Attachment A29

Preliminary Waste Management Plan
Mixed Use Scheme

Foresight Environmental

Stockland Piccadilly Complex – Mixed Use

133 Castlereagh Street

Sydney NSW 2000

Planning Proposal

Waste Management Plan

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This report is based on information provided by **Stockland,** coupled with Foresight Environmental's knowledge of waste generated within the commercial 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 **Stockland.**

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1. Introduction

This Planning Proposal Waste Management Plan (PPWMP) has been prepared by Foresight Environmental to accompany a planning proposal seeking to amend the Sydney Local Environmental Plan 2012 (the LEP) relevant to the land known as 'Stockland Piccadilly Complex' located at 133-145 Castlereagh Street, Sydney (the site) and legally described as Lot 10 in DP828419.

The report has been prepared in accordance with the following guidelines:

- Attachment E - The City of Sydney Guidelines for Waste Management in New Developments – as amended
- Better Practice Guide for Waste Management in Multi-unit Dwellings 2008
- Better Practice Guidelines Waste Management and Recycling in Commercial and Industrial Facilities 2012

This PPWMP accompanies a planning proposal seeking to amend the Sydney Local Environmental Plan 2012 (the LEP) relevant to the land known as 'Stockland Piccadilly Complex' located at 133-145 Castlereagh Street, Sydney (the site) and legally described as Lot 10 in DP828419.

The planning proposal seeks to prescribe site specific LEP provisions, including amending the floor space ratio development standard, as well as concurrently preparing a site-specific Development Control Plan (DCP) to guide the future development. The DCP will establish building envelopes for the site, as well as other key assessment criteria including the establishment of a through-site link and parking and vehicular access.

The intended outcome of the proposed amendments to the LEP and DCP is to facilitate the redevelopment of the site for either an all-commercial development or a mixed-use development, together with an activated ground plane, basement car parking and associated facilities. The proposal will retain the structure of the majority of the existing commercial tower as well as the basement structure. The proposal facilitates additional commercial floor space capacity in Central Sydney while also delivering improved public domain outcomes. Such outcomes will include a rectified Solar Access Plane breach to Hyde Park, a northerly aligned direct through-site link between Pitt and Castlereagh Street and enhanced pedestrian amenity and activation at the ground plane.

2. Operational Usage

The table below details the development profile, and the areas as they relate to waste - the **waste generating areas** of the development that will form the basis of the waste generation estimates and subsequent equipment/management recommendations. The figures in Table 1 do not represent the total square meters of the new development – only the areas that will actually contribute to waste generation. Note: these areas are based on approximate information provided at the time of writing and are subject to change through the respective future DA processes for each.

Table 1 – Total Area waste profile

TYPOLOGY	NLA (m^2)	GFA (m^2)	COUNT	USAGE/ASSUMPTIONS
Retail	-	3,511	-	All food & beverage
Commercial	75,049	-	-	Premium grade office space
Residential	-	-	100	

3. Operational Waste Generation Estimate

The projected waste profiles below are based on the information provided regarding the proposed development and the intended uses of all workspaces and food service areas, the Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities [1], and Foresight Environmental's benchmark data from similar developments[2].

Based on the estimated waste profile and in line with industry-leading best practice, the following primary streams will be implemented throughout the facility for everyday operational waste:

- Landfill
- Mixed Recycling (plastics, glass, aluminium, steel)
- Commingled Recycling (plastics, glass, aluminium, steel, paper and cardboard recycling)
- Cardboard/paper
- Food Organics
- Garden Organics

[1] https://www.epa.nsw.gov.au/resources/managewaste/120960-comm-ind.pdf

[2] Foresight Environmental currently reports the ongoing operational waste data for over 7million m^2 of Australian A and B grade commercial/retail/industrial/mixed use property. This extensive database provides the most current and detailed information on real-world waste generation performance and trends available and enables very accurate modelling for prospective property developments

- Cooking Oil

In addition to the above "common" streams, the following streams are likely to be generated in a more ad-hoc manner during ongoing operation. See Section 6.2.2 for further details on these streams.

- Secure paper
- Paper Hand Towels
- Toner cartridge recycling
- E-waste
- Bulky Waste

3.1 Retail Waste

The following table shows the estimated waste profile for all retail areas based on the assumptions in Table 1.

