Foresight Environmental

The Forest High School – Allambie Heights

Operational Waste Management Plan

This report is based on information provided by The NSW Department of Education c/o Johnstaff coupled with Foresight Environmental's knowledge of waste generated within the education sector. To that extent this report relies on the accuracy of the information provided to the consultant. It has been compiled by Foresight Environmental on behalf of Johnstaff.

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1. Introduction

This operational waste management plan has been prepared by Foresight Environmental on behalf of the NSW Department of Education (the Applicant) & Oculus. It accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application (SSD 9343) for the new Schools at The Forest High School at 187 Allambie Road, Allambie Heights (the site). The project will deliver:

- A multi-level, multi-purpose, integrated school building with a high school wing and large outdoor area. The school buildings are connected by a centralised green area that is embedded into the landscape surrounded by the school buildings. The school buildings contain:
    - Collaborative general and specialist learning hubs, with a combination of enclosed and open spaces;
    - General classroom areas;
    - Laboratories and workshops;
    - Staff workplaces;
    - Canteens;
    - Indoor gymnasium;
    - Multipurpose communal hall;
    - Outdoor learning, play and recreational areas (both covered and uncovered).
- Associated site landscaping and public domain improvements; and
- An on-site car park for with 3729 m2 of parking spaces;
- Construction of ancillary infrastructure and utilities as required.

The purpose of this operational waste management plan is to demonstrate how the Forest High School will implement best practice measures for the ongoing management of waste and recycling during the ongoing operation of the facility.

2. Operational Waste Generation Estimate

The following waste generation estimates have been produced based on the information provided regarding the projected activities throughout the schools, the projected student and staff numbers, along with extensive benchmark and audit data from similar facilities/developments.
Based on the estimated waste profile and in line with industry-leading best practice, the following streams are recommended to be implemented throughout the facility for everyday operational waste:

- Food waste
- Cardboard/paper
- Mixed recycling (plastics, glass, aluminium, steel)
- General Waste

In addition to these common streams, it is anticipated that various specialty and ad-hoc waste streams will be produced throughout the ongoing operation of the schools including:

- Bulky wastes (scrap timber, metal etc)
- Special/hazardous wastes (solvents, paints, chemicals etc)
- Flouro tube/globe recycling
- Battery recycling
- Confidential documents
- Vegetation/green waste from maintenance

The following table details the waste generation estimate for the common operational waste and recycling streams. It should be noted that the following waste generation profile is an estimation only, based on average teaching and office use assuming full use during weekdays and limited use during weekends. This estimate includes all waste from primary and high school areas, canteen, staff areas, gym and outdoor areas.

The following tables shows the estimated waste profile and quantities for the workspace/office areas throughout the facility.

Table 1 - Waste generation estimate

Stream	kg/day	L/day	kg/week	L/week
Paper/Cardboard	63	1,044	318	5,234
Mixed Recycling	16	262	79	1,316
Food Waste	43	152	213	762
General Waste	206	1,359	1,035	6,811
Grand Total	**328**	**2,817**	**1,645**	**14,123**

3. Waste Management Systems

3.1 Common Waste Systems

The following table shows the recommended bin systems for the management of total waste for the facility within the base building waste storage area on Basement level.

Table 2 - Recommended equipment and collection frequency

Waste Stream	Bin Type	No. of Bins	Weekly Clearance Frequency	Capacity (weekly)	Estimated volume / week	Footprint per bin (m2)	Total Footprint (m2)
Paper/Cardboard	MGB - 1100L	1	3	3,300	5,234	1.69	1.69
	MGB - 240L	5	3	3,600		0.43	2.13
Mixed Recycling	MGB - 660L	1	3	1,980	1,316	1.05	1.05
Food Waste	MGB - 120L	3	3	1,080	762	0.27	0.81
General Waste	MGB - 1100L	3	9,900	6,811	1.69	5.06	3
Spare bins for public place enclosures	MGB - 120L	12				0.27	3.24
Total bin footprint							**13.97**
Current Waste Store Area							**20.96**

3.2 Liquid/Hazardous waste

In addition to the above systems for common wastes, it is recommended that a bunded liquid/hazardous waste storage cabinet be implemented where required in visual arts store-rooms and in science prep/chemical storerooms for the safe storage of any paints, solvents or liquid chemicals associated with class/science lab activities. These wastes would then be collected by a specialist contractor directly from the storage cabinet upon request by facilities management for appropriate disposal i.e., Chemsal (see figure 1 below for example of cabinet).

