

APPENDIX G

Operational Waste Management Plan

Project:

177 Francis Street, West End



Operational Waste Management Plan
177 Francis Street, West End

- 1 -

Contact Information

Modus Transport and Traffic Engineering Pty Ltd ABN 49 668 863 269	310 Edward Street Brisbane City QLD 4000 Australia www.modusengineering.com.au Phone 0486017007
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Document Information

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MODUS TRANSPORT & TRAFFIC ENGINEERING

ABN 49 668 863 269

310 Edward St, Brisbane
City, QLD, 4000

P 1300 606 408

E info@moduseng.com.au

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Whether your project is a small residential development, mixed use development, a large commercial precinct or anything in between, our experienced traffic engineers will apply sound and practical traffic engineering principles to achieve an outstanding outcome for your project.

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Definitions

In this OWMP, a term has the following meaning unless otherwise specified and is shown below.

Term	Description
Bin carting / transfer route	The proposed route to move bins between the refuse room (storage point) and the servicing point.
Bin (bulk / wheelie)	A container (steel or plastic) use for disposal and storage of refuse items. Bins come in various types and sizes from MGB's to up 360L and bulk from 660L to 4500L.
Collection / Servicing point	The designated area allocated to the temporary storage of waste bins for the period of servicing only. The point may be within or external to a development.
Compactor / Compaction unit	A device that provides mechanical compaction for refuse (typically general waste only). It allows to reduce bin numbers and collection frequency.
Composter	A container or machine used for composting specific organic material
General waste	Waste, other than domestic clean-up waste, green waste, recyclable waste, interceptor waste or waste discharged to a sewer, produced as a result of the ordinary use or occupation of domestic or commercial premises.
Gross 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 (m ²)
Hazardous waste	Solid waste that is or contains toxic material, for example light bulbs, fluorescence lights, batteries.
Mobile Garbage Bin (MGB)	A plastic bin used for the storage and collection of refuse that is up to 360L in capacity. MGB's are typically used for kerbside collection for residential dwellings and on-site collection for commercial development.
Organic Waste	Waste that comes from plants or animals that is biodegradable for example green waste and food waste.
Recycling	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 Room / Storage point	The area allocated to the permanent storage of waste bins. This is the normal location of the waste bins and excludes the period when the bin is serviced. A storage point may be a common storage point or an individual bin storage point.
Refuse Collection Vehicle (RCV)	A vehicle specifically designed for collecting and emptying refuse bins and refuse compactors.
Rear-End-Loading RCV	A truck specially designed to collect refuse (typically 240L-1100L bins), from a rear loading mechanism and haul the collected waste to a solid waste treatment facility.
Transfer	Manual transfer means physical transfer of refuse material and associated bulk bins or trolleys without assistance.

1 Introduction

1.1 Overview

Modus has been engaged by QCWS to prepare an Operational Waste Management Plan (OWMP) in support of the proposed residential development, located at 177 Francis Street, West End.

This OWMP is to be used as a guide during the operational phase of the development only and additional requirements for demolition and/or construction phases will need a separate WMP. The purpose of the OWMP is to satisfy City of Townsville (CoT) requirements and detail the following information:

- ▶ Refuse (type and quantity) likely to be generated during the occupancy of the proposed development.
- ▶ Refuse collection arrangements, including disposal, storage and transfer, during the occupancy of the proposed development.
- ▶ Operational requirements, including equipment and systems, and design requirements for the proposed development.

1.2 References

For the purpose of this assessment, the following references have been utilised:

- ▶ Development Plans, prepared by Concepts Building Design
- ▶ Townsville City Council – SC6.4.22 Waste Management
- ▶ Traffic Engineering Report, prepared by Modus

1.3 Limitations

Modus has completed this OWMP in accordance with the usual care and thoroughness of the consulting profession. The assessment is based on accepted waste management practises and standards applicable at the time of undertaking the assessment. Modus disclaims responsibility for any changes to project planning or equipment requirements that may occur after completion of the assessment.

2 Existing Conditions

2.1 Site Location

The development site is located at 177 Francis Street, West End and is bounded by Residential uses to the north and east, vacant land to the west with Francis Street to the south.

Furthermore, the development site is currently zoned Low Density Residential within the CoT Local Government Area.

The site location is shown on Figure 2-1.

Figure 2-1 Site Location



Source: Nearmap

2.2 Existing Development and Refuse Arrangements

The lot is currently vacant land with no existing refuse arrangements.