Table 2 – Waste Generation Estimate: Retail

WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK	KG/MONTH	L/MONTH
Landfill	280	2,665	1,959	18,658	8,490	80,853
Mixed Recycling	116	1,941	815	13,588	3,533	58,879
Food Organics	361	1,290	2,528	9,028	10,954	39,123
Cardboard	128	3,663	897	25,640	3,889	111,108
Cooking Oil	18	20	126	139	548	602
TOTAL	**904**	**9,579**	**6,326**	**67,054**	**27,413**	**290,565**

3.2 Commercial Waste

The following table shows the estimated waste profile for all commercial areas based on the assumptions in Table 1.

Table 3 – Waste Generation Estimate: Commercial

WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK	KG/MONTH	L/MONTH
Landfill	480	6,862	2,402	34,308	10,407	148,668
Mixed Recycling	72	1,201	360	6,004	1,561	26,017
Food Organics	192	686	961	3,431	4,163	14,867
Paper	324	3,602	1,621	18,012	7,025	78,051
Cardboard	132	3,774	660	18,869	2,862	81,768
TOTAL	**1,201**	**16,125**	**6,004**	**80,624**	**26,017**	**349,371**

3.3 Residential Waste

The following table shows the estimated waste profile for all residential areas based on the assumptions in Table 1.

Table 4 – Waste Generation Estimate: Residential

WASTE STREAM	KG/DAY	L/DAY	KG/WEEK	L/WEEK	KG/MONTH	L/MONTH
Landfill	180	1,714	1,260	12,000	5,460	52,000
Commingled Recycling	103	1,714	720	12,000	3,120	52,000
Food Organics	32	114	224	800	971	3,467
TOTAL	**315**	**3,543**	**2,204**	**24,800**	**9,551**	**107,467**

4. Waste Management Systems

The following tables show the preliminary recommended bin systems and required spatial provisions for the management of waste within 133 Castlereagh Street, based on the data presented in Section 3 above (Tables 2 - 4). See Appendix 1 for Mobile Garbage Bin (MGB) specifications.

4.1 Retail Waste Management

Table 5 - Recommended equipment and indicative collection frequency - Retail

Waste Stream	Bin Type	Size (L)	Bins in waste room	Weekly Collection frequency	Weekly Capacity	Estimated (L) per week	Footprint per bin (m^2)	Total footprint (m^2)
Landfill	MGB	1100	5	4	22,000	18,658	1.69	8.45
Mixed Recycling	MGB	660	5	4	13,200	13,588	1.05	5.25
Food Organics	MGB	120	19	4	9,120	9,028	0.27	5.13
Paper & Cardboard	MGB	1100	6	4	26,400	25,640	1.69	10.14
Cooking Oil	TANK	200	1	As Needed	200	139	1.00	1.00
E-waste	MGB	240	1	As Needed	240	-	0.43	0.43
Bin Wash Area*							3.00	-
Bulky Waste Area							8.00	8.00
							Total Bin Footprint	**38.90**
							Recommended area required for bin storage and operational movement	**58.35**

**Bin wash area is a nominated space to wash bins, but as bins can be moved across/through this space, the bin wash footprint is not included in the total footprint.*

4.2 Commercial Waste Management

Table 6 - Recommended equipment and indicative collection frequency – Commercial

Waste Stream	Bin Type	Size (L)	Bins in waste room	Weekly Collection frequency	Weekly Capacity (L)	Estimated (L) per week	Footprint per bin (m^2)	Total footprint (m^2)
Landfill	MGB	1100	8	4	35,200	34,308	1.69	13.52
Mixed Recycling	MGB	660	3	4	7,920	6,004	1.05	3.15
Food Organics	MGB	120	8	4	3,840	3,431	0.27	2.16
Paper & Cardboard	MGB	1100	9	4	39,600	36,881	1.69	15.21
E-waste	MGB	240	3	As Needed	720	-	0.43	1.29
Bin Wash Area*							3.00	-
Bulky Waste Area							16.00	16.00
							Total Bin Footprint	**51.33**
							Recommended minimum area required for bin storage and operational movement	**77.00**

**Bin wash area is a nominated space to wash bins, but as bins can be moved across/through this space, the bin wash footprint is not included in the total footprint.*

4.3 Residential Waste Management – Level S

The table below shows a traditional bins-only system for the residential waste, and the total number of bins needed, to demonstrate the maximum space needed for the estimated number of bins prior to collection. The development will utilise a chute system for the residential waste as well as 240L bins – bins will be spread across the residential floors and the main residential waste room on Level S. This means not all bins will be in the waste room at the same time but rather will continually be in circulation, with only a portion of the total living in the main waste storage area.

