for the collection, storage, transfer, and disposal of refuse within the development. This includes the associated bin quantities, storage capacities, equipment details, collection frequencies and site access details.

2.1. Refuse Calculations

As a retail or shopping centre, TTM have applied a combination of generation rates for the calculation of refuse produced in accordance with the tenancy schedule supplied by the client using rates as prescribed by Brisbane City Council to achieve compliance. TTM notes that BCC's rates are standardised generation rates and not site specific however, give an estimation on the maximum potential waste generation.

Site specific auditing once operational is recommended to establish actual refuse generation of this site and enable refinement of waste strategy and refuse equipment employed.

A collection frequency of 3 days per week has been established as an accepted 'performance solution' for BCCs un-documented maximum 'low-frequency servicing' requirement.

Table 2.1: Refuse Generation Rates Utilised

Generation Rate	Tenancies Applied To	Measure	General Waste	Combined Recycling	Days of Operation
Food and Beverage Outlet >150m^2	Dental	L / 100m^2 / Day	660	200	7
	GP Clinic & Pathology				
Food and Beverage Outlet <150m^2	Retail 01A	L / 100m^2 / Day	300	200	7
	Retail 01B				
	Retail 02A				
	Retail 02B				
	Retail 02C				
	Retail 02D				
	Retail 02E				
	Retail 02F				
	Retail 03				
Supermarket	Supermarket	L / 100m^2 / Day	250	550	7
Retail Shop – non-food	Pharmacy	L / 100m^2 / Day	25	200	7
Healthcare Services	Medical / Allied Health / Lifestyle	L / 100m^2 / Day	10	20	7
Indoor Sport and Recreation	Lifestyle / Sport and Recreation	L / 100m^2 / Day	10	10	7

Table 2.2: Refuse Calculations

Description		Area	Measure	General Waste L/Week	Comingle Recycling L/Week
Food and Beverage Outlet >150m^2		463	GFA (m^2)	21,391	6,482
Food and Beverage Outlet <150m^2		365	GFA (m^2)	14,973	9,982
Supermarket		804	GFA (m^2)	14,070	30,954
Retail Shop – non-food		299	GFA (m^2)	357	2,856
Healthcare Services		1,554	GFA (m^2)	894	1,788
Indoor Sport and Recreation		1,138	GFA (m^2)	797	797
Total Weekly Volumes (L / Week)				**52,481**	**52,858**
Volumes per Day (L / Day)				**7,497**	**7,551**
Volumes per Collection (L / Collection)				**17,494**	**17,619**
Collection and Equipment Details	Collections per Week			3	3
	Storage Capacity			3 Days	3 Days
	Equipment Size			4500L	4500L
	Equipment Quantity Required			4	4

2.2. Refuse Bins and Equipment Requirements

Table 2.3 and Table 2.4 below outlines the number of bins and additional equipment required for the development. As waste volumes may vary according to the development occupants' attitudes to waste disposal and recycling, bin numbers and sizes may need to be altered to suit the building operation. The table shows the maximum number of bins and equipment expected.

Table 2.3: Bin / Storage Equipment Requirements

Refuse Stream	Bin / Equipment - Type or Size	Bin / Equipment Required
General Waste	4500L	4
Commingled Recycling	4500L	4

Table 2.4: Additional Equipment

Description	Quantity	Notes - See *Appendix B* for details
Tenancy Bins	TBD	Bins up to 240L in size stored in east wing interim holding room, used to assist in the transfer of refuse to the refuse storage area.
240L Bin Lifter	1	To assist in the manual decanting of tenancy BOH bins into bulk bins for final disposal.
Refuse / Cleaner Trolleys	TBD	To assist in manual transfer of refuse to the refuse storage area where 240L bins are not used.
Regulated Waste Storage Container	TBD	Separate receptacles required for each class or type of regulated waste.
Secure Destruct Paper (*Optional*)	TBD	Typically, 1 x 120L or 240L bin per office space.

2.3. Refuse Storage

All refuse will be stored within stream separated bulk bins in the dedicated refuse storage area provided within the shared loading dock. The shared loading dock to the extent of refuse storage area will be roofed with final design to be undertaken in post consent stages. A consolidated waste storage strategy is proposed where all uses within the Village share the use of the communal bulk bins within a single storage area for optimal efficiency in servicing cost and to control the number of RCV movements within the shared loading area.

An interim holding room is provided on the east wing of the development near the end of trip facilities on ground level. The interim holding room is intended to provide additional refuse storage, if required, for the uses on the eastern end of the development to reduce the instances of movement of refuse through publicly accessible areas of the development. The interim holding room is provided to ensure that refuse movements to the consolidated refuse storage area are limited to once per day, outside of operational hours.

Medical / Clinical waste will be stored in compliant containers throughout the required health related services tenancies in operationally convenient locations also in accordance with regulated waste requirements. A minimum of one medical / clinical waste container is required per health services tenancy with additional containers required for each separate class of regulated refuse. Medical / clinical waste arrangements will be managed by the operators of each tenancy and are not covered by the consolidated refuse strategy.

If required, Secure Destruct Papers bins will be housed in an operationally convenient location within office areas of each tenancy, typically in close proximity to a printer. A minimum one bin per tenancy containing an office is recommended, servicing arrangements to be managed by each tenancy.

The consolidated refuse storage area is sufficiently sized to accommodate all of the bins outlined in Table 2.3. All equipment in Table 2.4 either stored within the consolidated storage area or in back-of-house areas of each tenancy or unit.

Figure 2.1 depicts a potential layout of the consolidated refuse storage area. Figure 2.2 depicts the locality of the interim holding room.

The refuse storage areas also have the following features in order to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safer area:

- Doors wide enough to allow for the easy removal of the largest container to be stored.
- Adequate artificial lighting.
- Not located adjacent to or within any habitable portion of a building
- Permits unobstructed access for movement of containers to the service point.
- Does not have any steps or lips.

Additional design requirements:

- Is enclosed on all sides except for the entrance shutter / door to ensure bins are not visible from a public place, neighbouring properties, passing vehicles or pedestrian traffic external to the site.
- Is positioned away from entrances to shops or residential premises.
- The height of the bin storage area allows for waste bins to be opened and closed.
- The floors to be graded to fall to a drainage point.
- Drainage points connected to sewer in accordance with trade waste requirements.
- A hose cock provided inside the room for cleaning bins and the rooms.
- The walls, ceilings, floors, and equipment are to be designed and constructed of impervious material with a smooth finish to allow for easy cleaning.
- Is designed to minimise their visual impact on the surrounding areas.
- Is naturally or mechanically ventilated.

