Waste Management

3A & 3B Smalls Road Ryde - Public School

Conrad Gargett Ancher Mortlock Woolley

About TTM

For 30 years, we've been at the centre of the Australian development and infrastructure industry. Our unique combination of acoustics, data, traffic and waste services is fundamental to the success of any architectural or development project.

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Acoustics Data Traffic Waste

Revision Record

No.	Author	Reviewed/Approved	Description	Date
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Glossary

In this waste management plan unless the subject matter otherwise indicates, a term has the following meaning:

TERM	DEFINITION
Baler	A device that compresses waste into a mould to form bales which may be self-supporting or retained in shape by wire ties and strapping.
Bin Storage Area	An enclosed area designated for storing on-site refuse bins or a refuse compactor within the property.
Bulk Bin	A galvanised or steel bin receptacle that is greater than 360L in capacity generally ranging from 1.0m³ to 4.50m³ used for the storage of refuse that is used for on-site refuse collection.
Bulk MGB	A plastic (polypropylene) receptacle that is greater than 360L in capacity generally ranging from 0.66m³ to 1.10m³ used for the storage of refuse that is used for on-site refuse collection.
Collection Point	The identified position where refuse bins are storage for collection and emptying. the collection point could be the bin storage area for bulk bins.
Composter	A container/machine used for composting specific food scraps.
Green Waste	All vegetated organic material such as small branches leaves and grass clippings, tree and shrub pruning, plants and flowers.
Hopper	A fitting into which waste is placed and from which it passes into a chute or directly into a waste container. It consists of a fixed frame and hood unit (the frame) and a hinged or pivoted combined door and receiving unit.
L	Litre(s)
Liquid Waste	Non-hazardous liquid waste generated by commercial premises that is supposed to be connected to sewer or collected for treatment and disposal by a liquid waste contractor (including grease trap waste).
Mobile Garbage Bins	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	The component of the waste stream liable to become putrid. Usually breaks down in a landfill to create landfill gases and leachate. Typically applies to food, animal and organic products.
Recycling	All material suitable re-manufacture or re-use; Glass bottles and jars – PET, HDPE and PVC plastics; aluminum aerosol and steel cans; milk and juice cartons; soft drink, milk and shampoo containers; paper, cardboard, junk mail, newspapers and magazines.
Refuse	Material generated and discarded from residential and commercial buildings including general waste, recyclables, green waste and bulky items.
Refuse Bin	A receptacle (mobile garbage (wheelie) bin, bulk MGB or bulk bin) used for the storage of refuse.
Refuse Collection Vehicle (RCV)	A vehicle that is specifically designed for collecting and emptying refuse bins and refuse compactors.
Refuse Storage Room	An area identified for storing on-site mobile garbage bins or bulk bins within the property.
Regulated Waste	Waste generated from non-domestic sources.
Waste General	Refuse material with the exclusion of recycling, green waste, hazardous waste special waste, liquid waste and restricted solid waste.

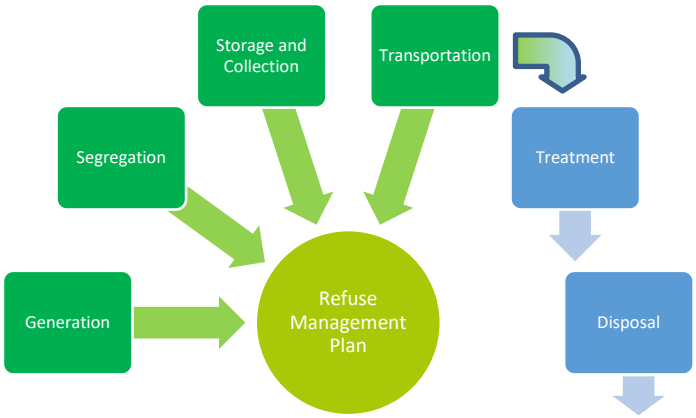
1. Introduction

1.1. Background

TTM Consulting has been engaged by Conrad Gargett Ancher Mortlock Woolley to prepare a refuse management plan to support the proposed school development at 3A & 3B Smalls Road, Ryde. The assessment and associated recommendations include:

- identification of refuse streams produced within the development
- estimated volumes generated
- appropriate segregation methods for each refuse stream
- internal systems and equipment requirements
- refuse storage, collection and loading facilities design
- refuse collection vehicle (RCV) access and manoeuvrability
- operational and safety requirements
- pollution prevention
- waste minimisation

Refuse Life Cycle



Information contained within the report is based on local government authority requirements related to the City of Ryde Council and the associated waste services department. The recommendations provided are designed to comply with Council's Development Control Plan 2014- *Part: 7.2 Waste Minimisation and Management.*

1.2. Site Location

The site is located at 3A & 3B Smalls Road, Ryde, as shown in Figure 1.1. The site has a road frontage to Smalls Road. The site is currently operating as an educational facility.