Table 7 - Recommended equipment and indicative collection frequency

Waste Stream	Bin Type	Size (L)	No. of bins	Weekly Collection Frequency	Weekly Capacity (L)	Estimated (L) per week	Footprint per bin (m^2)	Total footprint (m^2)
Landfill	MGB	240	52	1	12,480	12,000	0.43	22.36
Commingled Recycling	MGB	240	52	1	12,480	12,000	0.43	22.36
Food Organics	MGB	120	5	2	1,200	800	0.27	1.35
Garden Organics*	MGB	240	10	As Needed	2,400	Ad Hoc	0.43	4.30
E-waste**	MGB	240	3	As Needed	720	Ad Hoc	0.43	1.29
Bin Wash Area***							3.00	-
Bulky Waste Area							11.0	14.00
							Total Bin Footprint	**65.66**
							Recommended minimum area required for bin storage and operational movement	**98.50**

**Garden waste bins to be adjusted as needed once operational. Council offers opt-in collection every fortnight if needed.*
***Council offers regular e-waste recycling drop off days.*

****Bin wash area is a nominated space to wash bins, but as bins can be moved across/through this space, the bin wash footprint is not included in the total footprint.*

5. Waste Management Areas

The areas detailed above indicate the total footprint and spatial requirements for the different waste management areas. The retail and commercial waste areas have been kept separate in the tables above (Table 5 and 6) and in the sections below, but they can be combined into one waste area to streamline the waste management process and save some space. This should be considered against any potential NABERS rating (if the building will be aiming for a NABERS waste score), as combining retail and commercial waste can impact NABERS outcomes. If the two are combined, the total area required would be 131.16m^2 (with the weekly collection frequency of 4 x per week), which equates to 4.19m^2 of saved space – these numbers are indicative and subject to change, but included as a general guide to show the difference in space with separate vs combined rooms.

5.1 Retail Waste Management Area

As detailed in Table 5 above, the retail waste management area requires approximately 58m^2. The location is still TBC on the plans but is recommended to be placed on Level P1.

Figure 1: Location of Retail waste management area

Figure to be developed as part of the design documentation for the Development Application

5.2 Commercial Waste Management Area

As detailed in Table 6 above, the commercial waste management area requires approximately 77m^2. The location is still TBC on the plans but is recommended to be placed on Level P1.

Figure 2: Location of Commercial waste management area

Figure to be developed as part of the design documentation for the Development Application

5.3 Residential Waste Management Areas

As detailed in Table 7 above, the residential waste management area requires approximately 100m^2.

Figure 3: Location of Residential waste storage area – Level S

5.4 Waste Room Amenity

The waste management areas will have the following features:

- Ventilation: The bin storage rooms will be mechanically exhausted in accordance with AS 1668.2-2012
- Vermin and Odour Prevention:
    - Opening will be vermin proof
    - Cleaners are to ensure that bin lids are closed when unattended
- Noise: Noise will not be an issue due to the location of the waste management area away from public spaces.
- Floor: Structural concrete slab with smooth epoxy topping finish with coved wall and floor junctions and bunding. 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 finished with exposed concrete - a rigid, smooth faced impermeable material capable of being easily cleaned.
- Lighting: Base building lighting with switches inside and outside waste area (sensors may also be used).
- Water Supply: Cold tap and hose connection servicing graded bin wash areas and cleaner's sink.
- Electrical: Waterproof GPOs.
- Signage: clear signage identifying the various streams and appropriate use will be prominently displayed (see Section 5.5 on signage below).

5.5 Signage

All waste and recycling streams will be differentiated with clear signage on all bins and on walls within the waste management areas. Below are examples of signage that will be used on bins, in waste areas, and retail back of house areas.