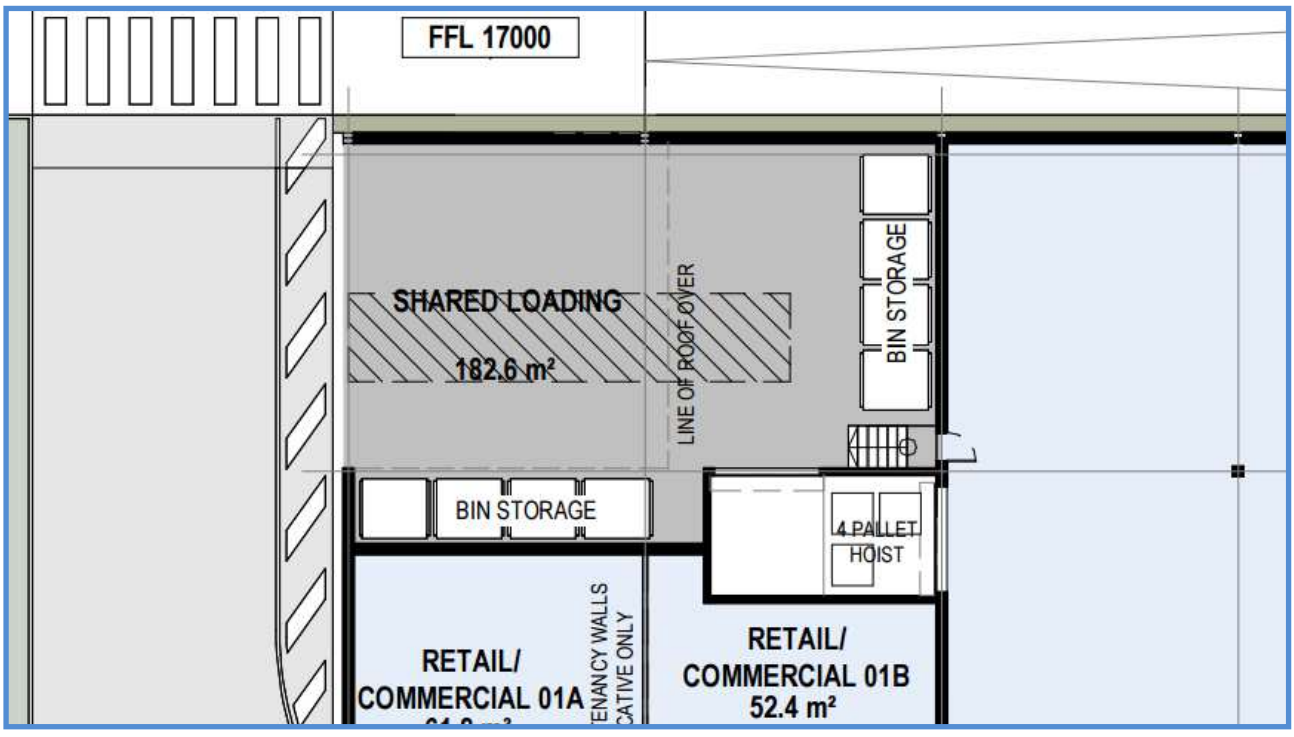


Figure 2.1: Potential Refuse Storage Area Layout

Source: Architectus, Conrad Gargett, Project: The Village Carseldine, Drawing: Key Plan - Ground Floor, Drawing Number: SK – AR – DR – DA 100 Rev: CC

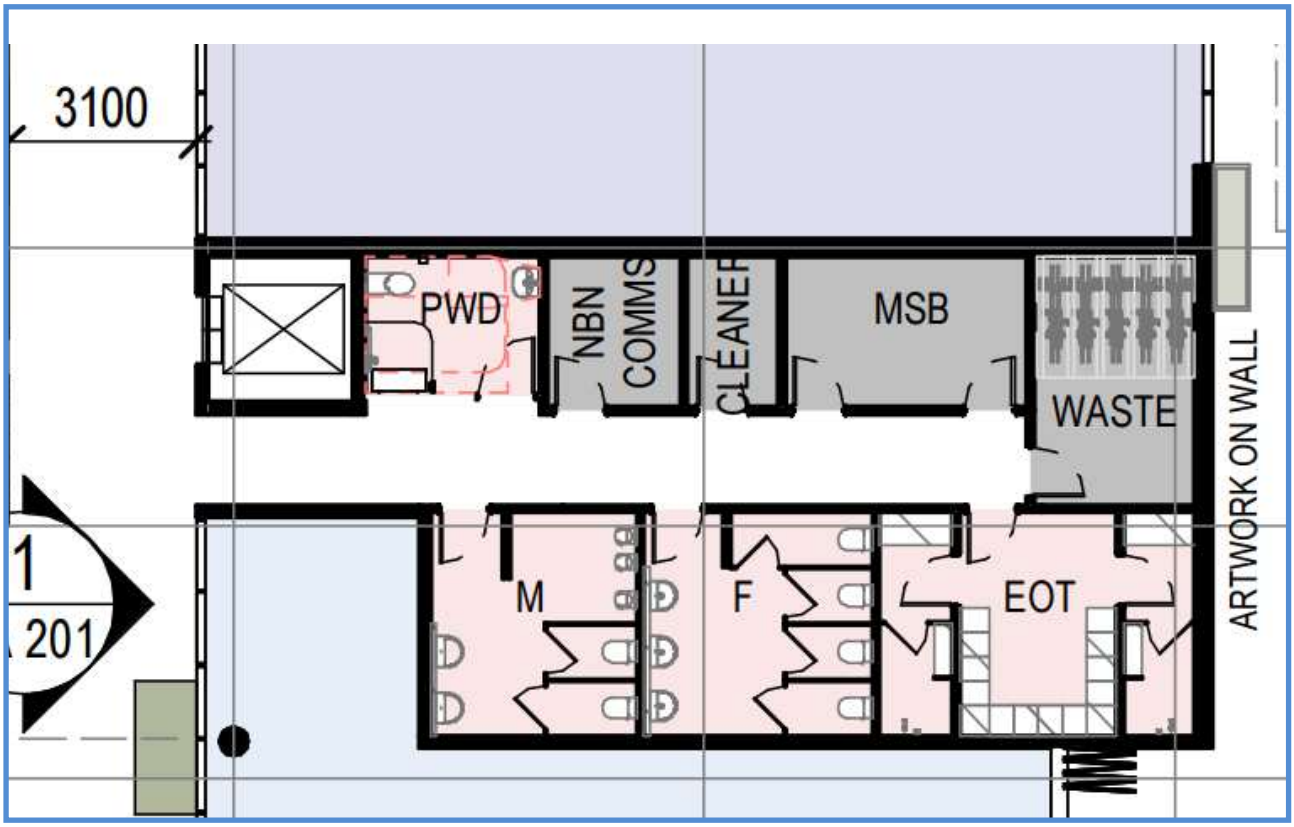


Figure 2.2: Interim Holding Room

Source: Architectus, Conrad Gargett, Project: The Village Carseldine, Drawing: Key Plan - Ground Floor, Drawing Number: SK – AR – DR – DA 100 Rev: CC

