Sandstone Precinct – Patina Hotel

Lands Building

Operational Waste Management Plan

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This report is based on information provided by **Essence Project Management Pty Ltd** coupled with Foresight Environmental's knowledge of waste generated within the mixed-use development 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 **Essence Project Management Pty Ltd**.

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Revision No.	Issue date	Author	Reviewed by	Reason/comments
1	06 May 2019	Kyle Renwick	Patrick Arnold	Initial issue
2	09 May 2019	Kyle Renwick	Patrick Arnold	Update per feedback
3	12 September 2019	Kyle Renwick	Patrick Arnold	General Amendments

Table of Contents

1. Executive Summary

This Operational Site Waste Minimisation and Management Plan has been prepared by Foresight Environmental on behalf of **Essence Project Management Pty Ltd**. The plan details the way in which the **Lands Building** within the proposed Sandstone Precinct development will manage the waste and recycling generated during the ongoing operational use of the development in accordance with the City of Sydney DA condition F17 and the Council's Guidelines for Waste Management in New Developments 2018.

2. Overview of Development

The proposed development will consist of a combination of mixed retail tenancies, restaurant/bar areas, kitchen facilities and function areas. For the purposes of estimating a waste profile for the development, the waste generating components is used in conjunction with Foresight Environmental's extensive database of historical operational data from similar developments/assets.

Table 1 below details the waste generating areas of the development, these areas will form the basis of the waste generation estimates and subsequent equipment/management recommendations. These figures do not represent the total area of the new development – only the areas that will actually contribute to waste generation.

Table 1 - Area breakdown and usage

Level	Component	Area (m^2)/Pax	Usage/assumptions
Lower Ground	Fresh Food	232	Fresh food/café
Lower Ground	Restaurant	811	Restaurant/bar/food
Lower Ground	Office	32	Standard office usage
Ground	Restaurant	409	Restaurant/bar/food
Level 2	Kitchen	387	Restaurant/bar/food
Level 2	Function Space	550 Pax	Mixed function usage
Level 3	Function Space	80 Pax	Mixed function usage

3. Waste Generation

Based on the information provided and Foresight Environmental's benchmark data from similar developments, the primary waste streams expected to be generated in the ongoing operation of the development would be:

- Mixed recycling (plastics, glass, aluminium, steel)
- Food Organic Recycling
- Cardboard and Paper Recycling
- General waste
- Cooking Oil

Additional smaller waste streams may include toner cartridge recycling, fluoro tube/globe recycling and battery recycling.

The Foresight Environment (FE) benchmark data is based primarily on actual weights received from waste contractors and derived from platform scales installed at commercial and mixed-use assets throughout Australia. Currently 6.9 million m^2 of properties is reported through FE's database each month. As such, we are confident that the FE benchmark data represents the most accurate and current weight-based waste data available in Australia. The densities used for any conversions are in line with the Nabers Waste Rating tool.

3.1 Estimates

The following tables show the projected waste generation estimates for both business as usual operational purposes and additional full function capacity generation. These figures have been estimated using benchmark data from similar developments.

Table 2 - Waste generation estimate – Business as Usual (BAU)

Stream	Kg/day	L/day	Kg/week	L/week
Paper/Cardboard	109.58	2,907.88	767.04	20,355.19
Food organics	252.60	902.15	1,768.21	6,315.04
Mixed Recycling	34.58	576.31	242.05	4,034.19
General Waste	80.17	1,062.49	561.19	7,437.41
Total	**476.93**	**5,448.83**	**3,338.49**	**38,141.84**

Table 3 – Additional function capacity generation estimate

Stream	Kg/day	L/day	Kg/week	L/week
Paper/Cardboard	7.88	126.00	55.13	882.00
Food organics	105.84	378.00	740.88	2,646.00
Co-mingle	15.12	252.00	105.84	1,764.00
General Waste	52.92	504.00	370.44	3,528.00
Total	**181.76**	**1,260.00**	**1,272.29**	**8,820.00**

3.2 Total Waste Estimate

As the waste room will need to accommodate the waste generated during usual business hours and that generated from function events, the total of the two will be used to base the required waste systems.