Figure 4: Stream appropriate signage

6. Onsite Management Protocols

6.1 Waste systems

It is anticipated that each component will be responsible for the internal management and disposal of waste into the systems provided within their respective waste management area. The following points provide high-level details on how each component would be managed:

- Retail: retailers are largely responsible for the internal management of their own waste and recycling within their immediate back of house area – retailers also responsible for transferring waste and recycling to their waste management area as required throughout each day.
- Commercial Office: conventional bin hub set up throughout tenant floors – bin hubs are then serviced/emptied by base building cleaners each night and waste and recycling is transferred to waste management area for disposal into the systems provided.
- Residential: Tenants will be responsible for depositing the correct waste down the Landfill chute point on their respective floor, and Commingled Recycling into the bins provided on each floor. Facility management are then required to manage the transfer of full/empty Commingled Recycling bins from each service room on each floor to the waste management room/s as required. Facility management are to ensure that full bins are placed at collection point prior to collection, and empty bins are returned.

It is highly recommended that a detailed operational guideline is prepared that outlines the expectations and best practice procedures for the internal management, transfer and disposal of waste for all stakeholders within the development to ensure operational consistency is delivered across the different components – to be completed during design development.

6.2 Waste Streams

6.2.1. Primary Waste Streams

The following table provides additional details of the proposed primary streams.

Table 8 – Primary tenant streams and management protocol

WASTE STREAM	ACCEPTABLE ITEMS	NOT ACCEPTABLE ITEMS
Landfill	Putrescible waste (non-hazardous)	Hazardous materials such as batteries, E-waste and liquids
Mixed Recycling	Empty glass, aluminium, plastic, steel bottles/cans/containers	All other items
Commingled Recycling	Plastics, glass, aluminium, steel, paper and cardboard recycling	All other items
Paper & Cardboard	Office Paper, Envelopes, Manilla Folders, Newspapers, Magazines, Cardboard	Plastic bags, food, waxed carboard, polystyrene, food-soiled cardboard
Food Organics	Food Scraps, Coffee Grounds, tea bags, flowers, herbs & garden trimmings, wooden or bamboo chopsticks and cutlery.	Plastic including straws, butter sachets, cling wrap, meat packaging. Biodegradable bags, polystyrene cups, grease trap waste, aluminium foil, coated cardboard, metal, tin, glass, paper hand towel.
Garden Organics	Garden prunings and leaves	All other items

6.2.2. Secondary Waste Streams

The following protocols are in place to manage additional streams.

Table 9 – Management Protocol for additional streams

WASTE STREAM	MANAGEMENT PROTOCOL
Secure Paper	Tenant-managed secure paper recycling services will likely be implemented throughout tenant floors. This service will be the responsibility of the tenant to organise collection with their appointed contractor. These bins are typically serviced by the specialist contractor directly from the tenant floor where they are located upon request by the tenant. Tenant secure paper bins will not be stored in any waste management areas – but ideally building management will facilitate the weighing of these bins prior to collection in collaboration with the tenant and their secure paper provider.
Paper hand towel recycling	In an effort to reduce waste generation volumes, a paper hand towel free system in bathrooms should be considered. Replacing hand towels with a system such as the 'Airblade' produced by Dyson[3] or the "Jet Towel" produced by Mitsubishi Electric[4] may prove to be more environmentally (and economically) efficient than a paper hand towel system. If a paper hand towel system is chosen, then it should be confirmed with the appointed waste contractor which recycling stream is most appropriate for this material.
Toner cartridge recycling	Where cartridges are generated recycling systems should be implemented. Typically, a free service provided by Planet Ark for example is sufficient – this system will consist of a large cardboard box located within the print rooms which will be collected by Planet Ark upon request by the facilities manager.
E-Waste	An E-waste collection service will be provided upon request by 133 Castlereagh Street facilities management. E-waste will be collected by cleaning staff and transferred to the waste areas to be stored for collection by the waste contractor. Measures should be taken to avoid generating E-waste and take-back programs with the supplier or reuse programs with charities or schools are encouraged.
Bulky Waste	Bulky waste is recyclable items that are too large to fit into bins, and include items such as furniture, whitegoods, electronics, pallets, strip-out waste and similar items so that storage in a public place is completely avoided. Items are stored here, and then private collection is arranged on an as needed basis.