2.4. Refuse Transfer

Designated staff or cleaners will transfer all refuse generated within each tenancy or held within the interim holding room to the refuse enclosure for disposal into the appropriate bulk bin, either manually or assisted with 240L bins or trolleys as part of standard daily operation. A bin lifter will be provided to assist in the manual decanting of 240L bins into the bulk bins for final disposal.

Given shared use of the loading dock drive on servicing is not provided for front loading bins and the collecting contractor will reposition bins within the refuse storage area and manoeuvre bins a short distance to the RCV lifting mechanism for service within the shared loading dock. The contractor will return bins to the relevant position within the refuse storage area after service. Servicing requirements will form part of the service collections contract with the preferred collections contractor.

Appointed tenancy or cleaning staff will be responsible for the cleaning of bins and the general area after service as required.

The refuse transfer path has been designed to allow for:

- The bins to be transferred via hard stand pathway.
- Allows bins to be easily manoeuvred.
- Does not impeded traffic flow.
- Does not extend through any habitable parts of a building or food premises.
- Does not have any lips, stairs, or steps for bins to be manoeuvred easily.

2.5. RCV Arrangements and Bin Servicing Areas

All refuse will be collected by private contractor utilising Front Loading RCV. RCV's will enter site in a forward gear via the driveway crossover on Meander Street closest the loading dock and enter the loading dock in a forward direction. Once the collection service has been performed, the RCV will perform a single reverse manoeuvre and exit site in a forward gear onto Meander Street. The refuse servicing area is open-aired with no overhead obstructions to servicing.

All vehicular movements within the shared loading area will be managed by site operators under an operational management plan to reduce instances of conflict in movements when vehicles are required to remain on site for periods greater than 15 minutes.

Secure Destruct Papers bins will be serviced as a bin to truck service, where the contractor replaces the full bin within the relevant tenancy with an empty one.

All Medical / Clinical waste will also be serviced as a bin to truck service, where the contractor replaces the full bin within the clinical tenancy with an empty one to ensure segregation and adherence to requirements of regulated waste is maintained. Service vehicles typically range from Van to MRV dependent of class and volumes of waste generated.

A Van / SRV loading bay is provided within the carpark and closely located to the tenancies that will generate Secure Destruct Papers and Medical / Clinical waste. This bay will be utilised for bin-to truck servicing to reduce the ad hoc vehicular movements in the shared loading dock.

Figure 2.2 below depicts the RCV swept path for a full-sized front loading RCV as specified in the Refuse PSP. Further details on service vehicle access and on-site manoeuvring can be found in the RPEQ Approved traffic report.

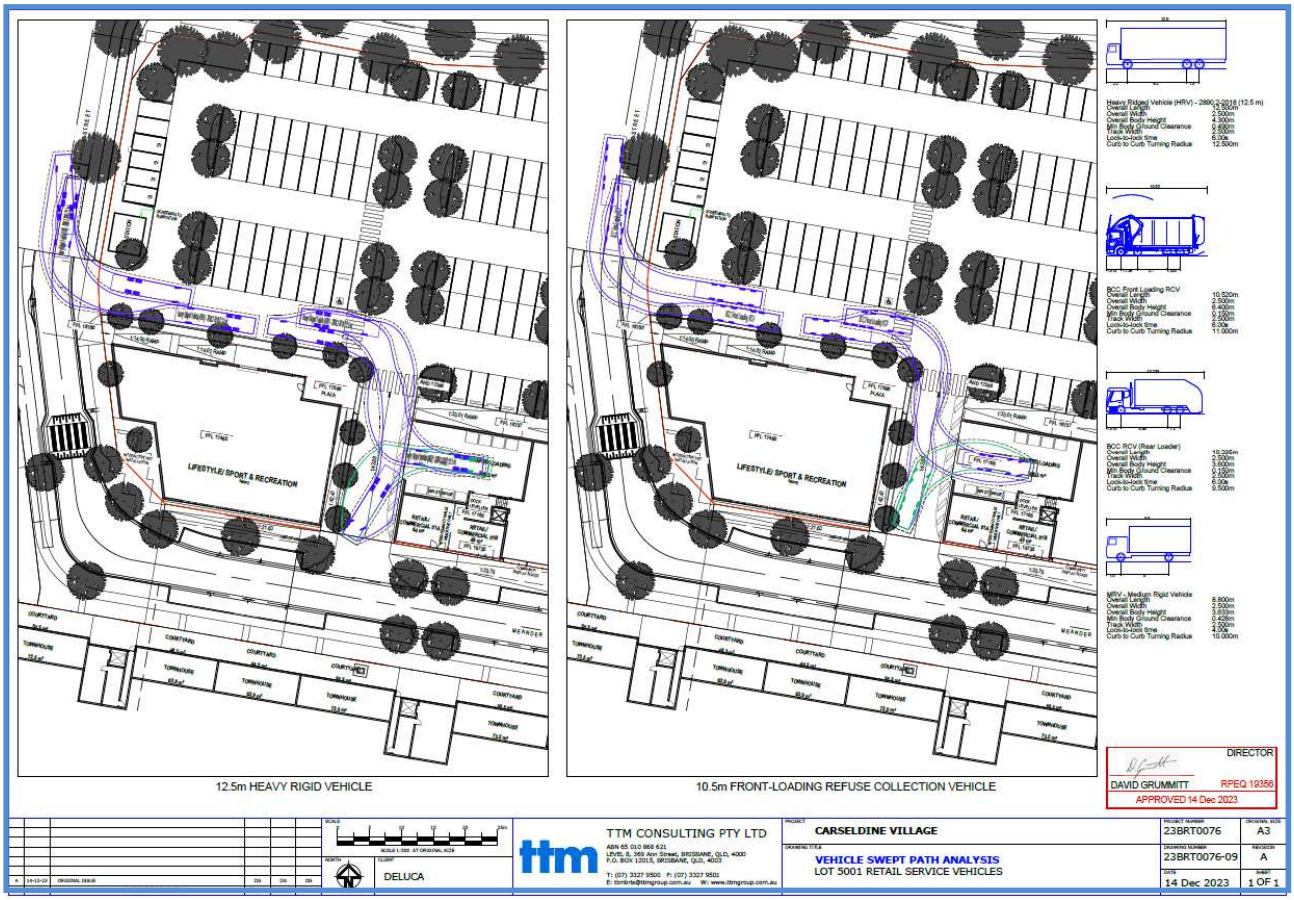


Figure 2.3 RCV Swept Path

The bin servicing area / loading bay has been designed with the following features:

- Has sufficient access and clearance for the waste and recycling collection vehicles to service the bins, including no overhead obstructions.
- Allows bins to be serviced safely while minimising the impediment to vehicle movements during servicing.
- Is clearly separated from car parking bays, footpaths, and pedestrian access.
- Is devoid of stairs, lips or ramps and allows bins to be manoeuvred easily.
- Does not block the entry and exit to the property.
- Is over 5m from any door, window or fresh air intake within the development or any adjoining site.
- Is positioned away from entrances to shops or residential premises.

3 Recommended Operational Requirements

3.1 Ongoing Operational Requirements

The tables in this section summarise general recommended disposal arrangements for frequently generated and infrequently generated refuse for each use within the development. Section 3.1.1 describes the frequently generated refuse streams that are generated in high volumes for any given period require significant capacity for storage prior to collections. Section 3.1.2 describes infrequently generated refuse streams that are generated in relatively low volumes, and where minimal provisions for storage can be easily managed by collection frequency.

3.1.1. Frequently Generated Refuse

Bins will be provided for each tenancy during fit out stages by tenancy operators, a sufficient number of receptacles to store one days' worth of generated refuse will be required. The number of and location of bins provided will be determined during tenancy fit out and careful consideration should be given to the placement and types of bins to optimise source separation. After each day of operation or as required, refuse will be transferred by staff to the refuse storage are and decanted into the appropriate communal bulk bin. Bins up to 240L may be used by each tenancy and stored in back of house areas. Bins are decanted into the communal bulk bins using a powered bin lifter.

Further details on refuse disposal are provided in Table 3.1.

Table 3.1: Disposal of Frequently Generated Refuse (General Waste)

Refuse Stream	Disposal Details
WASTE	
General Waste	Depending on the type of operations of the individual tenancies, different wastes will be produced. Waste bins should always be lined with bags and the bags tied before removal. General waste bins should always be lined with bags and the bags tied before removal. At a minimum general waste bins should be accompanied by a recycling bin in order to facilitate separation of general waste and recycling. Signage should be provided to encourage source separation. Bins up to 240L in size may be used for immediate disposal and positioned in back-of-house areas of tenancies that are expected to generate higher volumes of refuse, or within the interim holding room. In all lower refuse generating tenancies, where manual transfer methods are employed bins no greater than 60L should be utilised in areas where waste will be generated. Larger bins may be considered where assisted transfer methods are employed such as the use of refuse trolleys or mechanical means.
Organic (Food) Waste	Separating organic or food waste from general waste is recommended to reduce the total amount of general waste produced. Organics separation and collections may be commenced at any stage during the operational phase of the development. Separating organic or food waste from general waste may be considered to reduce the total amount of general waste produced. Organics will typically be produced in commercial kitchens of food and beverage tenancies, from spoiled supermarket product and staff areas or kitchen facilities of non-food and beverage tenancies. Should organics be separated, caddy bins or bins no larger than 60L should be used in food preparation areas for disposal of food waste if required. The bins are then transferred to the refuse storage enclosure and decanted into larger communal bins or processing equipment.

Table 3.2: Disposal of Frequently Generated Refuse (Recyclable Materials)

RECYCLING	
Comingled, including • glass • aluminum • steel cans • tins • cardboard • semi rigid plastics	Depending on the type of operations of the individual tenancies, different recycling materials may be produced. Items for recycling must not be bagged and disposed in loose form. This can be done by decanting the materials from the individual receptacles into a larger container / bin on a trolley for transport to the refuse room. Commingled recycling from food and beverage outlets such as restaurants, takeaways, cafés can be captured by 90L bins that will be placed within the kitchen or back-of-house area to meet the design or layout criteria of the café or restaurant operators. Recycling from medical facilities and offices largely consists of clean paper (and cardboard) which can be collected separately from commingled recycling if large quantities are produced.
	Container deposit / refund schemes are currently in place in Queensland. Various models exist including bottle return facilities and (automated) reverse vending machines. Occupants should be encouraged to separate containers that qualify for the schemes from the waste or recycling streams and send back to a return point.
Secure Destruction Paper	Tenancies containing offices often produce an amount of secure destruction paper / confidential paper documents which need to be disposed separately from general recyclable cardboard / paper. Special bins up to 240L are typically placed within the office areas for disposal of secure destruction paper. The bins are collected from the individual tenancies by the appropriate contractor and replaced by empty bins.
OTHER	
Medical / Clinical/ Hygiene waste	Medical / clinical / hygiene waste should be disposed of within clinical waste containers or bins stored on each floor or within the staff areas / nurse stations / examination rooms etc. Small transferable clinical and sharps containers may be placed in examination rooms or staff only areas. Larger clinical waste bins can be stored within storerooms internal to the tenancy. Specific receptacles need to be provided for specific uses and types of clinical waste. Clinical waste bins will be collected directly by a specialist waste contractor who will provide a "wheel-out wheel-back" service whereby the bins are collected from where they are stored within each tenancy.

3.1.2. Infrequent Waste

Table 3.3: Disposal of Infrequently Generated Waste

Refuse Stream	Disposal Details
Hard Waste / Bulky Goods	All tenancies will utilise bulk bins provided for bulky waste disposal or make other coordinated collection arrangements where items are unsuitable for bulk bin disposal or where significant volumes are generated such as during tenancy refits.
Organic (Garden) Waste	Green waste will be produced on an ad hoc and largely weather dependent basis from surrounding landscaped areas or potted plants. Green waste will be removed by the designated maintenance contractor. The engaged contractor will be required to send this material to a composting or resource recovery facility rather than to a landfill. Interim storage in not provided.
Hazardous Waste (paints, batteries and cartridges) **Electronic Waste**	Building management will assist tenancies in making arrangements for the disposal of specialised or hazardous waste and electronic waste such as recycling of toner cartridges and batteries as required. Please refer to local and QLD government websites for disposal options. Batteries are highly volatile and must be disposed of separately and never in the general waste or commingled recycling bins. TTM recommend a communal disposal point is provided by site management and located in a communally accessible point. This includes all hazardous, electronic or liquid waste and any paint or chemicals as required and requested. Hazardous waste must be handled with due care, separated and securely stored for collection by a specialist waste contractor. Please refer to local and QLD government websites for further information.