Figure 1 – example of liquid/hazardous waste storage cabinet

3.3 Bulky design/technology waste

It is proposed for consideration that manoeuvrable crates/cages be located within design/technology workshops for the storage of scrap materials (timber, metal etc). These crates will have a dual function – scraps and offcuts can be placed in the crates and made available to other users for re-use. It is anticipated that most materials will be reused with only limited quantities of materials needing disposal periodically. When crates become full and the materials are deemed unfit for reuse, they can be wheeled to the waste storage area to be collected by the appointed waste contractor upon request.

Figure 2 – Examples of manoeuvrable metal/timber recycling crate

3.4 Other waste/recycling

The following waste stream will be collected on call as needed:

- Green Waste/vegetation – vegetation generated from onsite maintenance activities will be managed by grounds staff.
- Battery Recycling – Battery recycling boxes will be present where deemed necessary e.g. copy rooms, office/study common areas. These boxes will be collected when full by a dedicated contractor.
- Toner Cartridge Recycling – Used toners will be collected by administration staff and consolidated for collection by specialty cartridge recycler (usually provided by office supplier).

4. Waste and Recycling Storage Area

The waste storage area is located on the carpark level and is accessed from the Allambie Street access. The waste storage room provides ample capacity for the recommended waste and recycling systems as detailed in table 2 above. The figure below shows the location of the waste storage area on carpark level and the access point from Allambie Street.