Table 4 - Total generation estimate

Stream	Kg/day	L/day	Kg/week	L/week
Paper/Cardboard	117.45	3,033.88	822.16	21,237.19
Food organics	358.44	1,280.15	2,509.09	8,961.04
Mixed Recycling	49.70	828.31	347.89	5,798.19
General Waste	133.09	1,566.49	931.63	10,965.41
Total	**658.68**	**6,708.83**	**4,610.78**	**46,961.84**

4. Waste Management Systems

Table 5 details the recommended equipment and collection frequency required to service waste and recycling streams for all waste generating components of the development. This also details the estimated spatial requirements for the interim waste storage area located on the lower ground level. The bins will then be transferred to the loading dock within the Education Building via the tunnel in basement 3 which connects the two buildings.

Table 5 - Recommended equipment and collection frequency

Stream	Bin Type	No. of Bins	Weekly Clearance Frequency	Weekly Capacity (L)	Estimated volume / week (L)	Footprint per bin (m^2)	Total Footprint (m^2)
Paper/Cardboard	MGB - 1100L	3	7	23,100	21,237	1.71	5.12
Organics	MGB - 120L	11	7	9,240	8,961	0.27	2.99
Mixed Recycling	MGB - 1100L	2	3	6,600	5,798	1.20	2.40
General Waste	MGB - 1100L	2	5	11,000	10,965	1.71	3.41
Cooking Oil	Heated Tank*	1	1	600	500	1.00	1.00
						Total bin footprint	**14.92**
						Including circulation space	**29.83**
						Recommended Room Size – including circulation space & 5m^2 bin wash area	**34.83**
						Available Space	**76.00**

*The heated tank is to be in a bunded and drained area. It is recommended the bunded capacity is the same capacity of the tank. The tank will also be transportable in order for it to be emptied on collection days from the loading dock within the Education Building.

4.1 Other waste/recycling

The following waste streams are unlikely to be generated regularly but can be collected on call as needed:

- E-waste - collected by facilities management staff and consolidated for collection by specialty e-waste contractor for recycler (usually provided by the appointed waste contractor on an on-call basis).
- Bulky waste – it will be the duty of retailers to inform facilities management staff of any bulky waste that will be required to be removed from site, including material generated during defit/refurbishments. The material/s will be stored in the tenancy, or approved area, until facilities management can coordinate with the waste contractor to organize an appropriate receptacle to be temporarily supplied.