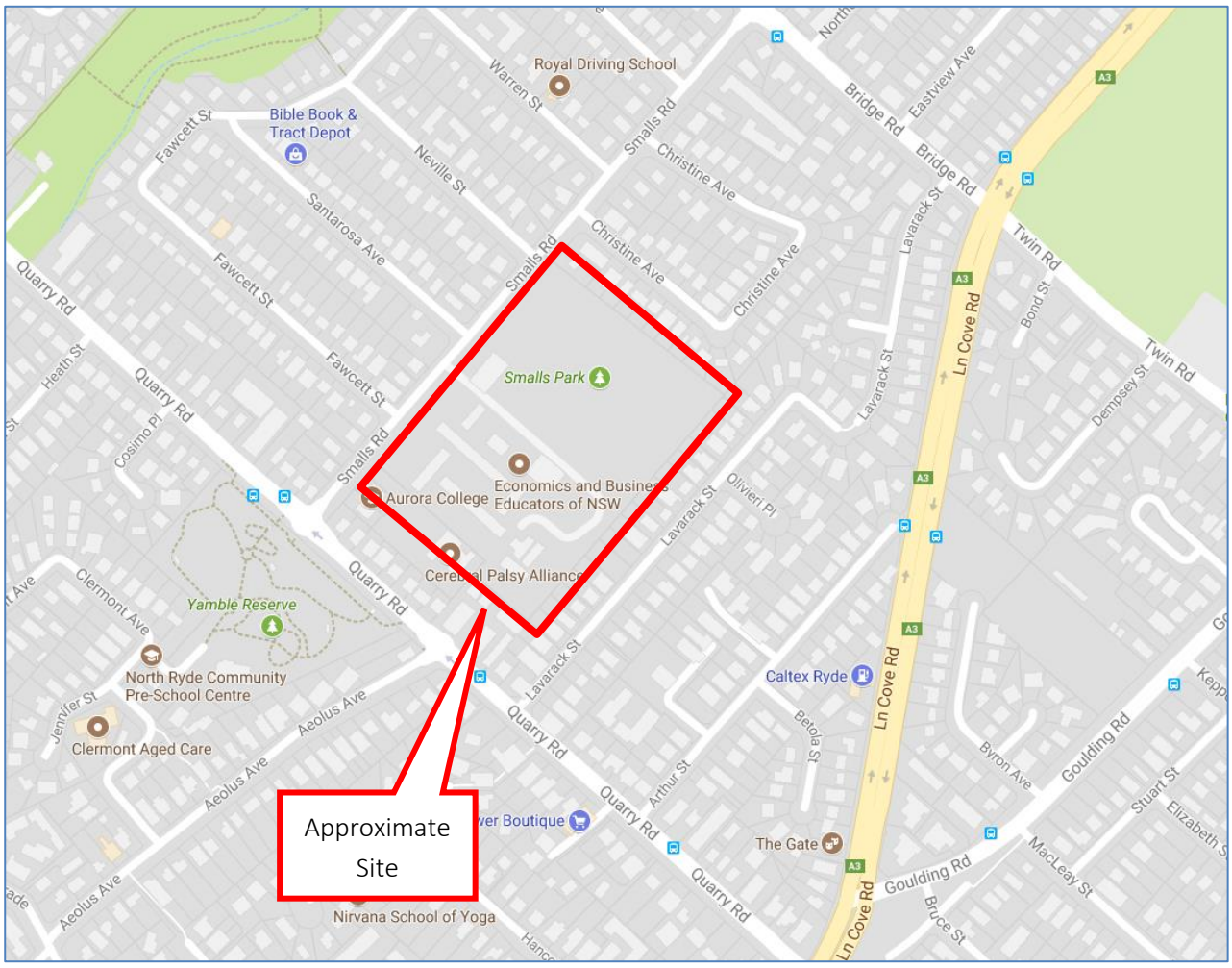


Figure 1.1: Site location

1.3. Development Refuse Profile

The development consists of an educational facility (school) including admin, classrooms, library and canteen area. The table below summarises the development refuse profile.

Table 1.1: Refuse Summary

Description	GFA (m^2)	Generated Waste (L/week)	Generated Recycling (L/week)
Admin	240	240	240
Staff	170	85	85
Student Amenities	239	120	120
Canteen	103	773	773
Storage	61	31	31
Home Base	3,800	3,800	3,800
Sped Unit	384	384	384
Assembly Hall	438	219	219
Special Programs	152	152	152
Library	370	185	185
Total	**5,957**	**5,988**	**5,988**

Detailed calculations and equipment requirements are based on the unit schedules and associated waste generation rates as outlined in the detailed information in Appendix A.1. Site drawings can be found in Appendix A.2 and Appendix A.3.