[3] Information gathered from http://www.dysonairblade.com.au/
[4] Information gathered from http://www.mitsubishielectric.com/bu/handdryer/products/index.html.

7. Collection

7.1 Waste Collection Practices

Retail and commercial waste will be collected utilising a commercial waste contractor. This affords the development sufficient flexibility regarding collection schedules, and the appropriate final collection frequencies will be determined in consultation with the waste contractor once appointed. Recommended collection frequencies have been detailed in Tables 5 - 7 above based on the estimated waste profile, however once operational, collection schedules may need to be adjusted accordingly depending on actual waste generation. The waste contractor engaged will be required to comply with all site safety requirements issued by centre management regarding safe access, onsite movement, traffic management etc.

Residential waste will be collected by Council. A standard Council truck (see Section 7.2 below for Council truck specifications) will be able to access the loading dock on the Ground Floor, where residential bins will be waiting in the temporary bin store also located in the loading dock.

7.2 Waste Collection Vehicles

The site will be serviced by both SRVs and MRVs, all of which will enter the loading dock from Castlereagh Street and drive down to the loading dock area/s. The figures below show indicative specifications of the collection vehicles which may be used by the appointed waste contractor and Council to collect waste and recycling from the site.

Figure 5: Indicative SRV rear-lift truck specifications

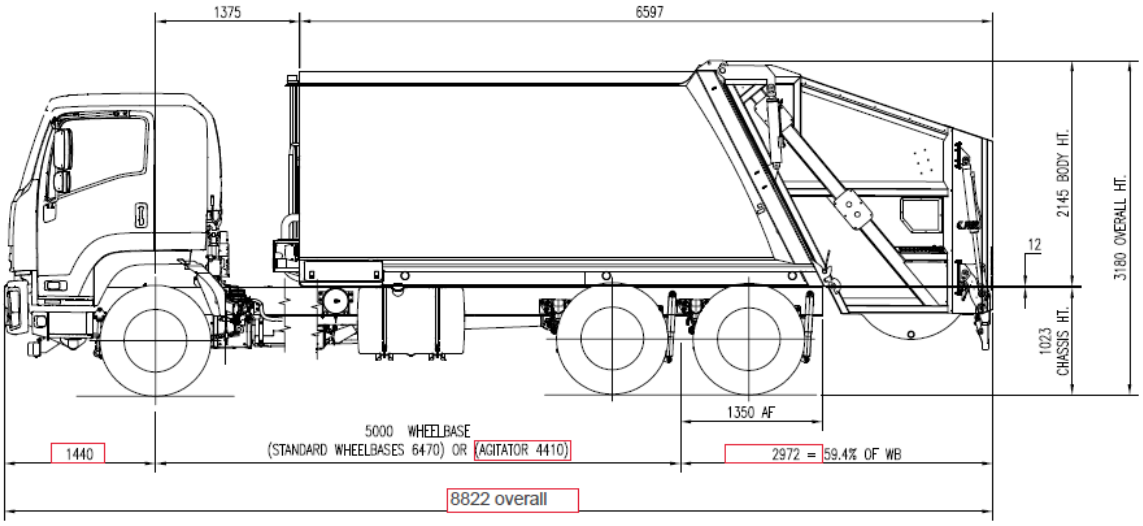
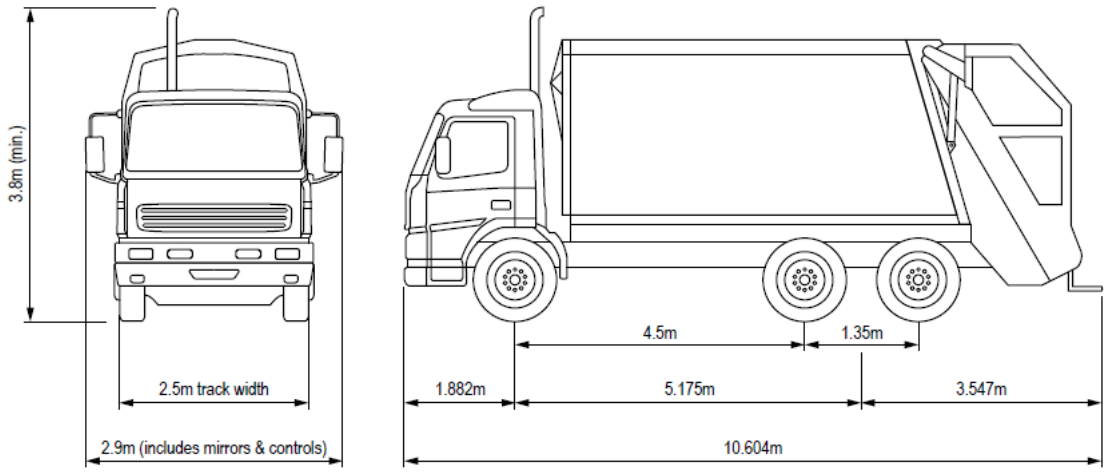