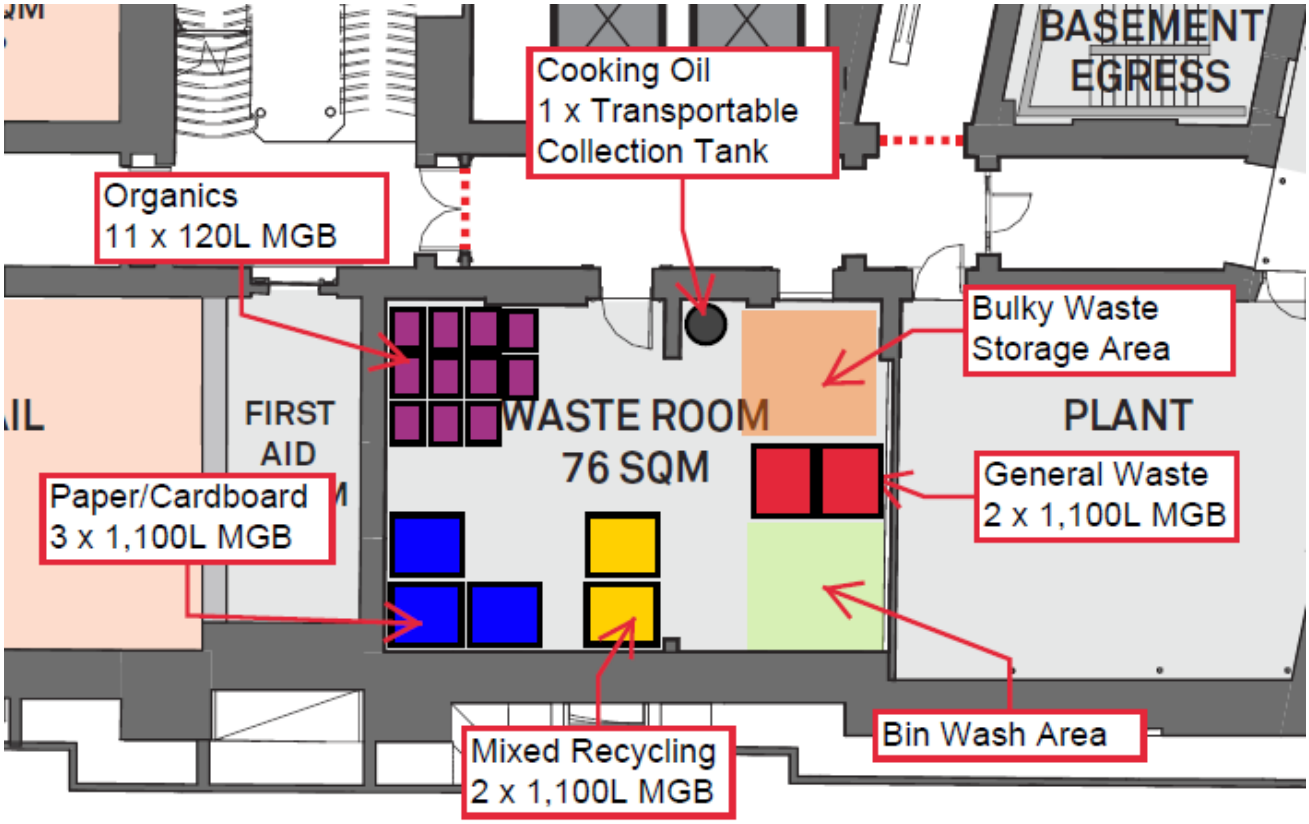
Contractor/delivery waste – Waste generated onsite by contractors/deliveries must be taken back unless prior consent has been negotiated with facilities management.

5. Waste and Recycling Storage Area

5.1 Waste Storage Area

The interim waste and recycling storage room is located on the lower ground level. The waste storage room provides ample storage space for the recommended systems detailed in the tables above.

Figure 1 – Indicative layout of the waste storage area location within the lower ground floor



5.2 Amenity

The 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 room 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
- 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 in accordance with AS 3958
- Ceiling: Structural concrete slab over
- Lighting: Base building lighting with switches inside and outside waste room (sensors may also be used)
- Water Supply: hot and 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.

5.3 Signage

All waste and recycling streams will 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.

Figure 2: Stream appropriate signage

5.4 Colour-coding

To further reinforce the differentiation between waste and recycling streams, the main waste storage room will be colour-coded to ensure bins are stored in the correct area and to enable easy identification of the streams provided. This will be done by the operator in collaboration with the cleaning/waste contractor once operational. This can be done by painting borders on the floor indicating where bins should be stored. The colour of the paint should be consistent with the waste stream e.g. yellow paint for comingled recycling, red paint for general waste. The waste room walls can also be painted.