2. Refuse Management

The site waste streams may consist of the following:

- General waste
- Recycling (glass, aluminium, paper/cardboard)
- Green waste
- Hard waste/ bulky goods
- Organic waste
- Hazardous/e-waste

Waste should be collected in a dedicated receptacle within the allotted space and bagged or wrapped prior to disposal. Operationally, general waste should be bagged, weigh approximately 3kg or less and not exceed the dimensions of the receptacles.

Recycling must not be bagged and should be collected in a dedicated receptacle to ensure separation from the waste material.

Green waste is typically removed by a designated maintenance contractor.

The development has several storage spaces on the ground floor for utilisation of storage and collection of hard waste/ bulky goods. Unless otherwise instructed by council, charitable organisations may be contacted by the waste caretaker/ cleaner as a mode for collections.

2.1. Refuse Disposal, Transfer and Storage Process

Each room will be supplied with adequate space for storage of one full day accumulation of refuse. Typically, schools utilise up to 60L bin receptacles. These waste and recycling bins are placed within close proximity to classroom doors, desk areas, eating and washrooms.

On completion of each day, or as required during the day, nominated staff or cleaners will transfer the waste and recycling into the appropriate bins in the refuse room (see Appendix A.2). All waste should be bagged and recycling deposited in the bins in loose form. Where applicable other materials such as cardboard and plastics should be separated.

2.2. Alternate Refuse Disposal

An alternate refuse disposal method, such as composting for organic waste, may be used to reduce the total amount of general waste produced. Composting should be arranged with the waste caretaker/ cleaner and further information can be found on Council's website.

2.3. Specialised Waste Disposal

The building manager will assist in the coordination of disposal or recycling of electronic, liquid waste and home detox (paint/chemicals) where required, due to safety and environmental reasons. waste caretaker/ cleaner should be directed to Council's website for more details for appropriate waste and disposal.

3. Refuse Collections

3.1. Refuse Vehicle Access and Loading

The site will have vehicle access to the site via Smalls Road. All refuse will be collected onsite by **a private contractor**. The vehicle will enter and exit the development in a forward gear and perform all manoeuvring onsite.

3.2. Collections

The collection area is contained with the ground floor refuse room located in the car park. The refuse room will be in close proximity to the vehicle parked position.

Refuse bin quantities have been based on collection cycles of two days per week for waste and two days per week for recycling. The waste care taker/ cleaners will consult with council to finalise service days and frequency prior to the time of occupancy.

Waste caretakers/ cleaners will liaise with and directly engage a private contractor for disposal of other waste streams such as green waste, oils and organics if required.

4. Recommended Operational Requirements

4.1. On-going Management

All refuse equipment movements are to be managed by the residents and building manager/caretaker or cleaners at all times. The resident and building manager/cleaner duties include, but are not limited to the following:

- organising, exchanging, maintaining and cleaning the refuse bins and associated refuse areas (frequency will depend on waste generation and will be determined based upon building operation)
- transporting and decanting (recycling) of bins as required
- organising both garbage and recycled waste pick-ups as required
- organising and coordinating bulky goods collections
- ensuring site safety for residents, children, visitors, staff and contractors
- abiding by all relevant OH&S legislation, regulations, and guidelines
- assessing any manual handling risks and preparing a manual handling control plan for waste and bin transfers
- providing to staff/contractors' equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities
- continual monitoring of equipment uses and scheduling to ensure best operational outcomes.

NOTE: 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.

4.2. Waste Minimisation

4.2.1. Education

On-going education and signage is important to ensure people continue to use the facilities as originally intended. Leasing arrangements should contain direction on expectations and waste management services.

4.2.2. Monitoring and Review

Regular monitoring and inspections of waste and related equipment and facilities from the development should be conducted by building management/designated staff for maintenance and sustainability, including but not limited to bin volumes, refuse storage areas and stormwater management.

Waste minimisation requires regular reviewing to ensure operational sustainability of refuse volumes and equipment and economic feasibility. It is recommended that refuse weights and movements are recorded

and reviewed. An external review is usually conducted 12 to 18 months after the implementation of the plan.

4.2.3. Signage

All receptacles and bins should have adequate signage and labelling, which is clear and easy to read. Standard signage should be provided in and around waste collection and storage areas (See Appendix D).

4.3. Safety

Note that transferring refuse bins is considered a hazardous manual task and therefore contractors must ensure 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 and occupancy of the development.