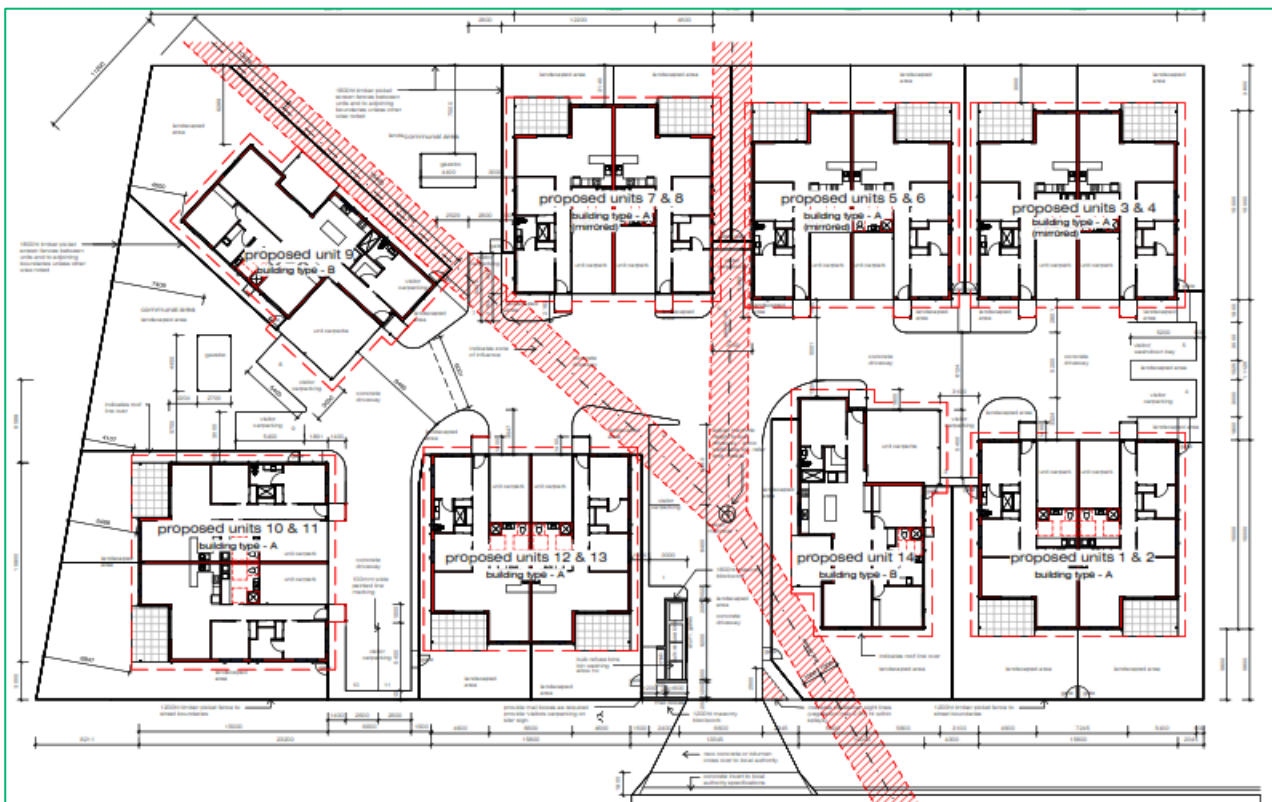
3 Proposed Development

The proposed development will comprise a Multiple Dwelling use accommodating 14 units.

As part of the proposed refuse arrangements for the development, bulk bins are proposed to be stored and collected on-site.

The proposed site plan is illustrated on Figure 3-1. A copy of the development plans can be found at **Appendix A**.

Figure 3-1 Proposed Development



Source: Concepts Building Design, Ground Floor Plans (Date: 25/02/26) – Ground Level

4 Refuse Generation

4.1 Calculations

The anticipated refuse to be generated by the proposed development may consist of the streams outlined in **Appendix B**.

To assess the waste generation for the proposed site, Modus has applied the current CoT generation rates, as outlined below in Table 4-1.

Table 4-1 Refuse Generation

Use	Generation Rate (L/Unit/week)		Units	Generation (L/Week)	
	General Waste	Commingled Recycling		General Waste	Commingled Recycling
Residential	120	120	14	1,680	1,680

The refuse volumes are considered to be conservative and may vary according to the operation of the development and each dwelling. As such, bin numbers and collection frequencies may need to be altered to suit the building operation once operational.

4.2 Bin Numbers

The required equipment for the development is based on the volumes calculated in Table 4-1. Additional waste management / minimisation equipment may vary depending on the operation of the development and each dwelling.

Table 4-2 shows the bin requirements (number & size) and area required to accommodate the bins.

Table 4-2 Bin Requirements

Description	Units	General Waste	Commingled Recycling
Total	14	1,680	1,680
Daily Volumes (L/day)		240	240
Collection Frequency (per week)		1	1
Collection Volumes (L/week)		1,680	1,680
Bin Size (L)		1100	1100
No. Bins		2	2
Bin Area		2.76m ²	2.76m ²
Refuse Storage Area		9.9m ² (1.6m x 6.2m)	

4.3 Equipment

The refuse bins to be utilised for the proposed development is outlined below in Table 4-3.

Table 4-3 Refuse Bins

Type	Dimensions	Comments
80L-120L	559 x 279 x 635mm (L x W x H)	For general waste and recycling Residents to supply and position in various locations. Several options and sizes available from numerous suppliers, depending on preference and space available.
1100L	1080 x 1280 x 1340mm (L x W x H)	For general waste and recycling Supplied by Council prior to operation. Sizes may vary slightly depending on contractor.

