



Alexandria Park Community School

Operational Waste Management Plan

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This report is based on information provided by The NSW Department of Education c/o TKD Architects coupled with Foresight Environmental's knowledge of waste generated within the education and commercial sectors. 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 TKD Architects.

This report is not a substitute for legal advice on the relevant environmental related legislation, which applies to businesses, contractors or other bodies. Accordingly, Foresight Environmental will not be liable for any loss or damage that may arise out of this project, other than loss or damage caused as a direct result of Foresight Environmental negligence.

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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'). It accompanies an Environmental Impact Statement (EIS) prepared in support of State Significant Development Application SSD 17_8373 for the redevelopment of 'Alexandria Park Community School' at 7-11 Park Road, Alexandria (the 'Site'). The EIS seeks development consent for the following works:

The redevelopment of the Alexandria Park Community School ('the School') will address issues of capacity for schools in the inner city areas of Sydney and is also driven by the population growth resulting from the large number of residential developments that are transforming the former industrial precincts of Zetland, Waterloo and Alexandria.

The new school has been briefed to accommodate up to 1,000 primary school students and up to 1,200 secondary school students on one campus in an integrated and fully connected school building.

Specifically, this project includes:

- Demolition of all existing buildings on-site, including the temporary pop-up schools;
- Remediation of specific areas of the site containing contaminated fill;
- Construction of multiple school buildings of up to five stories, arranged along the western and southern parts of the site comprising:
 - Classroom home bases;
 - Collaborative learning spaces;
 - Specialist learning hubs;
 - Learning support spaces;
 - Offices for teachers and administrative staff;
 - Library; and
 - Student canteen.
- Construction of a sports hall and multiple outdoor sports courts;
- An all-weather multipurpose synthetic sports field;
- Informal play spaces and Covered Outdoor Learning Space or COLA;
- A community centre;

- A pre-school for 39 children;
- Site landscaping including green links, community garden and open space;
- Construction of a new on-site car park and associated vehicular access point off Belmont Street; and
- Augmentation and construction of ancillary infrastructure and utilities as required.

Delivery of the project will be undertaken in sequential phases to maintain an operational school on the Park Road Campus and will involve enabling works separate to this application followed by three main construction phases for the new building and external works.

The purpose of this report is to provide an assessment of the proposal as described above and detailed within the EIS. This operational waste management plan details the systems and practices involved in managing waste and recycling during the ongoing operation of the School.

2. Spatial Use

Table 1 below details the waste generating areas of the new development – these areas will form the basis of the waste generation estimates to be incorporated with the whole-of-campus estimate, allowing for projected student numbers (100 primary and 1200 secondary) and equivalent full time (EFT) staff numbers (200).

Table 1 – Waste generating areas by location and type

Location	m2	%
Teaching Areas	11,303	72.72%
Office / Admin/Library	847	5.45%
Common Areas	827	5.32%
Amphitheatre/Communal Hall	1,094	7.04%
Amenities (Toilets)	777	5.00%
Canteen/Kitchenette	696	4.48%
TOTAL	15,544	100.00%

3. Waste Generation Estimate

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

- Cardboard/paper recycling
- Comingled recycling
- Food organics recycling
- General waste