4.4. Operational Equipment Summary

Equipment required or suitable for use as part of the operational phase of the development is outlined in Table 4.1 below. It should be noted that all collection receptacles and bins should be branded with the appropriate stickers and the use of the Mobius loop or similar identifying recycling equipment.

Table 4.1: Operations Equipment

Component	Description	Quantity	Notes
School	Recycling Bins	3	1100L MGB's
	Waste Bins	3	
	Green Waste	Subject to final operational requirements	
	Organics- Receptacles for use in centralised composting / worm farm or electronic composting bins.	Supplied as and if required	

4.5. Controls

4.5.1. Refuse Room

Waste and recycling storage rooms must be designed and constructed in accordance with the following requirements:

- The waste and recycling storage room must be of adequate dimensions to comfortably accommodate the required number of waste and recycling bins.
- The layout of the waste and recycling storage room must allow easy unobstructed access to all bins (stacked bin arrangements are not acceptable) and allow the bins to be easily removed for servicing purposes.

- Where building occupants are required to take their waste to the waste and recycling storage room, the garbage bins should be located closest to the access door to minimise the risk of the recycling bins being contaminated.

Note: The Better Practice Guide for Waste Management in Multi-Unit Dwellings, DECC 2008 provides information on suitable bin layouts for communal storage areas in larger developments.

- The floor of the waste and recycling storage room must be constructed of concrete finished to a smooth even surface and coved at the intersections with the walls.
- Where garbage or putrescible waste is to be stored, the floor must be graded to a floor waste connected to the sewerage system. The floor waste must be fitted with an in-floor dry basket arrestor approved by Sydney Water Corporation.
- Where garbage or putrescible waste is to be stored, a tap with a hose connection must be provided in or adjacent to the waste and recycling storage area to facilitate cleaning.
- The walls of the waste and recycling storage room must be constructed of brickwork, concrete block work or similar solid material with the internal wall surfaces cement rendered to a smooth even surface.
- The ceiling of the waste and recycling storage room must be constructed of a rigid smooth faced non-absorbent material. The ceiling must be of a minimum height that enables access for cleaning and enables the lids of bins to be fully opened.
- The internal walls and ceiling of the waste and recycling storage room must be painted with a light coloured washable paint.
- The waste and recycling storage room must be provided with a close fitting self-closing door that is openable from inside the room without the use of a key.
- The doors of the waste and recycling storage room must be finished with a smooth faced impervious material that is capable of being easily cleaned.
- The waste and recycling storage room must be provided with permanent natural ventilation direct to the outside air or a system of mechanical exhaust ventilation.
- The waste and recycling storage room must be provided with artificial lighting controllable by switches outside and inside the room. Sensor lights may be used in this regard.
- Clear signage must be displayed in the waste and recycling storage room describing how to use the waste facilities correctly.

4.5.2. Storm Water Prevention and Litter Reduction

Designated personnel/ cleaners are responsible for on-site storm water pollution and litter reduction. To limit the impact on the environment and site, the following measures should be considered:

- providing adequate signage to promote litter control

- providing sufficient refuse bins in appropriate areas
- preventing unauthorised entry to waste areas
- monitoring waste and prevent waste overflow
- promoting best practices for waste minimisation
- installing litter traps in car parks for any unwanted discharge

4.5.3. Ventilation

Natural (unobstructed, permanent openings direct to external air no less than one-twentieth (1/20) of floor area) or mechanical ventilation (minimum rate of 100 L/s and 5L/m^2 exhausting rate) must be provided to waste storage areas unless refrigerated below four degrees Celsius.

Appendix A Detailed Information

A.1 – Refuse Calculations

The generation rates used for the calculation of refuse produced uses rates recommended by Council's Waste Management Guidelines.

Waste and recycling volumes indicated do not include compaction.

It should be noted that all classrooms and staff areas generally operate as an office type set up. Any refuse associated with eating areas are accounted for in the office generation rate and the canteen is based on a takeaway generation rate. All calculations are based on a five day per week operation.