3.2. On-going Management

The tables below are not assessable as part of the development application instead for the demonstration of required tasks during the operational phase of the development and therefore intentionally left blank.

Responsibilities have to be assigned for all on-going refuse management operations. This is generally done by a building manager, staff and / or cleaners. The following lists (Table 3.4 to Table 3.10) are designed to help managing responsibilities and monitor the refuse operations in order to maintain efficient services and a safe environment.

Table 3.4: General Refuse Management Checklist

Objectives	Checked	Remarks
Organising of weekly pick-ups for all refuse streams.		Liaise with private contractors as required.
Regular spot checks are performed on bins		Checking for compliance and no contamination.
Managing daily bin transfers between tenancies and storage / collection areas if required.		
Check bin fill levels and rotate / swap bins for convenient access as required		

3.2.1. Safety

Transferring refuse bins and using management equipment are considered hazardous tasks. Therefore, contractors must ensure that a full risk assessment of equipment, surfaces, and related gradients is complete. The contractor must provide procedural documentation to appropriate personnel prior to delivery of equipment occupancy of the development.

Table 3.5: Safety Checklist

Objectives	Checked	Remarks
Abiding by all relevant occupational health and safety legislation, regulations and guidelines to ensure site safety for visitors, staff and contractors.		
Assessment of any manual handling risks and preparation of a manual handling control plan for waste and bin transfers.		
Provision of equipment manuals, training, health and safety procedures, risk assessments and personal protective equipment to staff / contractors in order to control hazards associated with all waste management activities.		

3.2.2. Signage

All receptacles, bins and other refuse management equipment will have adequate signage. Standard signage will be provided in and around waste collection and storage areas and should be colour coded in accordance with AS 4123.7 – 2006 Mobile waste containers (see *Appendix C*).

Table 3.6: Signage Checklist

Objectives	Checked	Remarks
Ensuring compliance of signage with government local council regulations.		Use signage compliant with colours as noted in *AS 4123.7–2006 Mobile waste containers – Part 7: Colours, markings and designation requirements*
Ensuring that labelling on bins, refuse room etc. is appropriate and clear and easy to read and updated if required.		

3.2.3. Cleaning and Maintenance

Regular cleaning and maintenance of all refuse management facilities is important to maintain a safe and hygienic environment for visitors, staff, and contractors.

Table 3.7: Cleaning and Maintenance Checklist

Objectives	Checked	Remarks
General cleaning of all refuse holding and transfer areas including • Refuse rooms and storage areas • Refuse bins • Any other refuse management equipment		Frequency depends on refuse generation and building operation.
Coordination of specialised cleaning contractors as required.		
Maintenance and servicing of refuse management equipment as per schedule.		Frequency as per manufacturers recommendation and warranty requirements.

3.2.4. Refuse Minimisation

Refuse minimisation is an important part of any site operation, it is strongly recommended that building operations staff are actively involved in encouraging and assisting occupants to follow the refuse hierarchy. At a minimum, the following should be implemented. Guidance on additional refuse minimisation options can be provided during the operational phase of the development by external review.

Refuse minimisation required regular reviewing to ensure operational sustainability of refuse volumes, equipment, and economic feasibility. It is recommended that refuse weights and movements are noted and reviewed. An external review is usually conducted 12 to 18 months after the implementation of the plan.

Table 3.8: Refuse Minimisation Checklist

Objectives	Checked	Remarks
Regular review of material quantities to avoid over-ordering.		
Consideration of secondary and recycled materials where possible.		
Encouraging refuse minimisation through education and signage (see below).		
Reduce refuse through continuous monitoring and review (see below).		

3.2.5. Education and Communication

On-going education is important to ensure people continue to use the facilities as originally intended and to avoid ongoing contamination of recoverable refuse streams. Management from each tenancy should be involved in education of staff and encouraging participation in recycling activities. All leasing contracts should contain clauses pertaining to waste management arrangements and waste diversion targets.

Table 3.9: Education and Communication Checklist

Objectives	Checked	Remarks
Communication of refuse management arrangements to tenants, staff and contractors as required.		
Consideration of promotional opportunities for any successes e.g. local shopping partnerships / discounts.		

3.2.6. Monitoring and Review

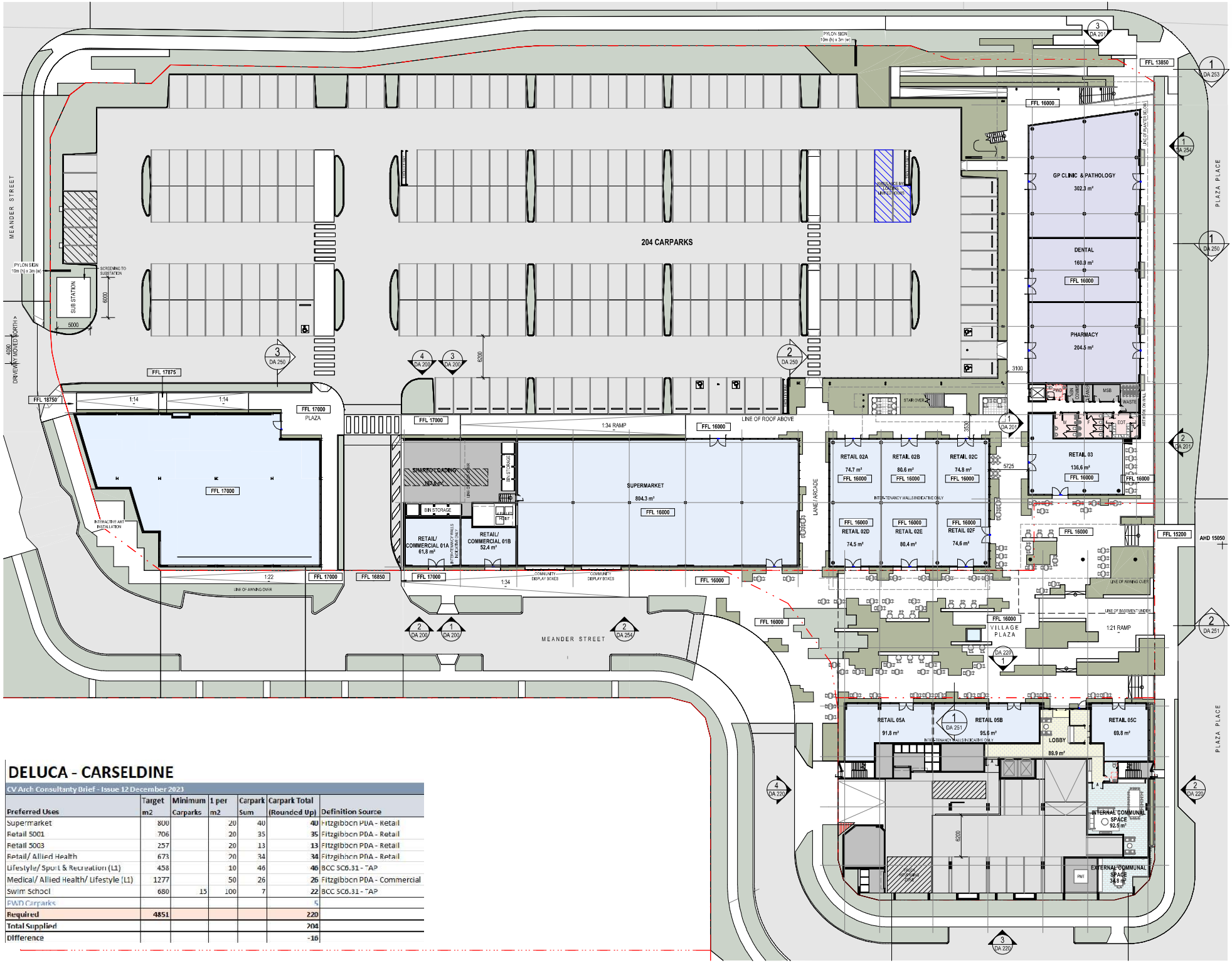
Regular monitoring and inspections of waste and related equipment and facilities from the development should be conducted by building management or designated staff or maintenance and sustainability.