Depending on the operation of the development and each dwelling, additional refuse minimisation equipment and procedures can be implemented. Refuse minimisation and recommendations are detailed in Section 6.

5 Refuse Arrangements

5.1 Refuse Disposal

The proposed disposal arrangements are provided in Table 5-1.

Table 5-1 Residential Refuse Disposal

Stream	Process
General Provisions (Waste and Recycling)	▶ Each dwelling will have at least one day worth of storage capacity for their refuse. ▶ Small bins / receptacles will be provided around various locations within each dwelling, typically under sinks, in pantries or bathrooms. ▶ As required, residents will dispose of their refuse to the appropriate receptacles / bins within their dwelling during the day. ▶ Residents will collect the refuse from their dwelling after each day or as required. The refuse material will be disposed directly to the refuse enclosure.
General Waste	▶ Bins should always be lined with bags and tied before removal. ▶ Waste should not exceed 3kg in weight or the dimensions of the receptacles. ▶ Waste bins should be accompanied by a commingled recycling bin.
Commingled Recycling	▶ Items for recycling must not be bagged and disposed in loose form. ▶ Recycling waste should not exceed 3kg in weight or the dimensions of the receptacles. ▶ Recycling bins should be accompanied by a general waste bin.

5.2 Refuse Storage

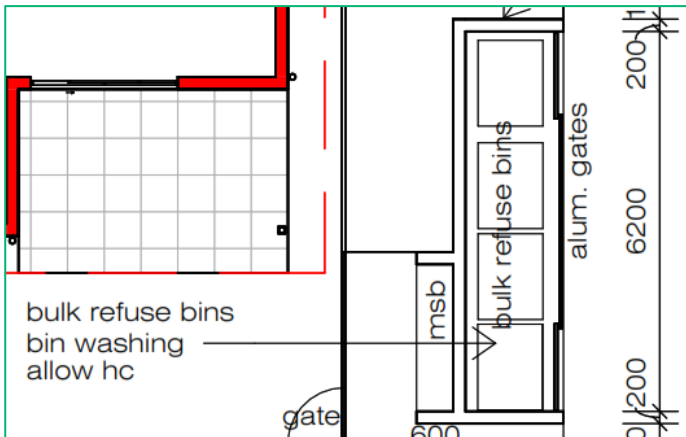
The proposed refuse storage arrangements are as follows:

- ▶ The refuse enclosure can accommodate all required bins (4 x 1100L bins) for storage and collection.
- ▶ Bin wash facilities will be provided within the refuse enclosure.
- ▶ The refuse enclosure is screened to improve amenity impacts (odour, amenity and noise).

The configuration and size of the refuse room are provided to ensure the bins are accessible to all required users. The refuse area is adequately sized to include sufficient clearance between bins / walls and store all bins for collection, as shown in Figure 5-1.

The recommended refuse room design requirements are detailed in **Appendix C**.

Figure 5-1 Refuse Enclosure



Source: Concepts Building Design, Ground Floor Plans (Date: 25/02/26) – Ground Level

5.3 Refuse Transfer

The proposed transfer arrangements are as follows:

- ▶ Once a day, or as required, residents will transfer all refuse material to the refuse enclosure.
- ▶ CoT contractors will be responsible for collecting the bins directly from the enclosure and return them once serviced.
- ▶ Bins will be transferred approximately 5m to the loading area along a generally flat grade.

The transfer requirements are detailed in **Appendix D**.

5.4 Servicing Arrangements

The proposed servicing provisions are as follows:

- ▶ Servicing will be conducted on-site by CoT via a rear-loading RCV.
- ▶ The RCV will enter and exit the site in a forward via Francis Street and perform a single reversing movement on-site.
- ▶ The RCV will stand on-site in an informal loading area within the driveway, which has dimensions of 6.6m (W) x 12.5m (L). Servicing will not have any overhead obstruction and will be conducted on a generally flat grade.
- ▶ The refuse enclosure is located within 5m from the servicing area, with contractors to directly collect bins and return them once serviced.
- ▶ Access and manoeuvring is shown in the Traffic Engineering Report prepared by Modus.
- ▶ General waste and recycling will be serviced with a maximum collection frequency of once per week. All collections will be coordinated and managed onsite by the building management.

The recommended servicing requirements are detailed in **Appendix D**.

5.5 Operational Management

The operational management and procedures can vary based on the operation of the development and each dwelling.

Appendix E details the minimum recommended arrangements for roles and responsibilities, maintenance and cleaning, training and education, safety, signage and monitoring and review. A blank table is also provided, to be completed by the appropriate personnel as required.

6 Refuse Minimisation

Refuse minimisation is an important part of any site operation and ensuring that diversion from landfill is minimised, to achieve the desired target rates as outlined in the QLD sustainability requirements.

To determine the feasibility of collection volumes and assist with achieving desired landfill diversion targets, it is recommended that a baseline audit is undertaken at various stages of building occupancy (i.e. at a minimum of 50% and 80% dwelling occupancy or 0-1 month, 1-3 months, 3-6 months, 6-12 months and yearly thereafter) by an external contractor.