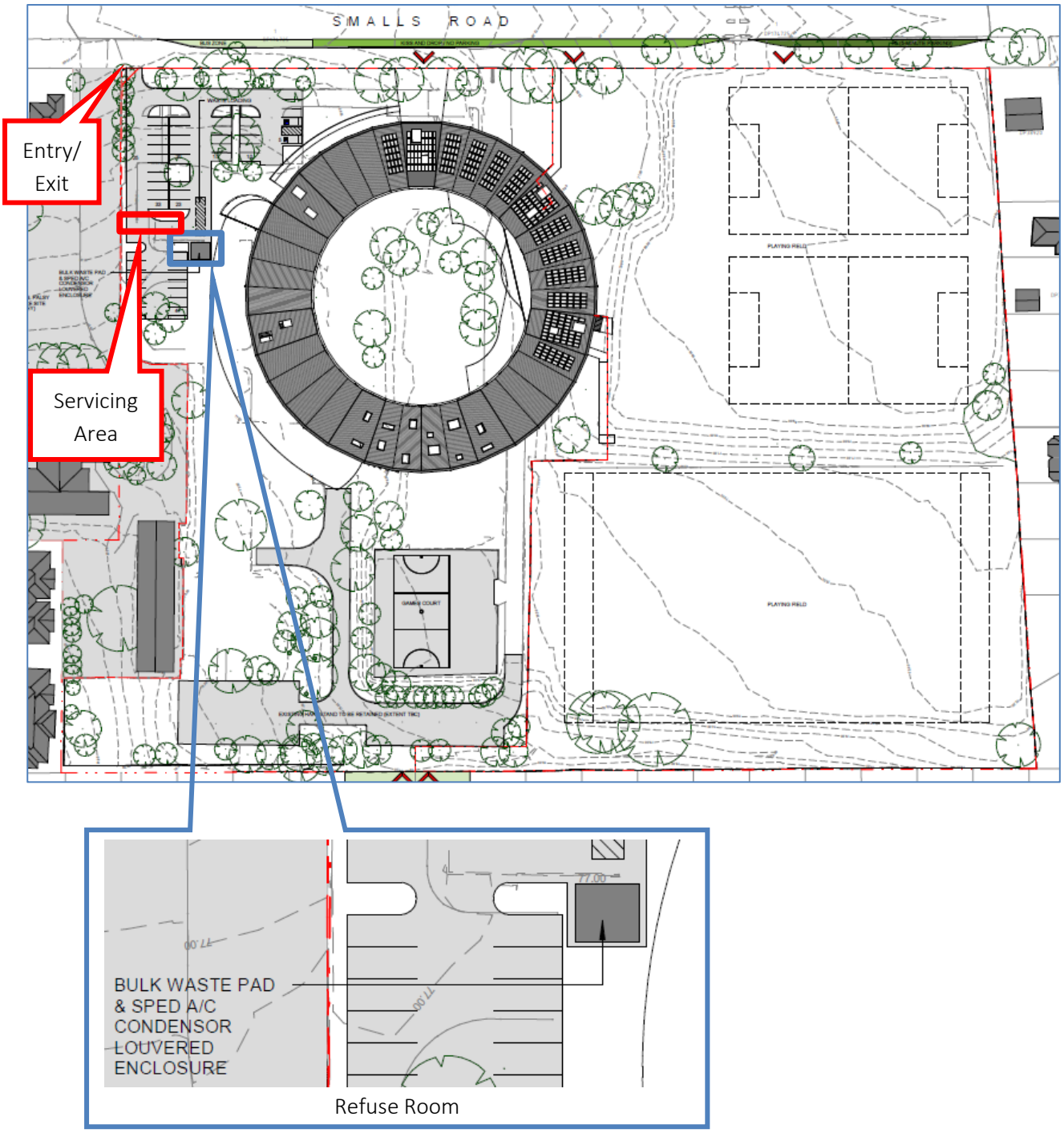
Table A.1: Commercial Generation Rates

Unit Type	Waste	Recycling
Admin/ Classrooms (home base, sped unit, special programs)	20 Litres / 100m^2 / day	20 Litres / 100m^2 / day
Staff/amenities/storage/assembly/library	10 Litres / 100m^2 / day	10 Litres / 100m^2 / day
Takeaway (Canteen)	150 Litres / 100m^2 / day	150 Litres / 100m^2 / day