Waste composition audits are recommended on a routine (12 monthly) basis to identify potential improvements in the recycling processes taking place. Audits may be undertaken by external contractor or internally by visual inspection during on-site waste management handling activities. For example, cleaners or staff members may observe contents of waste receptacles when decanting caddies in larger bins and recording results, this method is less accurate than a comprehensive audit however, gives immediate indicative actionable results and may be undertaken on an ongoing basis.

Table 3.10: Monitoring and Review Checklist

Objectives	Checked	Remarks
Continual monitoring of equipment uses and scheduling to ensure best operational outcomes.		
Regular review of refuse management equipment and facilities such as bin volumes, refuse storage capacities and stormwater management arrangements.		
Regular review of recycling rate target to target continual improvement.		Amend as required
Review service frequency and methodology on 6 monthly intervals with collecting contractor.		
Update and amend OWMP based on review outcomes.		

Appendix A Site Plans and Drawings



DELUCA - CARSELDINE

CV Arch Consultanty Brief - Issue 12 December 2023

Preferred Uses	Target m2	Minimum Carparks	1 per m2	Carpark Sum	Carpark Total (Rounded Up)	Definition Source
Supermarket	800		20	40	40	Fitzgibbon PDA - Retail
Retail 5001	706		20	35	35	Fitzgibbon PDA - Retail
Retail 5003	257		20	13	13	Fitzgibbon PDA - Retail
Retail/ Allied Health	673		20	34	34	Fitzgibbon PDA - Retail
Lifestyle/ Sport & Recreation (L1)	458		10	46	46	BCC SC6.31 - TAP
Medical/ Allied Health/ Lifestyle (L1)	1277		50	26	26	Fitzgibbon PDA - Commercial
Swim School	680	15	100	7	22	BCC SC6.31 - TAP
PWD Carparks					5	
Required	**4851**				**220**	
Total Supplied					**204**	
Difference					**-16**	

architectus™ Conrad Gargett

We acknowledge the Traditional Custodians of the land on which this project is sited, and pay respects to their Elders past, present and emerging.

Revision

REV	DESCRIPTION	DATE	APP.
S	EDQ Issue	21/11/2023	KL
T	Issued For Information	30/11/2023	KL
U	Issued For Information	05/12/2023	KL
V	Issued For Information	07/12/2023	KL
W	DA Issue	12/12/2023	KL
X	DA Issue	19/12/2023	KL
Y	Issued For Information	05/03/2024	NJA
Z	Issued For Information	06/03/2024	NJA
AA	Issued For Information	12/03/2024	DF
BB	Issued For Information	18/03/2024	DF
CC	Issued For Information	19/03/2024	DF