Figure 3: Waste storage area location

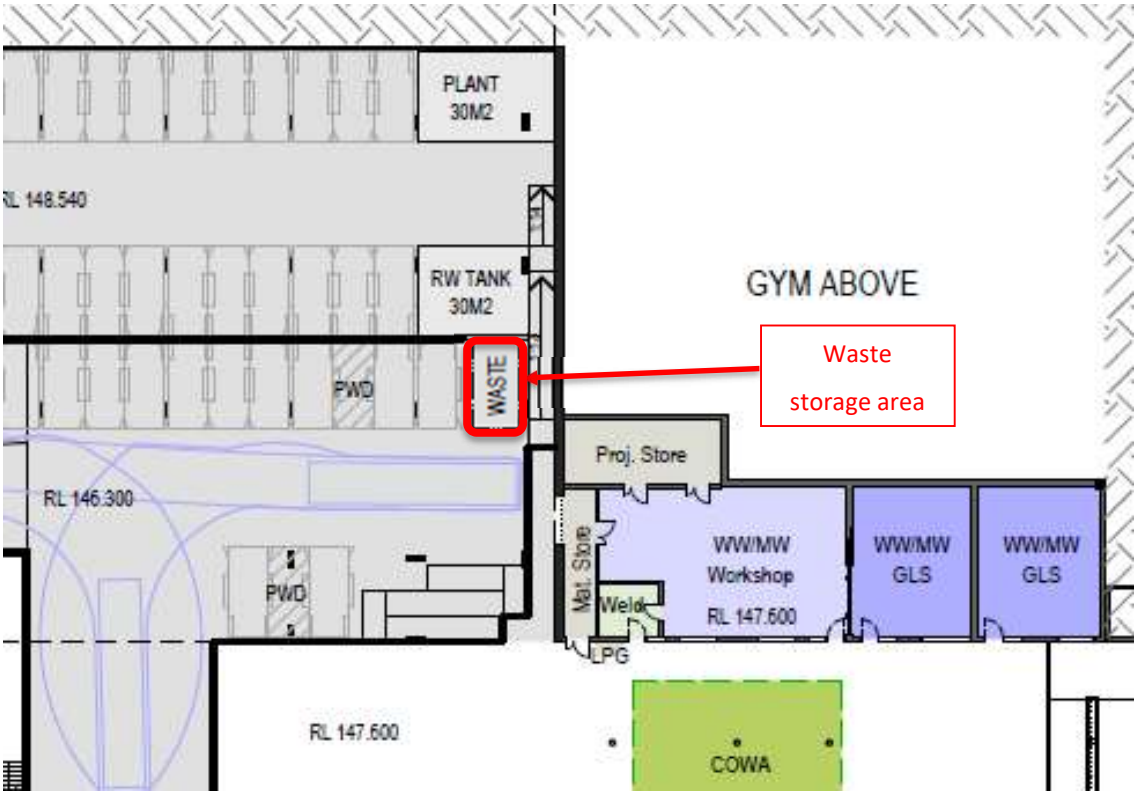
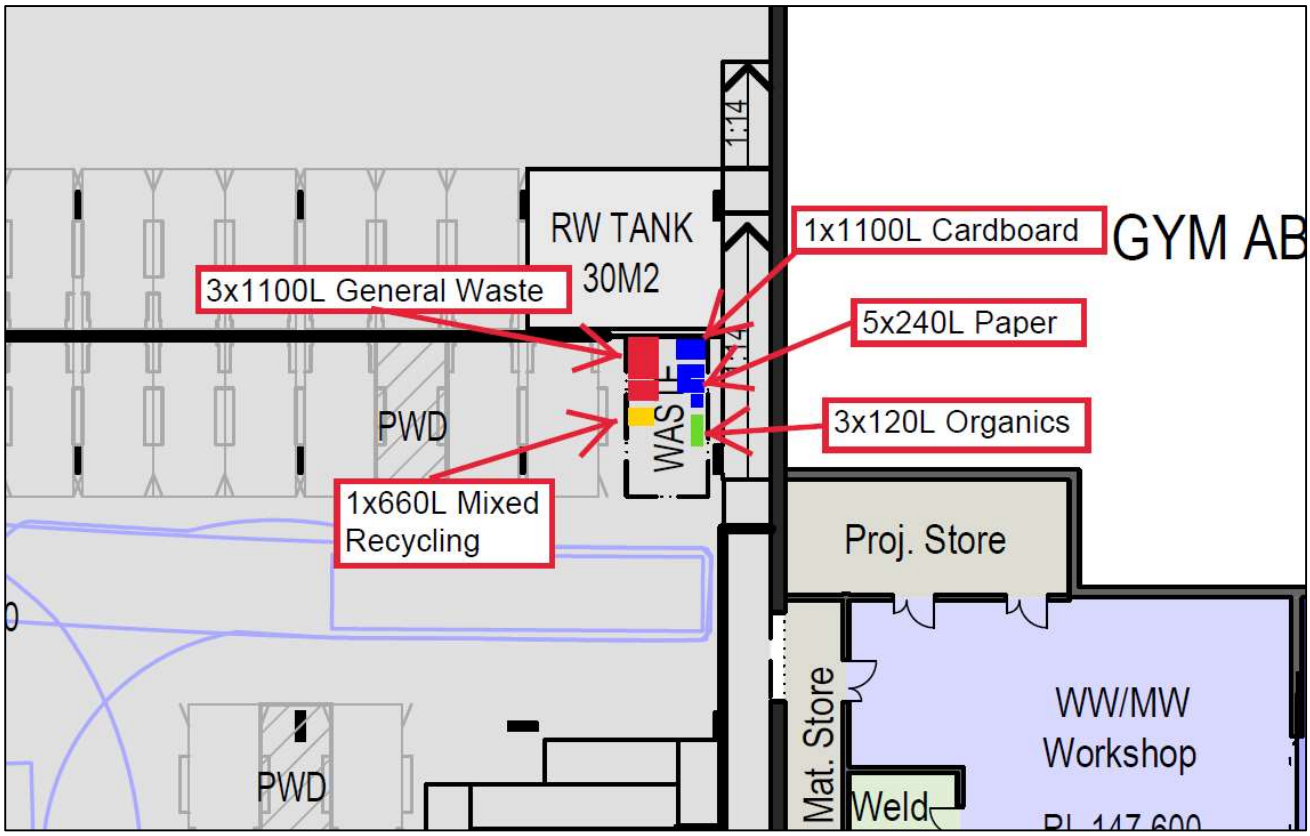


Figure 4: Waste storage area indicative layout



Note – markup not to scale, refer to appendix for bin dimensions

4.1 Amenity

The main waste and recycling storage room will have the following features:

- Ventilation: The bin storage room will be ventilated to external air or mechanically exhausted in accordance with AS 1668.2-2002
- Vermin Prevention:
    - The bin storage rooms will feature tightly fitted doors
    - Opening will be vermin proof
    - Cleaners are to ensure that bin lids are closed when unattended
- Doors: The room will be fitted with a close fitting self-closing door that is openable from inside the room without the use of a key. The doors will be finished with a smooth faced impervious material that is capable of being easily cleaned
- Noise: Noise will not be an issue due to the location of the waste storage room away from public on the carpark level
- Floor: Structural concrete slab with smooth epoxy topping finish with coved wall and floor junctions. Graded drains to approved sewer connections – fitted with an in-floor dry basket arrestor approved by Sydney Water Corporation
- Walls: Brick work/concrete block or similar finished in a light coloured, washable paint
- Ceiling: Structural concrete slab over
- Lighting: Base building lighting with switches inside and outside waste room (sensors may also be used)
- Water Supply: cold tap and hose connection
- Signage: clear signage identifying the various streams and appropriate use will be prominently displayed (see section on signage below)

The ongoing maintenance and up-keep of the waste storage room will be the responsibility of cleaning/building management staff. They will be tasked with ensuring bins are stored neatly and are cleaned as required.