Figure 3: Indicative colour-coding guide

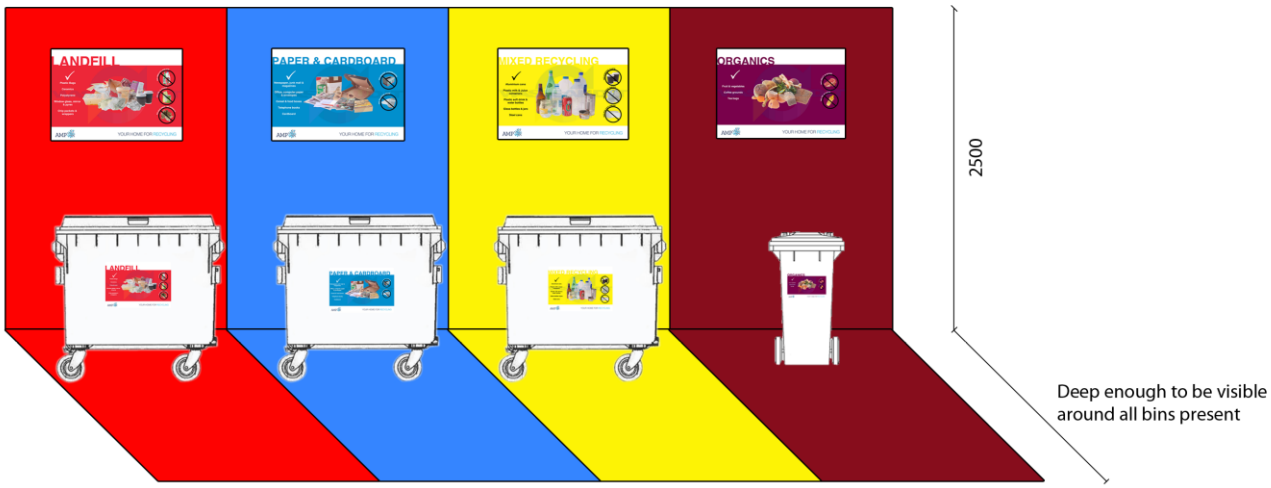


Figure 4: Example of appropriate colour-coding

6. Onsite Management Protocols

6.1 Waste systems on each level

Due to the amount of different rooms and areas it would be impractical and unnecessary to offer bins in every single room. Instead, it is recommended that bin hubs be established throughout the floors in hallways and common spaces to service the different areas. Cleaners would then service these bin hubs by collecting the contents, with bin liner, and transferring it into a typical cleaner's trolley which would then be taken to the main waste storage area for disposal into the larger bins provided there prior to collection.

Figure 5 below provides an example of best practice bin-hub set up using individual bins to create the bin hub.

Figure 5 - Examples of small waste/recycling "multisort" bins bin hubs integrated into cabinetry (60L or 90L)

6.2 Waste collection practices

The details provided in table 6 outline a high-level management procedure for the movement of waste internally amongst the different stakeholders.

Table 6: Internal waste management guidelines for all stakeholders

Component	Management Protocol
Retail	• Retail Staff will be responsible for the separation of waste and recycling streams in 60L/90L multi-sort bins (or similar equivalent - refer to figure 6 below) in their immediate back-of-house area i.e. under bench. • Retailers will be required to transfer their full bins to the waste storage area as required throughout the day for disposal into the larger bins provided. • Figure 7 shows a trolley system that can be used to assist in moving these bins when full. • Sealed cooking oil caddies will be transferred to the main waste room to be emptied into the sealed vacuum silo in the main waste room
Function	• Functions will have bin-hub set ups (figure 5) within the function rooms that will be accessible to guests during the service period. • Staff will be required to transfer contents of bins to the waste storage area as required throughout the day for disposal into the larger bins provided. • Figure 7 shows a trolley system that can be used to assist in moving these bins when full.
Cleaners	• Cleaners will be responsible for the daily collection of the bin hubs scattered throughout the building. They will transfer all waste and recyclables to the waste storage area on the lower ground floor via the lift. All materials will be decanted into the larger bins provided within the waste storage area on ground floor.
Kitchen/Bars	• Kitchen/Bar staff will be responsible for the separation of waste and recycling streams in 60L/90L multi-sort bins (or similar equivalent - refer to figure 6 below) in their immediate back-of-house area i.e. under bench. • Kitchen/Bar staff or cleaners will be required to transfer the full bins to the waste storage area as required throughout the day for disposal into the larger bins provided. • Sealed cooking oil caddies will be transferred to the main waste room to be emptied into the sealed vacuum silo in the main waste room

The figures below provide examples of the recommended (or equivalent) bins for retailer/operator use.