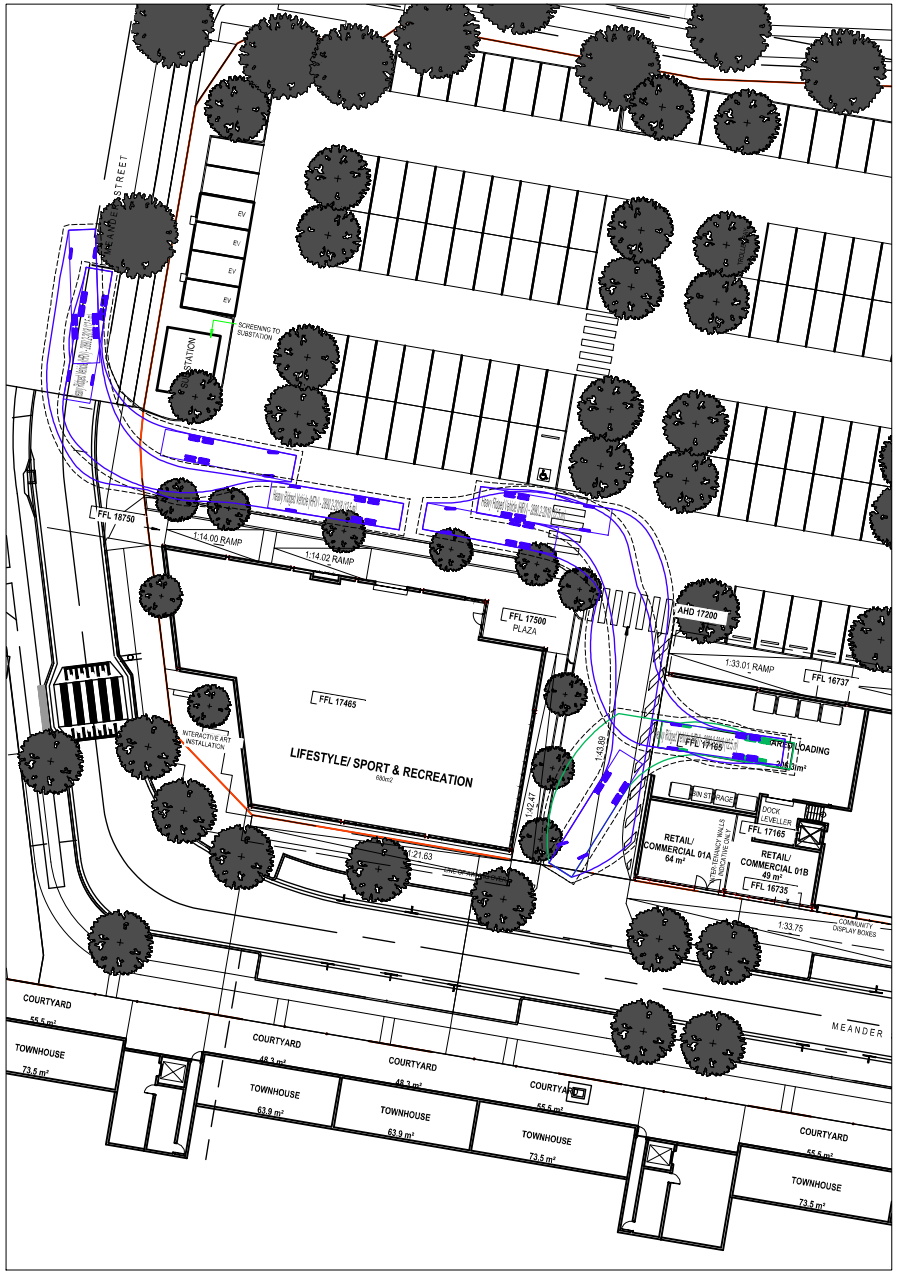
Client
DELUCA

Project
CARSELDINE VILLAGE - STAGE V - LOTS 5001, 9001 & 5003

Drawing
KEY PLAN - GROUND FLOOR

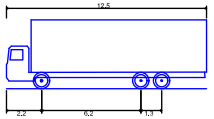
A1 Scale 1 : 250
A3 Scale 1 : 500
Project No. 23.0159
Revision CC
Number SK - AR - DR - DA 100

Details



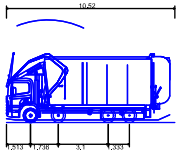
12.5m HEAVY RIGID VEHICLE

10.5m FRONT-LOADING REFUSE COLLECTION VEHICLE



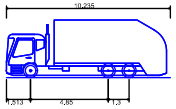
Heavy Ridged Vehicle (HRV) - 2890.2-2018 (12.5 m)

Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.490m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m



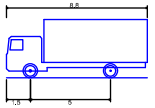
BCC Front Loading RCV

Overall Length	10.520m
Overall Width	2.500m
Overall Body Height	6.400m
Min Body Ground Clearance	0.150m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	11.000m



BCC RCV (Rear Loader)

Overall Length	10.235m
Overall Width	2.500m
Overall Body Height	3.600m
Min Body Ground Clearance	0.150m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	9.500m



MRV - Medium Rigid Vehicle

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.833m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

DIRECTOR

DAVID GRUMMITT RPEQ 19356

APPROVED 14 Dec 2023

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	14-12-23	ORIGINAL ISSUE	DG	DG	DG

SCALE 0 5 10 15 20 25m

SCALE 1:500 AT ORIGINAL SIZE

NORTH

CLIENT: DELUCA

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PROJECT: **CARSELDINE VILLAGE**

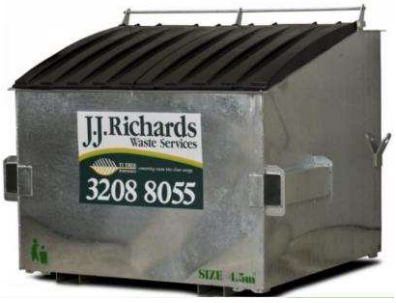
DRAWING TITLE: **VEHICLE SWEPT PATH ANALYSIS**
LOT 5001 RETAIL SERVICE VEHICLES

PROJECT NUMBER	23BRT0076
ORIGINAL SIZE	A3
DRAWING NUMBER	23BRT0076-09
REVISION	A
DATE	14 Dec 2023
SHEET	1 OF 1

Appendix B Systems and Specifications

B.1 Specified Refuse Management Equipment

The table below provides contextual examples of the equipment specified within this OWMP and is not intended to provide an exhaustive list of all potential options of the required equipment.

Bin Types	Waste Streams	Examples	Information
Tenancy Back-of-house Bins	General waste, recycling, food waste, paper / cardboard		Various options and sizes available. Tenant to supply depending on preference and space available. Example: 60L multisort bins https://www.sourceseparationsystems.com.au-/product/multisort
4.5m^3 steel bins	General waste, recycling, paper / cardboard		Dimensions depend on contractor Example: https://www.jjrichards.com.au/service/industrial-bin-services
Refuse / Cleaners Trolleys	All Streams	 	Assisted manual transfer of refuse Examples: https://rubbermaidcommercial.com.au/products/waste-management/mega-brute https://www.materialshandling.com.au/products/deluxe-compact-cleaning-carts
Powered Bin Lifter	All Streams	 	Assisted decanting of 240L bins into bulk bins for collection Examples: https://www.electrodrive.com.au/products/bin-lifters/simplicity-plus-bin-lifter.aspx https://wasteinitiatives.com.au/product/bin-lifters/multi-tip/
240L bins	General waste, paper, recycling, green waste		Dimensions approx. 740 x 580 x 1080mm (L x W x H) (dimensions may depend on contractor) Examples: http://www.justwheeliebins.com.au, http://wheeliebinsonline.com.au

Bin Types	Waste Streams	Examples	Information
Secure Destruction Papers Bin (optional)	Paper		Secure bins, sizes range up to 240L. Examples https://www.shred-x.com.au/document-destruction/document-shredding-destruction/ https://www.cleanaway.com.au/waste/secure-document-destruction/
Regulated waste bins (if required)	Clinical, medical, hazardous		Various options and sizes available, depending on type of regulated waste and servicing contractor. Examples: https://www.suez.com.au

Appendix C Refuse Signage

C.1 Refuse Signage

All waste stream signage used should be colour coded to be compliant with *AS 4123.7–2006 Mobile waste containers – Part 7: Colours, markings and designation requirements.*

Waste signage guideline are provided by the Queensland government: https://www.qld.gov.au/environment/pollution/management/waste/recovery/recycling/signage.