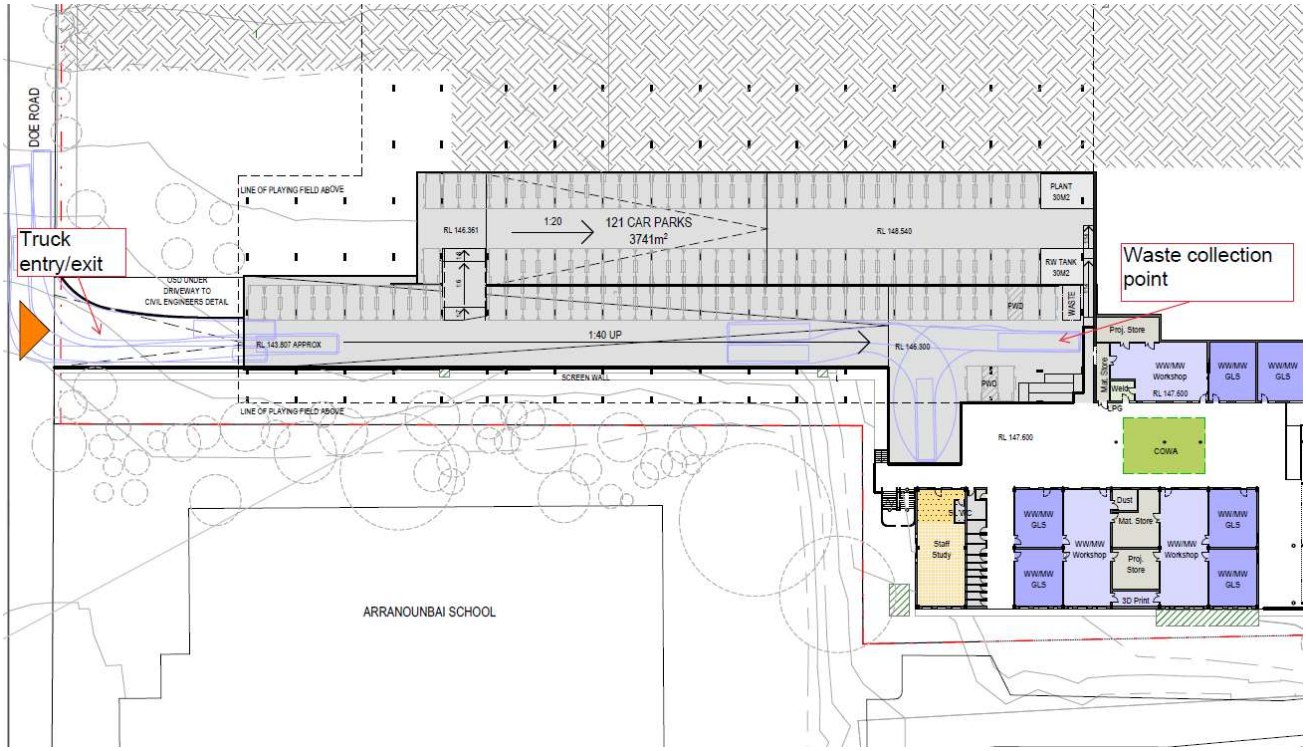
4.2 Signage

All waste and recycling streams should be differentiated with clear signage on all bins and on walls within the waste storage area. Below are examples of appropriate signage incorporating textual information, pictures and colour-coding to communicate the message.