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

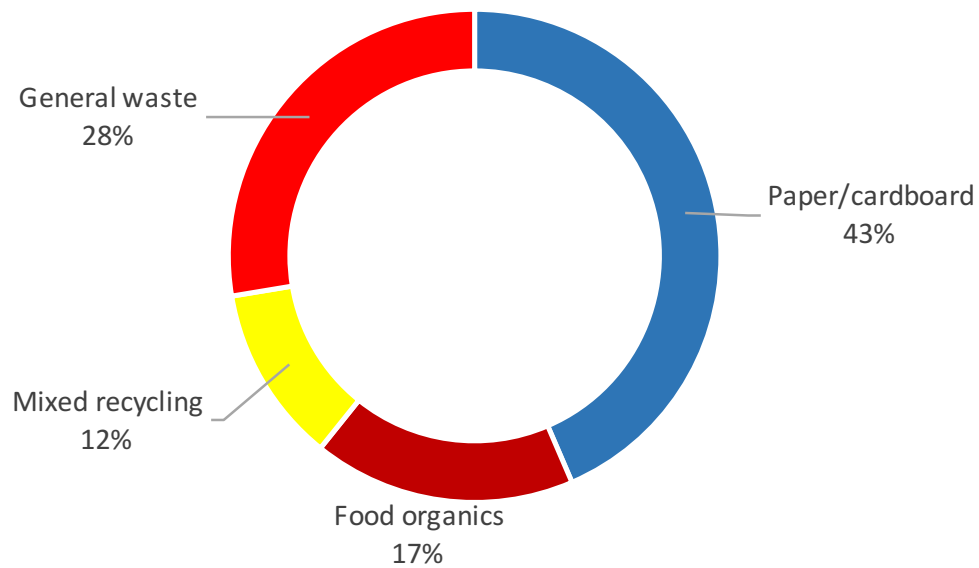
3.1 Estimated Waste Generation

Based on industry averages and historical audit data, it is estimated that the proposed facilities will generate a total of **413 kilograms and 4,807 litres** of waste and recyclables per day. 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 with the projected total student number of 2200 and staff of 200.

Table 2 – Waste generation estimate

	kg/day	L/day	kg/wk	L/wk
Paper/cardboard	95	2,093	477	10,463
Food organics	206	829	1,028	4,144
Comingled recycling	19	559	95	2,794
General waste	93	1,327	466	6,637
Total	413	4,807	2,066	24,037

Chart 1 – Waste profile (volume)



4. Waste Management Systems

4.1 Waste Systems

Table 3 below demonstrates how the current onsite systems provide ample capacity for the estimated waste volumes detailed in Table 2 above.

Table 3: Recommended equipment and collection frequency

Waste Stream	Bin Type	No. of Bins	Weekly Clearance Frequency	Capacity (weekly)	Estimated volume / week	Footprint per bin (m ²)	Total Footprint (m ²)
Paper/Cardboard Recycling	1100L MGB	3	3	9,900	10,463	1.37	4.1
	240L MGB	10	1	2,400		0.43	4.3
Comingled Recycling	660L MGB	2	3	3,960	2,794	1.05	2.1
General Waste*	1100L MGB	4	3	13,200	10,780	1.37	5.5
TOTAL				29,460	24,037		16.0
Recommended Storage Area (including circulation space)							24.9m²
Total area provided in waste storage area							26m²

*note: includes organics

**note: these bins will be stored throughout the school for use at the point of generation – they will only be brought to the waste storage/collection area as required for collection. It is unlikely that they will all be located at the collection area at any one time.

4.2 Liquid/Hazardous waste

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

Figure 1 – example of liquid/hazardous waste storage cabinet



4.3 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



4.4 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. A bulk 3m3 front lift bin is recommended for the management of this stream which can be located adjacent to the waste storage area near the garden store. This bin should be collected on request as required.
- 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).

5. Waste and Recycling Storage Area

The current waste storage area is located off Belmont St and provides ample capacity for the bins proposed in table 3 above.