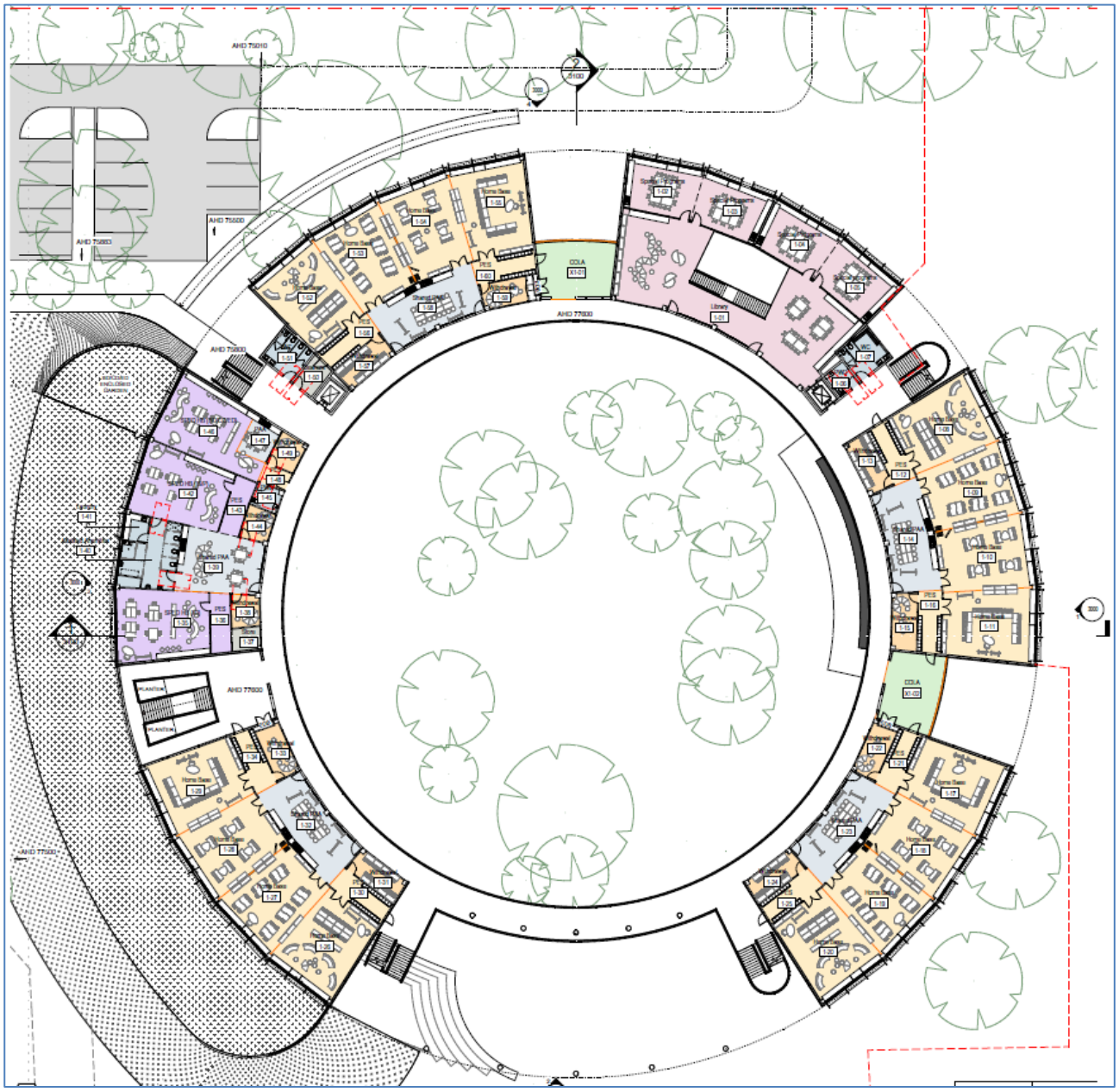
Table A.2: Commercial Apartment Calculations

Description	GFA (m^2)	Generated Waste (L/week)	Generated Recycling (L/week)
Admin	240	240	240
Staff	170	85	85
Student Amenities	239	120	120
Canteen	103	773	773
Storage	61	31	31
Home Base	3,800	3,800	3,800
Sped Unit	384	384	384
Assembly Hall	438	219	219
Special Programs	152	152	152
Library	370	185	185
TOTAL	**5,957**	**5,988**	**5,988**
Refuse/ day		**856**	**856**
Collections and Equipment	**Bin Size (L)**	1100	1100
	Collections per Week	**2**	**2**
	No Bins Required	**3**	**3**
	Raw Bin Area	10.2 m^2	
	Refuse Room	22.6 m^2	