5. Collection

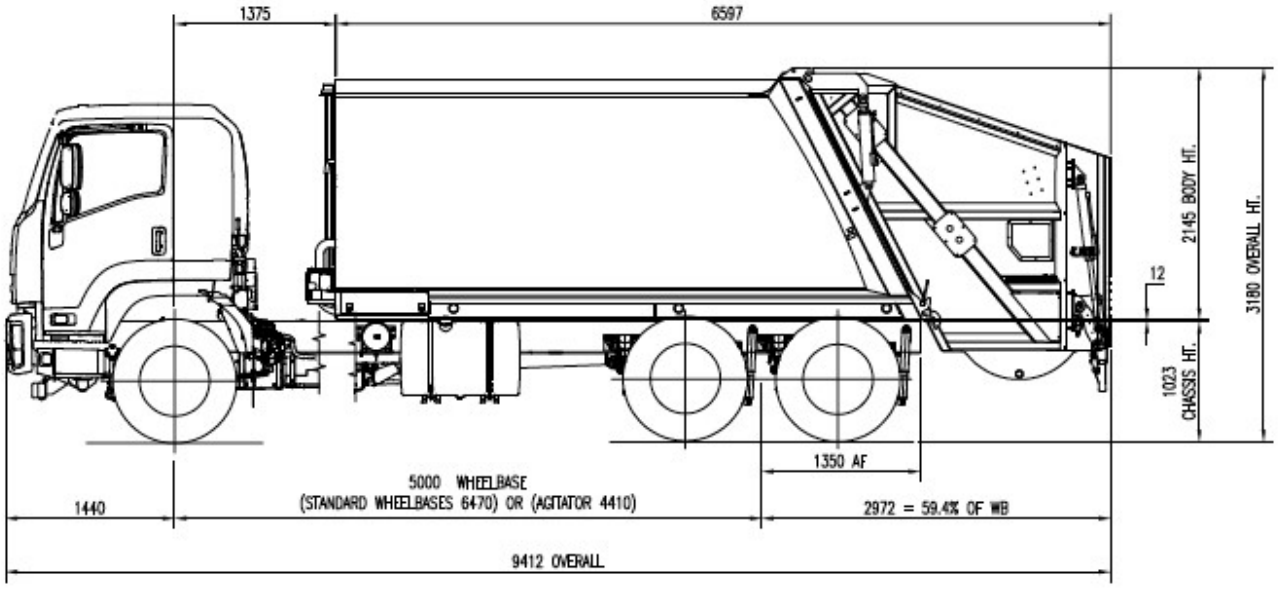
Table 2 details the suggested collection frequency for all waste and recycling streams. The appointed waste contractor will be able to access the site from the entry/exit point off Doe Road. Collections will occur from the waste collection area on an agreed after-hours collection schedule (likely after 5pm - to be confirmed in collaboration with appointed waste contractor). The turning zone allows waste trucks to enter and exit the site in a rear direction as shown in figure 5 below. Provision has been made for a 12.5m heavy rigid waste truck. The waste truck will reverse into the loading bay after entering the service road. The waste contractor will retrieve the bins directly from the waste area and load into the rear-lift waste truck – empty bins will then be returned to the waste area following collection.

Figure 5: Site access and waste collection point



Waste truck specifications will vary slightly between contractors however as a guide, all streams and bins recommended in this report will be collected by a MRV rear lift waste truck – the following figure details the indicative dimensions of a typical MRV rear-lift truck used by most commercial waste contractors and don't require any additional overhead clearance when servicing.

Figure 6: Indicative waste vehicle specifications



6. Onsite Management Protocols

Throughout the campus are different areas with different functions – different bin systems will be implemented in the various areas as appropriate for the specific application. The following table outlines the systems and management procedure for each area.

Table 3 – Waste systems and management procedures

Area	Bin System	Management Procedure / Cleaner Process
General Learning Spaces	20L Bin: • General Waste • Mixed Recycling	Onsite cleaning staff to collect bin liners from all bins as required throughout day and transfer materials to main waste room for disposal. Cleaners to use segregated trolley to keep streams separate.
Staff Area	60L Bin: • Mixed Recycling • Paper • Organics • General waste	Onsite cleaning staff to collect bin liners from all bins as required throughout day and transfer materials to main waste room for disposal. Cleaners to use segregated trolley to keep streams separate.
Library	20L Bin: • General Waste	Onsite cleaning staff to collect bin liners from all bins as required throughout day and transfer materials to main waste room for disposal. Cleaners to use segregated trolley to keep streams separate.
Canteen – back of house	• 60L bin general waste • 240L MGB cardboard • 120L MGB organics	Onsite cleaning staff to collect bin liner from general waste bins as required throughout day and transfer materials to main waste room for disposal. Cardboard and organic MGB's collected as required transferred daily to the waste collection area.
Staff Kitchenettes	40L Hafele (in cabinetry) • Mixed Recycling • Organics • General waste	Onsite cleaning staff to collect bin liners from all bins as required throughout day and transfer materials to main waste room for disposal. Cleaners to use segregated trolley to keep streams separate.
Speciality Leaning – Food Tech	60L Bin: • Mixed Recycling • Organics • General waste	Onsite cleaning staff to collect bin liners from all bins as required throughout day and transfer materials to main waste room for disposal. Cleaners to use segregated trolley to keep streams separate.
Speciality Leaning – Wood Tec	60L Bin: • General waste	Onsite cleaning staff to collect bin liners from all bins as required throughout day and transfer materials to main waste room for disposal.