Figure 1 – Waste storage area location

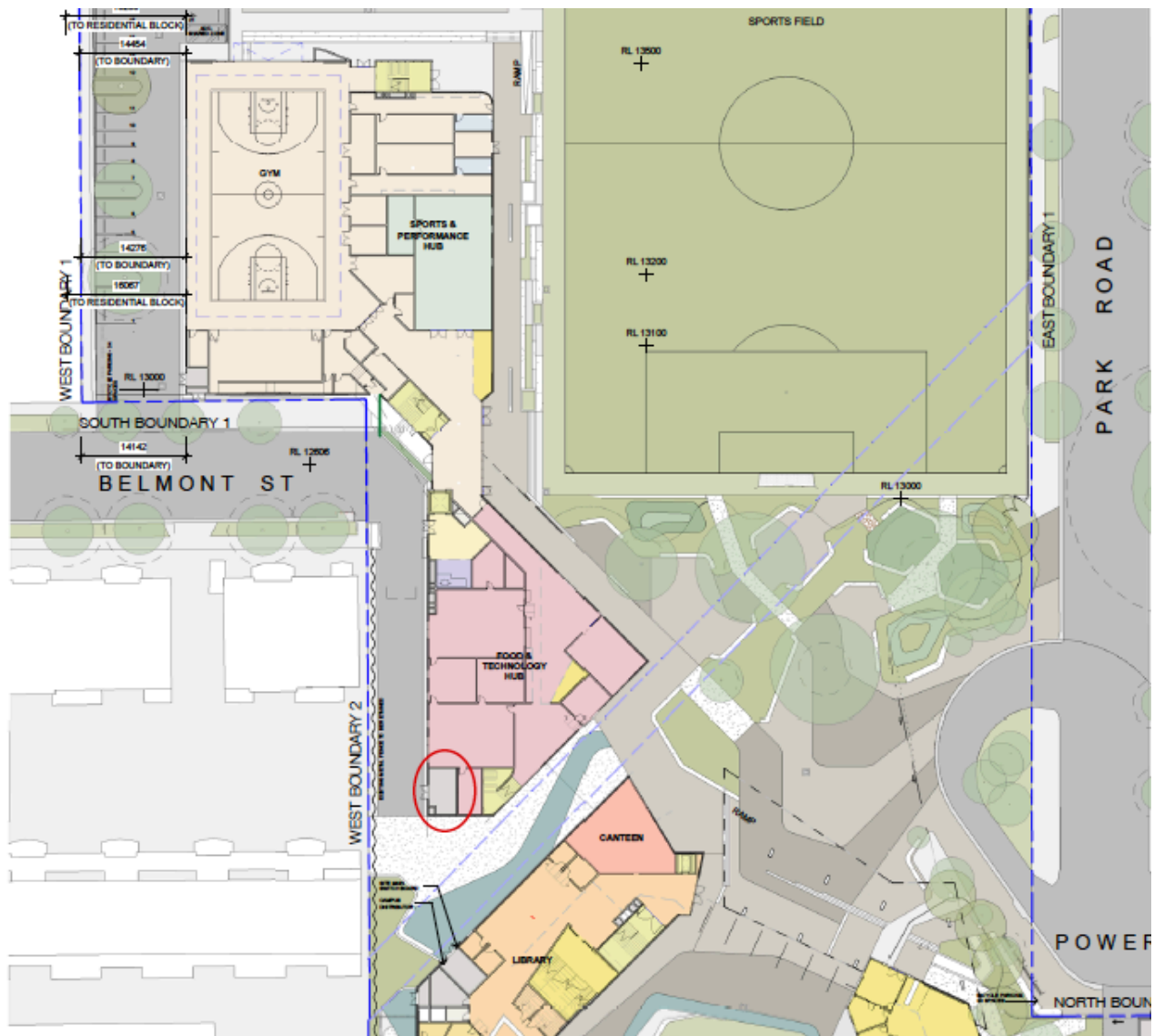
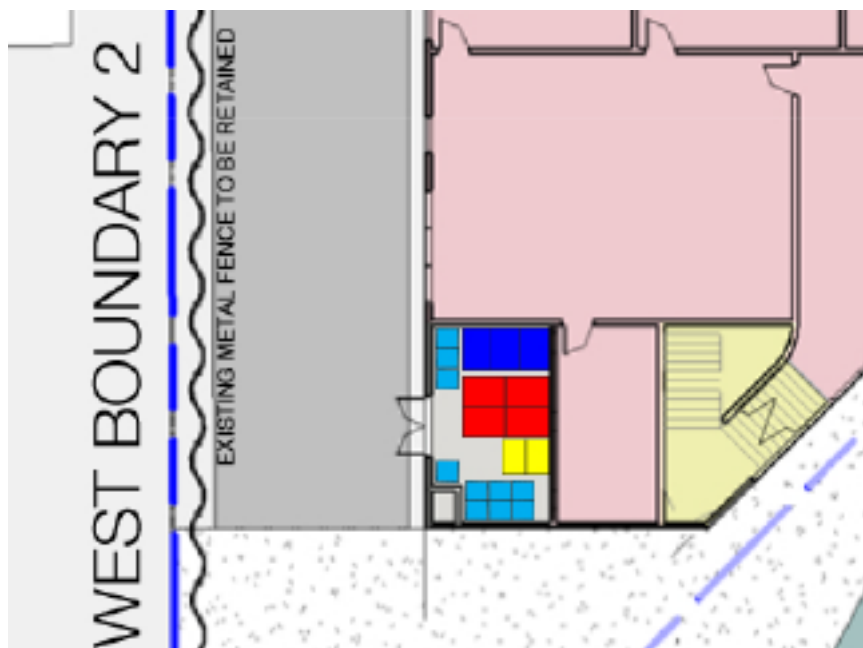