Based on the outcome of the audit, a management plan can be developed and implemented for continual improvement of the operational performance of the site and assist with implementation of waste minimisation strategies.

6.1 Equipment

Refuse minimisation is an important part of any site operation. Minimisation systems are summarised in Table 6-1 and are presented as options only. To assess the feasibility, further investigation is required by the developer at the concept stage and/or building management at the operational stage. Additional refuse management equipment is detailed in Table 6-2. The equipment suppliers are further outlined in **Appendix F**.

Table 6-1 Refuse Minimisation Equipment

Type	Streams	Comments
Composter / digester	Food Waste	Compost bins / digestors can process compostable material and garden organics on-site. This reduces the volume of waste to landfill and converts organic materials into soil or mulch through natural decomposition. A variety of compost bin arrangements and systems are commercially available for use.
Waste Conversion	General waste	Converting waste by reducing its volume and weight means less material to be disposed of, which results in fewer RCV trips. This allows cost savings and reduces environmental impacts. An example of waste conversion is an OMPECO system, which converts waste into a sterilised, dehydrated material. The final product reduces up to 80% less volume and 50% less weight than the original waste material and can be used in waste to energy systems as it is reasonably dry with a high calorific value. The process involves crushing / grinding of the material and is heated to approximately 100°C, evaporating moisture from the material.
Compaction	General waste, cardboard, plastics	Various compaction equipment exists for reducing the volume of refuse and ultimately less bins and/or fewer collections / service vehicle trips are required, to reduce costs and environmental impact. Examples of typical waste compaction equipment include bin press equipment and public place litter bins with a built-in compaction mechanism.
Container deposit schemes	Eligible plastic / glass / aluminium bottles	Container deposit / refund schemes are currently in place in QLD. This includes bottle return facilities and (automated) reverse vending machines. Tenants, staff and cleaners should be encouraged to separate containers that qualify for the schemes from the waste or recycling streams, and return them to a designated return points. Dedicated storage space or bins should be provided within tenancies or communal areas.

Table 6-2 Refuse Management Equipment

Type	Streams	Comments
Refuse Trolley	General waste, recycling, food waste, paper / cardboard	Safety and mobility disposal can be assisted by trolleys for everyday use. Multi-purpose bin trolleys are used to transport bulky and awkward loads and are used widely in hospitals, laundries, manufacturing and warehouses.

6.2 Signage

Waste signage guidelines are provided by local and state government. Various signage for the refuse areas including safety and facility signage should be arranged through appropriate providers. Example signage for the site including refuse room and equipment, and safety signage is demonstrated in **Appendix G**.

7 Summary

Modus has been commissioned by QCWS to provide waste engineering advice in relation to a proposed Residential development located at 177 Francis Street, West End. Modus has the following findings:

Refuse Equipment

- ▶ 2 x 1100L bulk bins for general waste.
- ▶ 2 x 1100L bulk bins for commingle recycling.

Refuse Disposal

- ▶ Each dwelling will be provided with receptacles for storage of daily refuse volumes.
- ▶ Once a day, or as required, residents will dispose of all refuse material directly to the refuse enclosure.

Refuse Storage

- ▶ The refuse enclosure can accommodate all required bins (4 x 1100L bins) for storage and collection.
- ▶ Bin wash facilities will be provided within the refuse enclosure.