A.2 – Ground Floor Plan

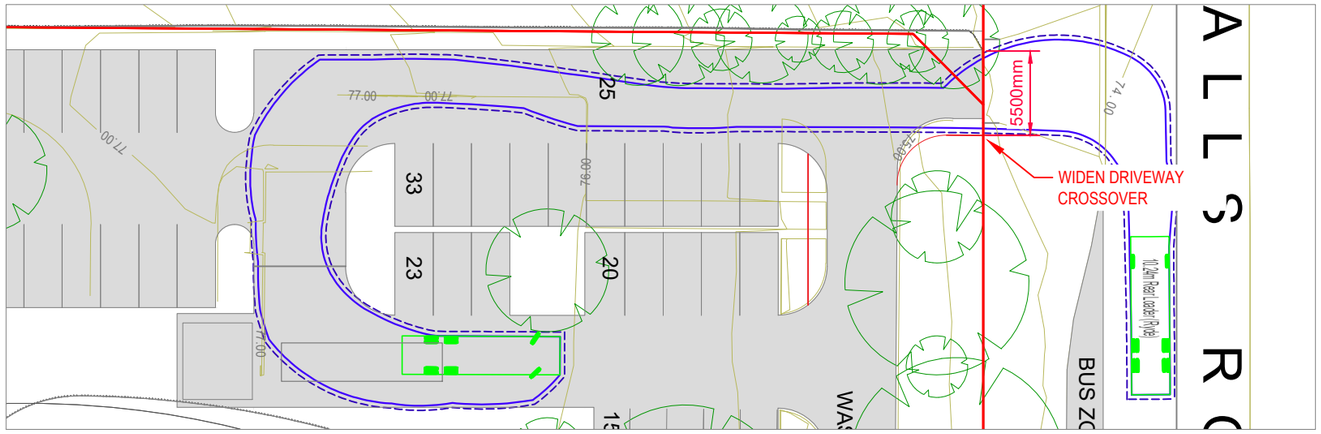


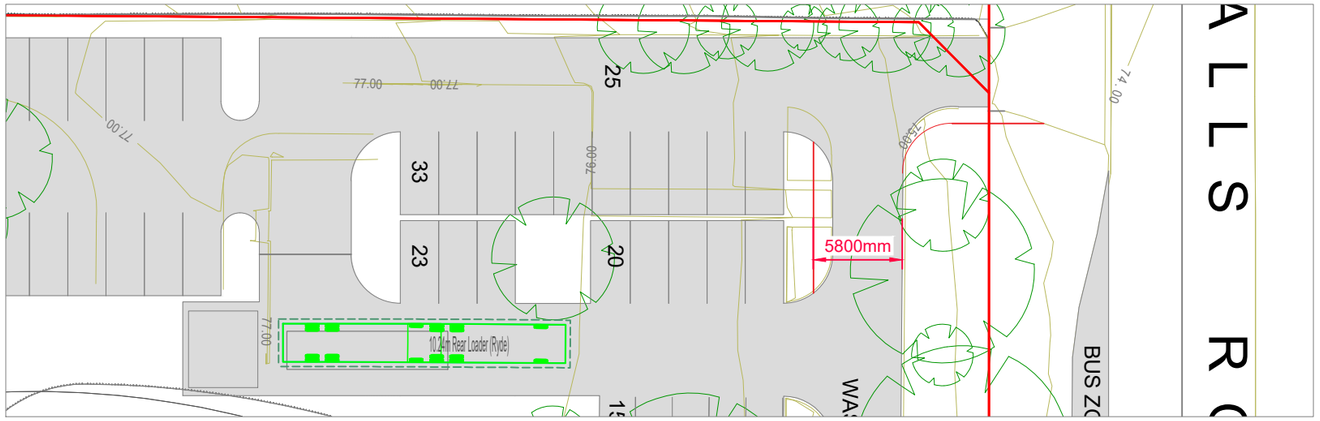
A.3 – Level 1 Floor Plan

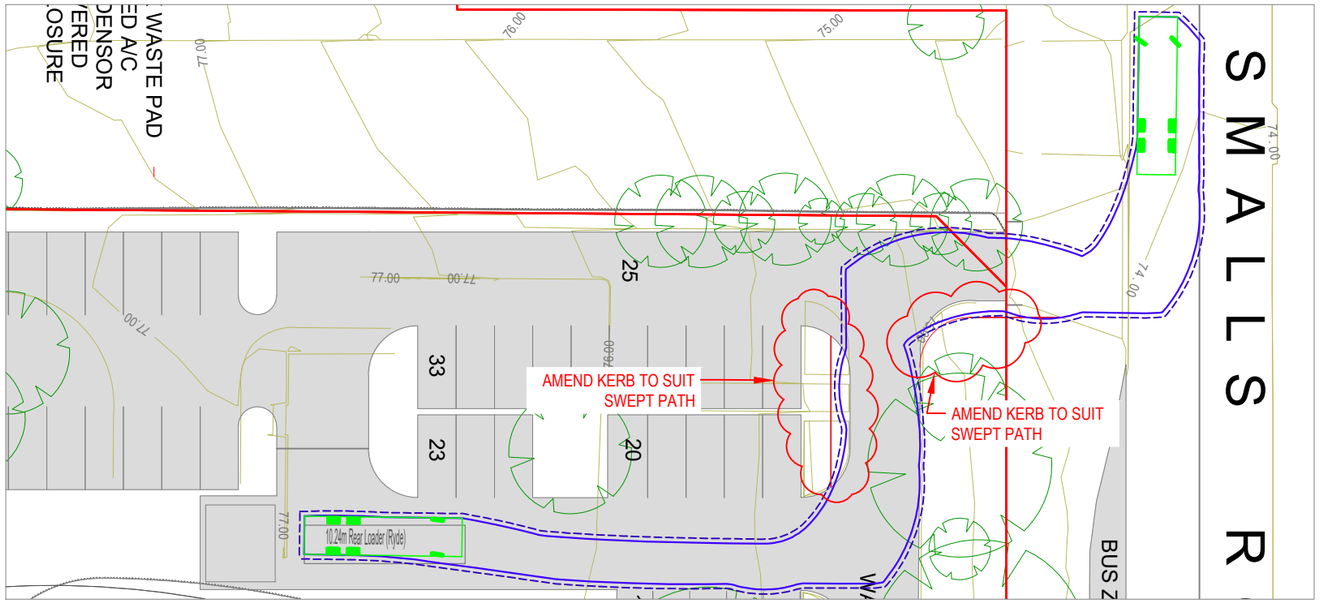


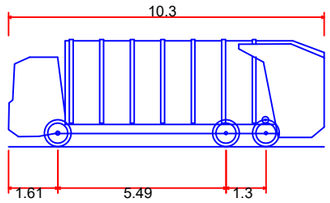
Appendix B RCV Swept Path

PRELIMINARY ADVICE ONLY
29 September 2017









10.24m Rear Loader (Ryde)

Overall Length	10.300m
Overall Width	2.500m
Overall Body Height	3.500m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	9.000m

REV.	DATE	AMENDMENT DESCRIPTION	DRAWN	CHECKED	APPROVED
A	29-09-17	ORIGINAL ISSUE	AS	SK	SK

SCALE 0 4 8 12 16 20m
SCALE 1:400 AT ORIGINAL SIZE

NORTH

CLIENT
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PROJECT
3A & 3B SMALLS ROAD, RYDE

DRAWING TITLE
SWEPT PATH MOVEMENTS
RCV DESIGN VEHICLES

PROJECT NUMBER	ORIGINAL SIZE
17SWY0011	A3
DRAWING NUMBER	REVISION
17SYW0011-01	A
DATE	SHEET
29 Sep 2017	1 OF 1

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Appendix C Systems and Specifications

C.1 – Collection Bins

BIN TYPE	HEIGHT	DEPTH	WIDTH
80 Litre Bin	870mm	530mm	450mm
120 Litre Bin	940mm	560mm	485mm