Figure 6: Examples of small waste/recycling "multisort" bins for bin hubs (60L or 90L)

Figure 7: Example of multi-sort transport trolley – could be provided for retailer and cleaner use

7. Collection

Table 5 details the suggested collection frequency for all waste and recycling streams. Section 6 details the internal movement of waste for all stakeholders. Waste will be brought to the waste storage room on the lower ground floor directly by cleaners and retail staff or via the lift either by cleaners or kitchen/bar staff. On collection days, bins will be transferred to the loading dock in the Education Building via the tunnel in basement 3 to be presented for collection for the nominated waste contractor as per the following figures:

Figure 8 – Land Building lower ground level bin transfer path

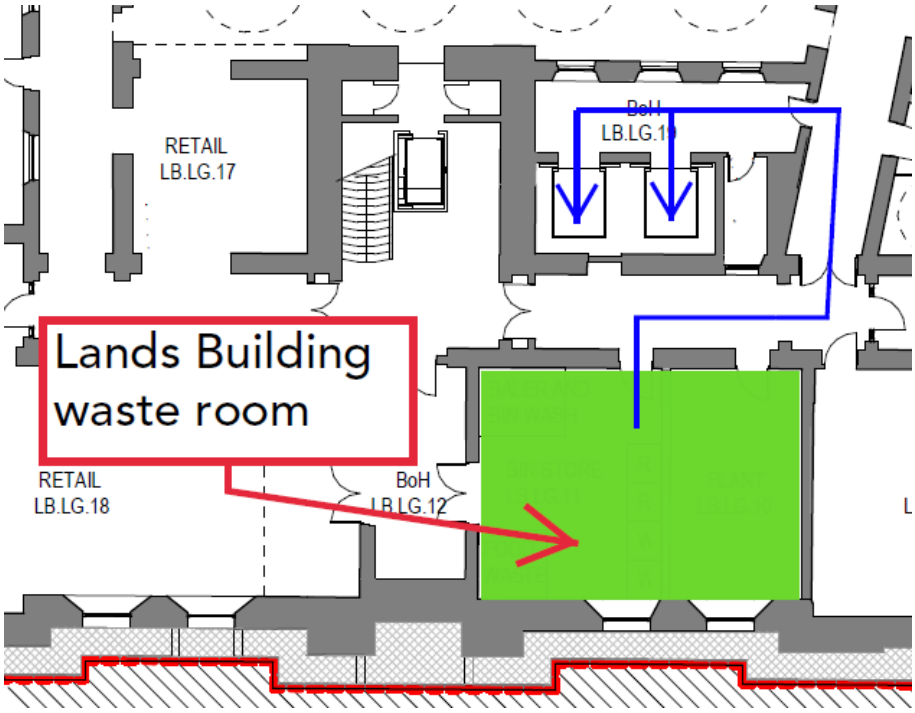


Table 7 - Basement 3 tunnel transfer path

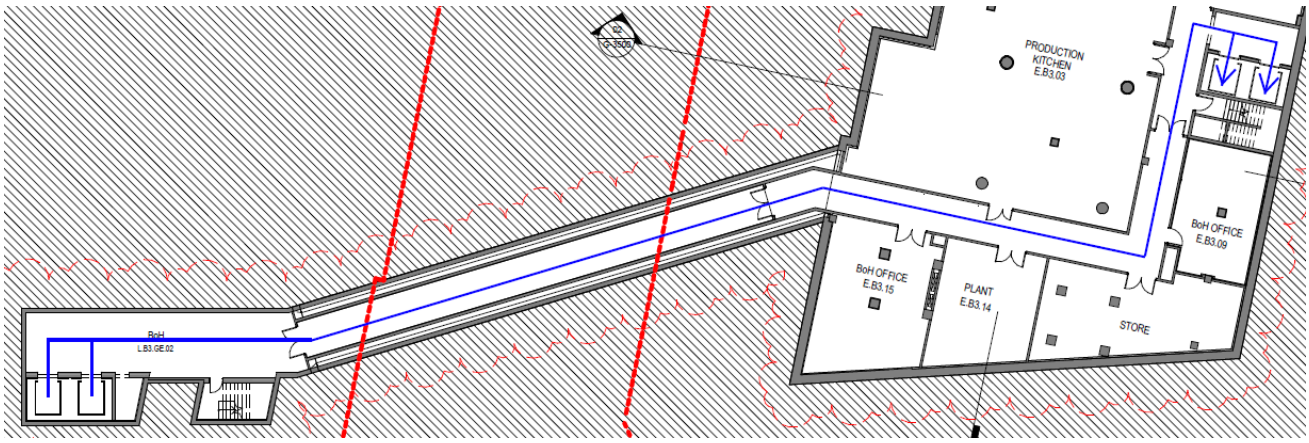
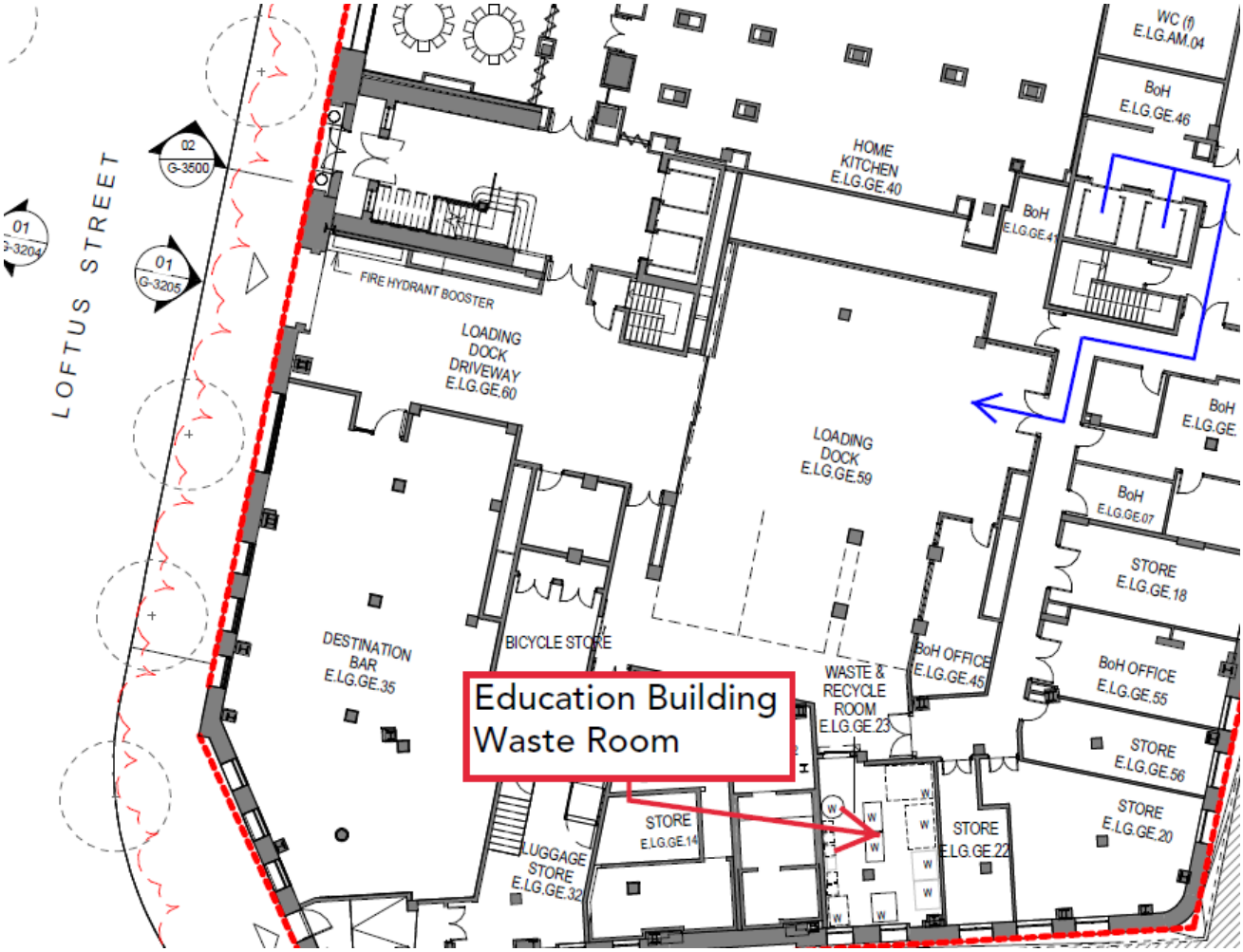