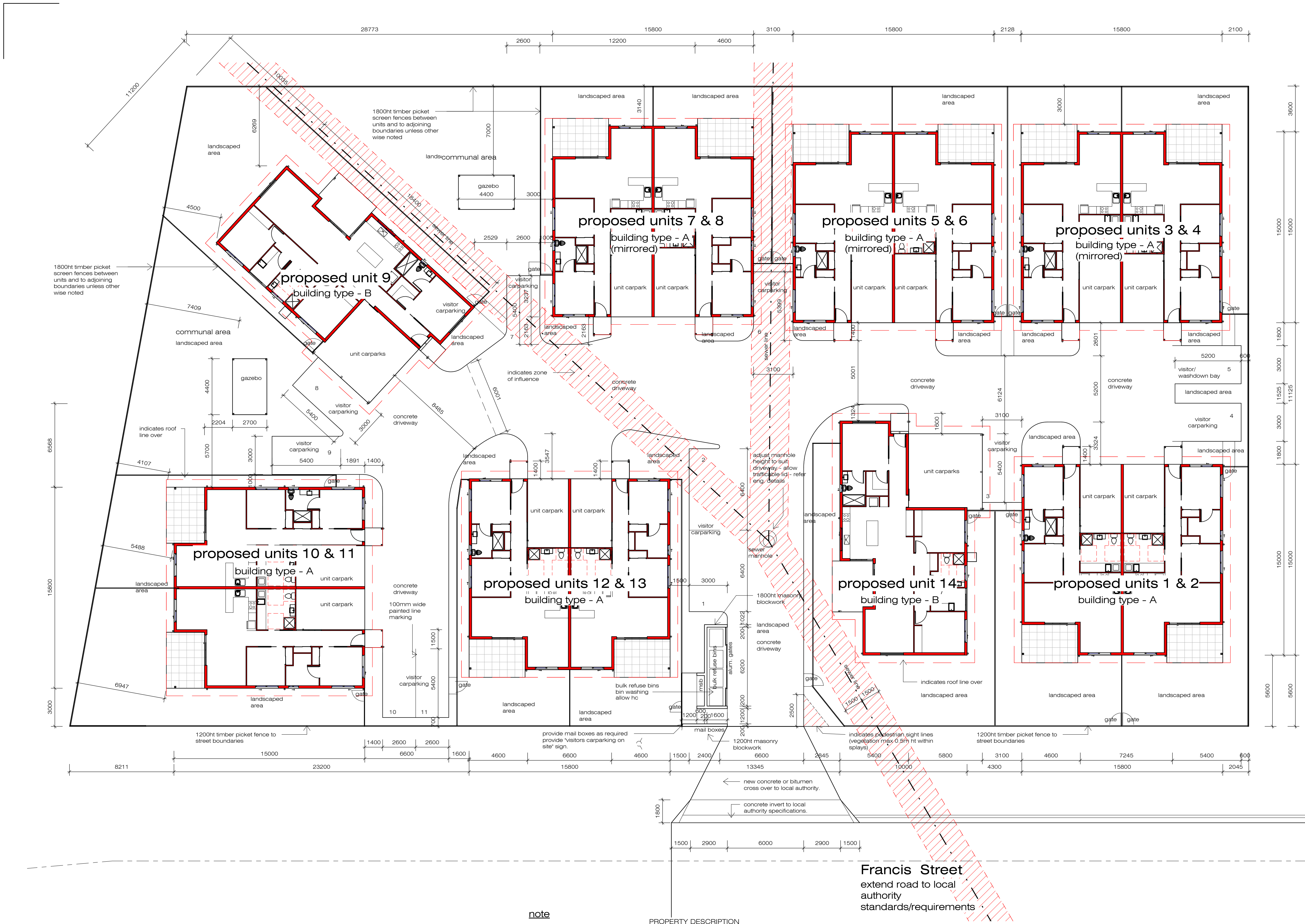
Refuse Transfer

- ▶ Once a day, or as required, residents will transfer all refuse material to the refuse enclosure.
- ▶ CoT contractors will be responsible for collecting the bins directly from the enclosure and return them once serviced.
- ▶ Bins will be transferred approximately 5m to the loading area along a generally flat grade.

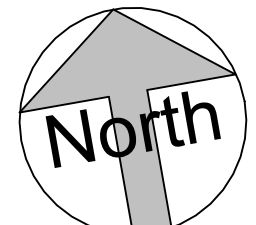
Refuse Servicing

- ▶ Servicing will be conducted on-site by CoT via a rear-loading RCV.
- ▶ The RCV will enter and exit the site in a forward via Francis Street and stand on-site in an informal loading area within the driveway.
- ▶ Servicing will not have any overhead obstruction and will be conducted on a generally flat grade.
- ▶ The refuse enclosure is located within 5m from the servicing area, with contractors to directly collect bins and return them once serviced.
- ▶ General waste and recycling will be serviced with a collection frequency of once per week.

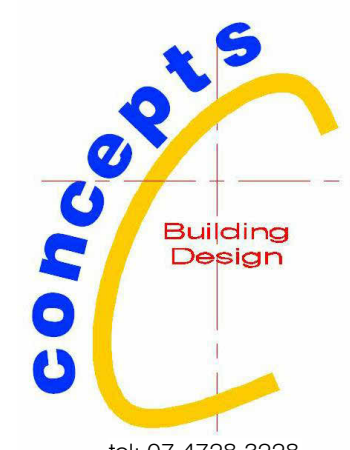
APPENDIX A - Development Plans



NOTES:		
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* VERIFY ALL ON SITE DIMENSIONS & LEVELS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION		
Revision Schedule		
No	Description	Date



Preliminary
not to be used for construction purposes



tel: 07 4728 3228

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project:
Proposed Multiple Dwellings

for:
Kaenetto Investments P/L

at:
177-179 Francis Street
Westend

Issue Date	dec 2025	25-051
Drawn	Author	
scale	As indicated	
sheet	sk 02	printed 25/02/2026 7:45:59 PM

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note

1. provide hard standing area for bulk refuse or wheeler bins provide hose cock & hose
2. a/c condensers are to be located below fence lines and not located on the frontage of the buildings or on balconies and must not be visible from the street frontage or from adjoining properties.
3. refer engineers details for all civil & storm water details
4. landscaping - refer landscape consultant plans for details

PROPERTY DESCRIPTION

LOT No: Lot 1,2,3,&4
PLAN No: RP 711746
SITE AREA: 4433M2

Parking Schedule		
Levels	unit parking	Visitor parking
Ground Floor	16	11
Sub-total	16	11
Total parks provided	27	