140 Litre Bin	930mm	615mm	535mm
240 Litre Bin	1080mm	735mm	580mm
660 Litre Bin	1180mm	770mm	1360mm
1100 Litre Bin	1460mm	1230mm	1370mm
3000 Litre Bin	1450mm	1842mm	1995mm

Appendix D Refuse Signage

D.1 – Refuse Signage Resource

Gold Coast City Council recommended. Free signage is available from the Qld Government site using the link below.

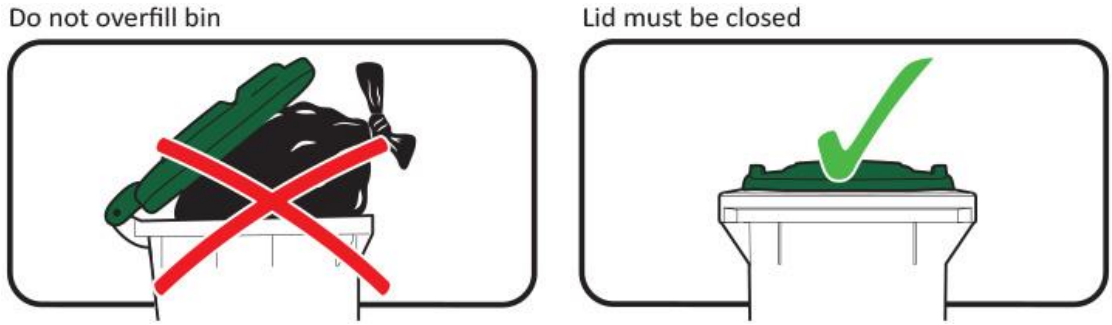
http://www.ehp.qld.gov.au/waste/recycling/awareness_raising_materials_for_public_place_recycling.html

Example bin or wall signage

Example Public Place Signage

D.2 – Example Safety Signage

Safety Signs are required for refuse discharge and storage rooms / areas and must comply with Australian standards "AS 1319 Safety signs for the occupational environment". Additional state or local government requirements may also apply. Following are examples of typical signs used around a waste storage area. It should be noted however that an assessment must be completed by a qualified fire and safety consultant, prior to occupancy, to determine the correct signage to be used.

Fire Management

Refuse Room Management