General Refuse Signage

Other Refuse Signage

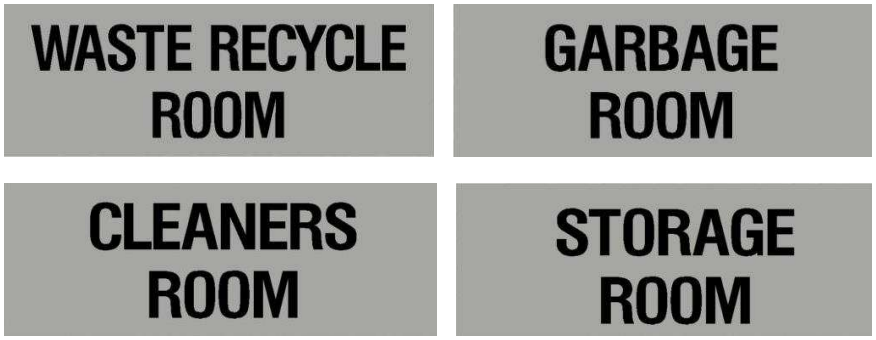
Colour coding as per AS 4123.7-2006

Mixed (Commingled) Recycling	*PMS 108*
General waste (landfill)	*PMS 032C*
Organics	*PMS 15-0343*
Paper and cardboard recycling	*PMS Process Blue C*
Soft Plastics	*PMS 1655*
Used Cooking Oil	*Grey*

C.2 Other Refuse, Facility and Safety Signage

Various signage including refuse area, safety and facility signage should be arranged through certified signage providers. Example signs can be found at http://www.signblitz.com.au, https://www.wayout.com.au or https://www.smartsign.com.

Example Refuse Room Signage



Example Facility Signage

Example Safety Signage

Appendix D Terms and Abbreviations

In this OWMP, a term or abbreviation has the following meaning unless indicated otherwise:

TERM	ABBREVIATION	DEFINITION
Equipment		
Bin (Refuse Bin)		A plastic or steel container for disposal and temporary storage of waste or recycling items. Various types and sizes exist for different items and purposes. Examples include residential unit bins, bulk bins, MGB, steely bins and specialised for medical waste or cigarette butts.
Bin Storage Area		An enclosed area designated for storing on-site refuse bins or a refuse compactor within the property.
Bulk Bin		A galvanized or steel bin receptacle that is greater than 360L in capacity generally ranging from 1.00m³ to 4.50m³ used for the storage of refuse that is used for on-site refuse collection.
Bulk Mobile Garbage Bin	Bulk MGB	A plastic (polypropylene) receptacle that is greater than 360L in capacity generally ranging from 660L to 1100L used for the storage of refuse.
Collection Point		An identified position where refuse bins are stored for collection and emptying. The collection point can also be the bin storage area.
Compactor		A receptacle that provides for the mechanical compaction and temporary storage of refuse. It allows to reduce bin numbers and collection frequency.
Composter		A container or machine used for composting specific food scraps and/or organic materials.
Food Waste Recycling System		Defined as a vacuum or pump-based system for shredding, macerating or pulping of food waste. The food waste is transferred through pressure (service) pipes to sealed liquid storage tanks.
Green Waste		All vegetated organic material such as small branches, leaves and grass clippings, tree and shrub pruning, plants and flowers.
Liquid Waste		Non-hazardous liquid waste generated by commercial premises should be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste).
Mobile Garbage Bin	MGB	A plastic (polypropylene) bin or bins used for the temporary storage of refuse that is up to 360L in capacity and may be used in kerbside refuse collection or on-site collection.
Putrescible Waste		Putrescible waste is the component of the waste stream liable to become putrid and usually breaks down in a landfill to create landfill gases and leachate. Typically applies to food, animal and organic products.
Recycling		Recycling contains all material suitable for re-manufacture or re-use, e.g. glass bottles and jars; plastics such as PET, HDPE and PVC; aluminium aerosol and steel cans and lids; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines.
Refuse		Refuse is material generated and discarded from residential and commercial buildings including general waste, recyclables, green waste and bulky items.
Refuse Storage Room		An area identified for storing on-site MGBs or Bulk Bins within the property.
Refuse Tolley		A cart on wheels that can be used to collect smaller quantities of refuse from different areas or rooms of a building or site, and wheel the collected refuse to a (bulk) bin storage area where it is disposed. Refuse trolleys are commonly used in hotels or offices.
Regulated Waste		Regulated waste is waste prescribed under legislation as regulated waste.

TERM	ABBREVIATION	DEFINITION
Transfer (Manual Transfer)		Manual transfer means physical transfer of refuse material and associated bulk bins or trolleys without assistance.
Waste		Waste is referred to as refuse material with the exclusion of recycling, green waste, hazardous waste, special waste, liquid waste and restricted solid waste.
Waste (General Waste)		General waste is generally referred to as material free of any actual or apparent contamination such as pathological / infectious, radioactive materials and / or hazardous chemical. Reporting use is for material considered to be free of food waste.
Wheelie Bin		A MGB of up to 360L, usually with 2 wheels for easy transfer. A common type is a 240L wheelie bin used for kerbside collection in many residential areas.
Measures		
Cubic Metre	m^3	Volume in cubic metre(s) related to refuse management equipment.
Ground Floor Area	GFA	The GFA of all storeys of a building is measured from the outside of the external walls or the centre of a common wall. It is commonly measured in square metres.
Kilogram	kg	Kilogram(s) related to refuse weight.
Litre	L	Litre(s) related to refuse volumes.
Square Metre	m^2	Square metre(s) related to refuse areas.
Ton	T	Ton(s) related to refuse weight.
Collection Vehicles		
Body Truck		A conventional heavy vehicle with a covered loading area. It is generally not specifically designed for emptying the content of bins into the truck during refuse collections, but can be used to carry entire (full) bins for servicing by bin swap-over.
Refuse Collection Vehicle	RCV	A vehicle specifically designed for collecting and emptying refuse bins and refuse compactors.
Rear-End-Loading Refuse Collection Vehicle	REL RCV	A truck specially designed to collect municipal solid waste and recycling, typically 240L wheelie bins to 1100L bulk bins, from rear loading mechanism and haul the collected waste to a solid waste treatment facility.
Tank Truck		An RCV that is specifically designed to collect liquid wastes such as waste cooking oil and food waste pulp. The waste is typically pumped from a waste storage tank into the truck via a hose. Liquid waste management equipment is often provided by the contractor who collects the waste and operates the truck.