	• Wood recycling – cage for internal reuse	Cleaners to use segregated trolley to keep streams separate. Off cuts will be reused where possible. Sawdust and non-reusable wood can be segregated in a designated bin/cage – collection to be arranged as required (see section 3.3)
Speciality Learning – Science Lab	20L Bin: • General Waste • Paper • 120L Hazardous MGB/ bag • Chemical storage cabinet • 5L Sharps container	Onsite cleaning staff to collect bin liners from all bins as required throughout day and transfer materials to main waste room for disposal. Cleaners to use segregated trolley to keep streams separate. Hazardous Material - Filter paper, gloves, tissues, paper towel, benchcote, spent silica, and sample vials that have been contaminated with hazardous chemicals should be placed directly into the designated bin or bag for chemically contaminated. (TBC by operator) Liquid chemicals to be stored as directed within a bunded chemical storage cabinet stored within lab storeroom. Collection of waste chemicals to be conducted by specialty contractor directly from lab storeroom upon request by school lab staff. Broken glass or sharps to be placed in a sharp's container. When full containers to be placed in lab storeroom. Collection by specialty contractor directly from lab storeroom upon request by school lab staff.
Gym	60L Method Bin: • Mixed Recycling • General waste	Onsite cleaning staff to collect bin liners from all bins as required throughout day and transfer materials to main waste room for disposal. Cleaners to use segregated trolley to keep streams separate.
Outdoor area	120L Enclosed bin within "Manhattan" bin enclosure: • Mixed Recycling • General Waste	Bin enclosures throughout outdoor areas will provide 1x120L bin for general waste and 1x120L bin for mixed recycling (bins should always be located together and not separated). Bins will be lined, and facilities staff will collect bin liners when full in a 1100L bin for transfer back to the waste storage area – this avoids the need to swap full bins for empty bins and is thus a far more efficient way to empty all bins and reduces storage space for spare 120L bins.

Student Bathrooms	Hand Dryer system Sanitary bins	Hand dryers will be implemented throughout all bathrooms to reduce paper handtowel waste. Sanitary bins will also be provided in bathrooms – these will be serviced directly by the specialty contractor.

The following figures show examples of the proposed systems as detailed in the table above (these are indicative references only – final decision TBD operator preference).

Figure 7: Learning space bin

AC:87 Bins – Waste /Paper

Location:	Learning Space
Supplier:	Method Australia
Description:	General Waste
Size:	285x 285x400
Volume:	20L
EFSG:	Compliant

Figure 8: Staff area bins

AC:86 60L Bins (4no.)

Location:	Staff area
Supplier:	Method Australia
Description:	Recycle, Paper, Organics, Landfill
Finish:	Black and Standard Colours per bin
Size:	Individual Bin - W350 x D350 x H755mm
EFSG:	Product not specified

Figure 9: Staff kitchenette system

AC:31 Push Pull Bin

Location:	Staff Kitchenette, HB and GLS PAA
Supplier:	Hafele
Description	Recycling, Organic, General Waste
Material:	Plastic
Model:	3631481
Size:	Refer to 70 series for sizes. General Cabinet width 450 to 900mm

Figure 10: Outdoor area bin enclosure

LR6532

MANHATTAN BIN ENCLOSURE 120L

DIMENSIONS

Width: 625mm | Depth: 565mm | Height: 1120mm

This bin enclosure fits a standard 120L wheelie bin

MATERIALS

Frame: Mild steel | 304 Stainless Steel

Battens: Australian Hardwood Timbers (Class 1) | Enviroslat Recycled Battens

FINISHES

Frame: Powdercoated | Satin Polished

Battens: Quantum gold oil | Enviroslat woodgrain

7. Conclusion

The details of this waste management plan confirm that the waste facilities provided in the proposed design adequately cater for the projected waste generation rates at the completion of the development.