Figure 6: Council indicative rear-lift truck specifications



10.6m Council collection vehicle (side view)

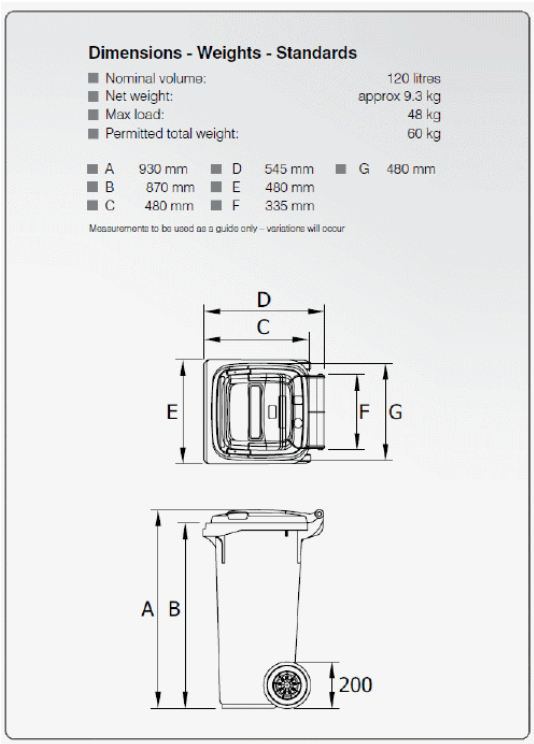
8. Conclusion

The details of this waste management plan confirm that the proposed waste facilities can adequately accommodate the indicative required equipment for the effective management of waste from all components of the Stockland Piccadilly Complex, Sydney: Mixed Use development. It is anticipated that further detailed design will follow in future stages, including a detailed DA, to capture the detailed specifications of the required equipment and the associated detailed spatial design requirements of all the waste management areas.

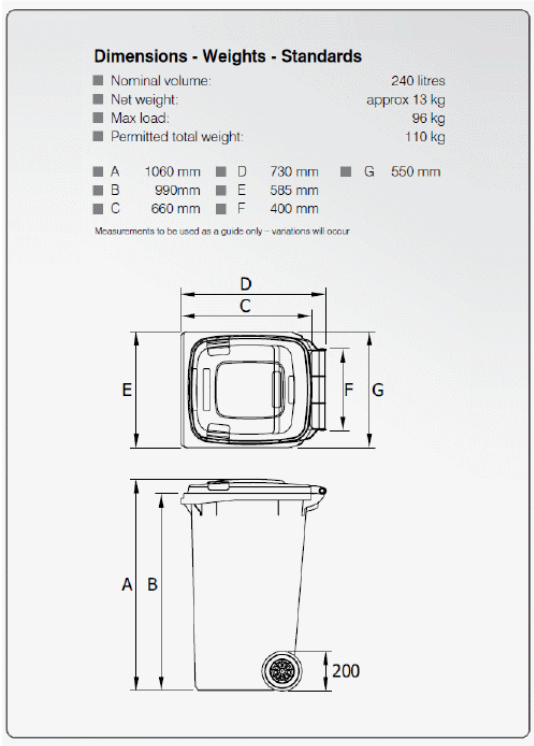
Appendix

Appendix 1: MGB Specifications (SULO)

120L MGB



240L MGB



660L MGB

1100L MGB