1 site plan
1 : 150

Francis Street
extend road to local
authority
standards/requirements

Gross Area Schedule				
number	Count	Name	Area	percentage
building				
1	1	units 1 & 2	215.19 m²	5%
2	1	units 3 & 4	215.88 m²	5%
3	1	units 5 & 6	215.88 m²	5%
4	1	units 7 & 8	215.88 m²	5%
5	1	units 9	169.03 m²	4%
6	1	units 10 & 11	215.88 m²	5%
46	1	units 12 & 13	215.88 m²	5%
47	1	units 14	169.00 m²	4%
building: 8	8		1632.61 m²	37%
driveway/parking				
7	1	driveway/visitor parking	945.30 m²	21%
51	1	refuse/msb	21.96 m²	0%
driveway/parking: 2	2		967.26 m²	22%
landscape				
48	1	gazebo	11.88 m²	0%
49	1	gazebo	11.88 m²	0%
13	1	landscaping	13.20 m²	0%
16	1	landscaping	11.99 m²	0%
17	1	landscaping	179.83 m²	4%
24	1	landscaping	174.03 m²	4%

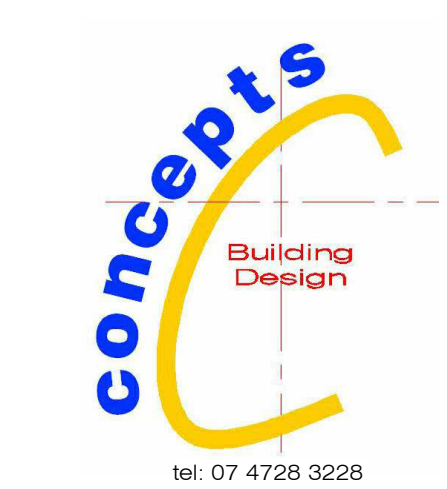
Gross Area Schedule				
number	Count	Name	Area	percentage
25	1	landscaping	134.45 m²	3%
26	1	landscaping	106.58 m²	2%
27	1	landscaping	66.96 m²	2%
28	1	landscaping	270.88 m²	6%
29	1	landscaping	165.95 m²	4%
30	1	landscaping	172.28 m²	4%
31	1	landscaping	6.41 m²	0%
32	1	landscaping	4.36 m²	0%
33	1	landscaping	13.04 m²	0%
34	1	landscaping	12.48 m²	0%
35	1	landscaping	13.20 m²	0%
36	1	landscaping	13.20 m²	0%
37	1	landscaping	13.20 m²	0%
38	1	landscaping	13.20 m²	0%
39	1	landscaping	12.48 m²	0%
40	1	landscaping	13.20 m²	0%
41	1	landscaping	13.20 m²	0%
42	1	landscaping	13.20 m²	0%
43	1	landscaping	13.20 m²	0%
44	1	landscaping	13.20 m²	0%
45	1	landscaping	13.20 m²	0%
50	1	landscaping	239.09 m²	5%
52	1	landscaping	91.76 m²	2%
landscape: 29	29		1831.54 m²	41%
Grand total: 39	39		4431.41 m²	100%



NOTES:		
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Revision Schedule		
No	Description	Date
1		



Preliminary
not to be used for construction purposes



project:
Proposed Multiple Dwellings

for:
Kaenetto Investments P/L

at:
177-179 Francis Street
Westend

Issue Date	dec 2025	25-051
Drawn	Author	
scale	1 : 150	
sheet	sk 03	printed 25/02/2026 7:45:59 PM

sheet size = A1

APPENDIX B – Proposed Refuse Streams

Stream		Description
Frequently Generated		
General Waste	General Waste, Food Waste	General waste items are non-recyclable and can be putrescible (organic matter which can break down) or non-putrescible (non-organic matter which cannot break down).
Commingled Recycling	Semi-rigid plastics, glass, aluminium, steel / tin cans, glass, cardboard, paper	Commingled recycling includes everyday items that are collected and later processed for recycling into new products and resources. Recycling separation diverts waste to landfill.
Infrequently Generated		
Green Waste	Landscaping, trees, potted plants	This development does not generally produce green waste (other than landscaping). Maintenance contractors are typically engaged to remove material and should be directed to send to a resource recovery / composting facility to avoid landfill.
Hard Waste / Bulky Goods	Furniture, white goods, appliances	Storage and collection should be coordinated with building management or designated staff. Where available, space can be provided in the refuse room or within a designated area. When transferring heavy material, it is recommended to utilise mechanical assistance or multiple personnel. Please refer to local and QLD government websites for further information.
Hazardous Waste	Paints, fluorescent globes, mobiles, batteries and cartridges Electronic Waste (computers, printers, TV's)	Storage and collection should be coordinated with building management or designated staff, and handled with care. Space should be provided in a secure and separate area. Refer to local and state government websites for further information.