Table 8 - Education Building lower ground level bin transfer path



8. 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 in accordance with the City of Sydney DA condition F17 and the Council's Guidelines for Waste Management in New Developments 2018.

9. Appendix

Figure 9 - 120L MGB Dimensions

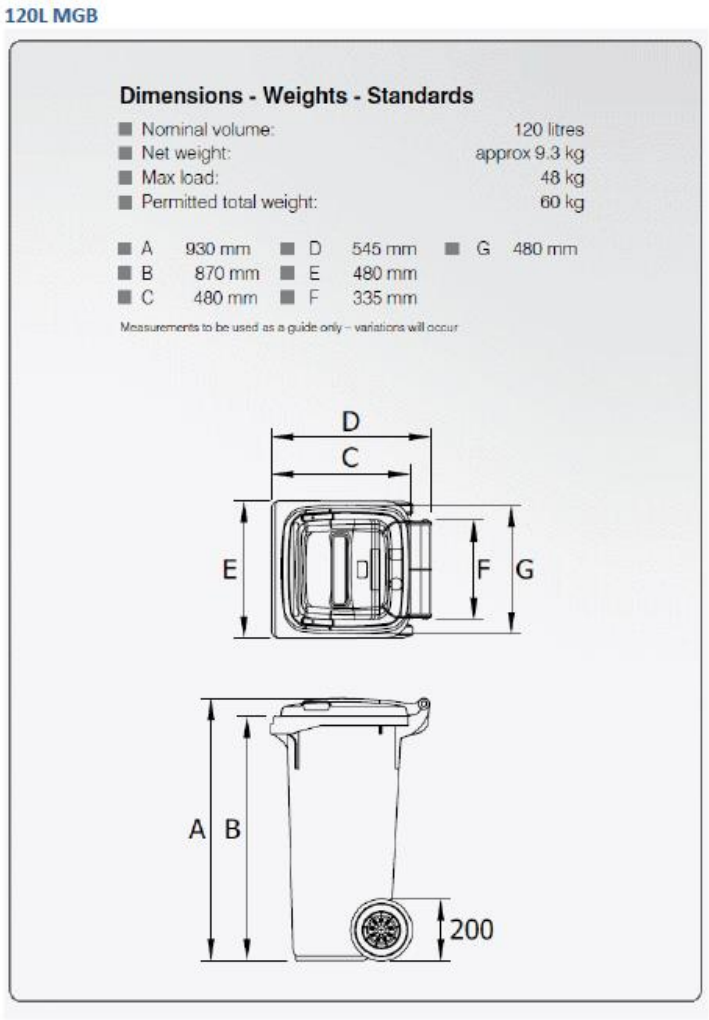


Figure 10 – 1,100L MGB Dimensions