APPENDIX C – Refuse Enclosure Design Requirements

Component	General Requirement
Refuse Room / Storage point	▶ Allow the bins to be serviced in-situ or easily transported to a separate servicing point (no steps or lips on bin-carting route). ▶ Waste-carting distance generally should not exceed 60m and in any case be reasonable to ensure ease of use. ▶ Generally positioned away from entrances to shops or residential premises and located at least 5m from any door, window or fresh air intake within the development (habitable rooms) or any adjoining site (excluding the storage of wheelie bins at each individual dwelling), particularly food preparation areas (including food storage). ▶ Screened to ensure bins are not visible from a public place or sensitive land use. ▶ Safe access to the disposal area. ▶ Of sufficient size to accommodate the required number of bins. Allowance is to be made for a minimum of 0.1m clearance surrounding each container, or for the storage of multiple bins – one metre clearance around the combined bin area (whichever is the lesser). ▶ Provide adequate storage and unobstructed access for all users to safely and easily access via the provision of suitably located bulk bins or wheelie bins. ▶ The floors, walls and ceilings of waste and recycling storage areas and chute room(s) are to be finished with a rigid, smooth-faced impermeable material capable of being easily cleaned. ▶ Is enclosed on all sides except for the gated entrance to ensure bins are not visible from a public place, neighbouring properties, passing vehicles or pedestrian traffic external to the site. A close-fitting and self-closing door or gate operable from within the room is to be fitted to all waste and recycling storage areas. ▶ Doors/gates to the waste and recycling storage rooms are to provide a minimum clearance width of 1.3m. At least one door or gate to the waste and recycling storage area is to have sufficient dimensions to allow the entry and exit of waste containers of a capacity nominated for the development. ▶ The height of the bin storage area to be a minimum of 2.1m in accordance with the National Construction Code and Building Code of Australia, to allow for waste bins to be opened and closed. ▶ Lightweight roller shutter-type doors or grilles should be considered for access to waste and recycling storage areas, as these do not impact on the available storage space. If these types of doors or grilles are used, the requirement for a close-fitting and self-closing door remains, so that waste collectors can access the waste and recycling storage area other than through the roller door or grille. Where required, the refuse room is to be fire rated in accordance with the National Construction Code and Building Code of Australia. ▶ The design shall restrict the entry of trespassers, vermin or other animals into the area. ▶ The waste and recycling storage area is to be provided with an adequate supply of water for cleaning purposes with a hose cock. ▶ The storage area is to be adequately ventilated by either: i. Natural ventilation openings to external air. The dimension of the openings are not to be less than 5% of the bin bay or bin room floor area.

	ii. A mechanical exhaust ventilation system in accordance with relevant Australian standards. ▶ Waste and recycling areas are to be provided with artificial light controlled by switches located both outside and inside the storage area. ▶ Any compactors or mechanical devices, if permitted for the mechanical handling and storage of waste and recycling, are to be fitted with safety operating and cut-off systems. ▶ Any facet of the waste and recycling management system that is visible from outside the building is to be in keeping with the dominant design of the remainder of the development.
Bin wash-down facility	▶ Constructed hardstand area with a solid concrete base or acceptable equivalent. ▶ Roofed and designed to prevent entry to rainwater. ▶ The floors are graded to fall to a drainage point. The floor is to be provided with a ramp to the doorway where necessary. ▶ Drainage point connected to sewer in accordance with trade waste requirements. ▶ Provided with a hosecock for cleaning. ▶ Not be located within a building structure, unless it is: i. in a purpose-built storage area which is air locked, fly and vermin proofed, and used solely for the storage of waste; ii. in a well-ventilated portion of the basement and not within 30m of an opening to a food premises or food handling area; or iii. demonstrated that no / minimal putrescible / organic waste is generated by the proposed development type.

APPENDIX D - Servicing Requirements

Component	General Requirement
Bin servicing point	▶ Is of sufficient size to accommodate the bins. ▶ Sufficient access and clearance for the collection vehicles to service the bins, including adequate unobstructed overhead space for the swinging arm action of the collection vehicle. ▶ Bins serviced safely while minimising the impediment of traffic flow during servicing. ▶ Separated from car parking bays, loading bays, footpaths and pedestrian access, and any other similar areas. ▶ Clear of speed control devices or similar provisions (including entry and exit to the site) which inhibit direct access to the bins for servicing. ▶ Must be positioned to allow collection vehicles to enter and exit the site in a forward gear (internal servicing roadway). ▶ Positioned on a level pad devoid of stairs, lips or ramps and allows bins to be manoeuvred easily. ▶ Over 5m from any door, window or fresh air intake within the development (habitable rooms) or any adjoining site (excluding the storage of wheelie bins at each individual dwelling), particularly food preparation areas (including food storage). ▶ Bins to be removed from and returned to the storage point. ▶ Constructed hardstand with a solid concrete base or acceptable equivalent. ▶ Screened to minimise the view of bins from neighbouring properties, or passing vehicles and pedestrian traffic external to the site. ▶ Positioned away from entrances to shops or residential premises.
Bin carting	▶ The route must be via hard stand pathways / internal roads, and can be easily moved to the temporary storage area, and is not stored on a section of the driveway that falls away (e.g. to the basement). The route must occur within the property boundary. ▶ The route must allow bins to be easily manoeuvred and be devoid of steps or steep rises. ▶ The route must not impede traffic flow and extend through habitable parts of a building, or a food premises, and only occur through common property or publicly accessible locations.

APPENDIX E – Operational Management

Process	Procedure
Roles and Responsibilities	Responsibilities have to be assigned for all on-going refuse management operations. This is generally completed by a building manager, staff and / or cleaners. The on-going responsibilities help managing responsibilities and monitor the refuse operations in order to maintain efficient services and a safe environment. These include and are not limited to the following: ▶ Scheduling / organising refuse collections ▶ Transferring bins to and from the refuse area ▶ Washing bins ▶ Ensuring users / occupants are informed of all waste, recycling, organics and bulky waste arrangements ▶ Coordination of contractors, including specialised equipment and cleaning ▶ Monitoring and reviewing all waste management procedures
Maintenance and Cleaning	Regular on-going maintenance and cleaning is required to maintain a clean and hygienic environment for all users, including management / staff, visitors and contractors. This includes, and is not limited to the following: ▶ Refuse storage areas ▶ Refuse transfer areas ▶ Refuse equipment
Training and Education	Training and education is required to ensure operational efficiency and sustainability of the equipment and facilities within the development. Training and on-going education should be conditioned within all body corporate and leasing contracts. It is recommended that building management circulate ongoing recycling rate results to highlight current rate and performance against benchmarked recycling rate target.
Safety	Safety is an important part of all refuse management operations and is the responsibility of all users. A full risk assessment should be conducted by building management and all contractors. Contractors must provide required documentation to appropriate personnel prior to development occupancy and delivery of equipment.
Signage	All receptacles, bins and other refuse management equipment must have adequate signage. Standard signage will be provided in and around waste collection / storage areas and will be colour coded in accordance with AS 4123.7-2006 mobile waste containers and all local government regulations. Signage should be included, and not limited to the following: ▶ Refuse storage and collections areas ▶ Refuse transfer areas ▶ Refuse disposal points ▶ Refuse equipment All signage should be clear, legible and easy to read.
Monitoring and Review	Regular monitoring and reviews will ensure operational efficiency and sustainability of the refuse management arrangements for the development. This includes, and is not limited to the following: ▶ Refuse equipment ▶ Refuse area ▶ Refuse volumes, including diversion rates and targets to meet the required sustainability targets ▶ Service frequency and site operations / methodologies It is recommended that waste auditing / reviews are conducted a minimum of at least once every 12 months. Audits may be undertaken by external contractor or internally by visual inspection during on-site waste management handling activities. Additionally, refuse weights and movements should be noted to assist with economic feasibility.

A blank operational checklist is provided below to be appropriately filled out as required by building management / staff. This table has been designed to maintain efficient services and a safe environment and help manage responsibilities / monitor the refuse operations.

[illegible]

APPENDIX F – Equipment / Systems Manufacturers and Suppliers

Manufacturer / Supplier	Equipment / Systems
Elephants Foot Recycling Solutions http://www.elephantsfoot.com.au	Compactors Bin Lifters
Waste Initiatives https://wasteinitiatives.com.au	Compactors and Balers, Shredders, Sorting Equipment
Wastech http://wastech.com.au	Compactors, Bin Lifters
Pakmor http://pakmor.com.au	Compactors, Bin Lifters
Miltek http://www.miltek.com.au	Compactors
Closed Loop Organics https://closedloop.com.au/upcycling-products	Composting
Materials Handling https://www.materialshandling.com.au	Bin Lifters, Spill containment, Bins, Bin Cleaning
Spacepac Solutions http://www.spacepac.com.au	Bin tugs / trailers, trolleys / assisted transfer equipment
Draffin https://draffin.com.au	Bin lifters
Electrodrive / Lift Master http://www.electrodrive.com.au	Bin tugs / trailers, bin lifters
Absorbenviro http://www.absorbenviro.com.au	Spill containment equipment
Trade Environmental http://www.tradeenviro.com.au	Spill containment equipment
Spillstationaustralia www.spillstation.com.au	Spill containment equipment
Compost Revolution https://compostrevolution.com.au	Composting
Urban Composter https://www.urbancomposter.com.au	Composting
ORCA Digester https://www.feedtheorca.com	Composting
Rubbermaid https://rubbermaidcommercial.com.au/products/waste-management	trolleys / assisted transfer equipment, spill containment, bins
Sulo http://www.sulo.com.au	trolleys / assisted transfer equipment, bins, composting
Australian Waste Management https://www.australianwastemanagement.com.au/products	Bin lifters, bins
ReturnIT https://www.returnit.com.au/qld/	Various models exist including bottle return facilities and (automated) reverse vending machines

Contractors / Service Providers	Streams
JJ Richards	Commercial waste & recycling, Cooking oils, hazardous waste, liquid waste, industrial waste, construction and demolition waste
Cleanaway	Commercial waste & recycling, Cooking oils, hazardous waste, construction and demolition waste
Veolia	Commercial waste & recycling, Hazardous waste, liquid waste, industrial waste, construction and demolition waste, secure document destruction
Suez	Commercial waste & recycling, Liquid waste, electronic waste, construction and demolition waste
Toxfree	Hazardous waste, electronic waste, industrial waste
Ace Waste	Hazardous waste, industrial waste

APPENDIX G – Example Signage

Standard Signage



Refuse Room / Facility Signage



Safety Signage



Refuse Equipment