Figure 2 – Waste storage area indicative layout



5.1 Signage and Colour-coding

All waste and recycling streams should be differentiated with clear signage and colour-coding 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.



6. Onsite Management Protocols

6.1 Waste systems on each level

Throughout each level are various areas with different functions – including teaching/study areas, office/admin areas, tutorial rooms etc.

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. This encourages students/staff using the spaces to remove any waste they have and place it in the appropriate bin at the nearest hub – such a practice should promote recycling by giving users the choice of stream to dispose material into, and also reduce the time taken for cleaners to empty the bins. See photograph below for an example of a waste/recycling hub.

Signage will need to be displayed on all bins and ideally on walls above bins advising of acceptance criteria within each system.

Photograph 1 – Best practice bin hub



6.2 Outdoor Areas

Appropriate public place bin hubs should be implemented throughout high traffic outdoor areas i.e. sporting fields, break-out/lunch areas, walkways etc.

The following photographs provide examples of waste and recycling bin hubs. It is important to note that if recycling is implemented in these areas that both general waste and recycling bins must be located next to each other – when these streams are isolated from each other the likelihood of the recycling stream being contaminated by non-recyclables significantly increases.

For ease of use, bin hubs should be large enough to house a 240L MGB for each stream so that maintenance staff can simply remove the full bin and replace it with an empty bin. Full bins can then be transferred to the waste storage/collection area for collection by the waste contractor.

Photographs 2 & 3– Outdoor bin hubs



6.3 Waste Stream Collection Practices

Table 4 outlines the cleaners and campus operational staff collection practices for each waste stream

Waste Stream	Collection Practices
Paper/cardboard recycling	<ol style="list-style-type: none"> 1. Cleaners empty bin hubs into cleaner trolleys. Material is then taken to waste storage area via the lift core and transferred into the paper/cardboard bins. 2. Where possible, bulky cardboard should be taken directly to the waste storage area or left in a designated area on each level (e.g. store rooms) to be collected by cleaning staff. 3. Cleaners collect flattened cardboard as required and transfer it to the waste storage area where it is deposited into the paper/cardboard recycling 1100L MGBs 4. Bins collected from the waste storage areas directly by waste contractor via Belmont St.
Comingled Recycling	<ol style="list-style-type: none"> 1. Cleaners empty bin hubs into cleaner trolleys. Material is then taken to waste storage area and transferred into the 660L MGBs comingled bins in waste storage area. 2. Bins collected from the waste storage areas directly by waste contractor via Belmont St.
General Waste	<ol style="list-style-type: none"> 1. Cleaners to collect general waste from bin hubs using a trolley and transport the waste to the waste storage area to be transferred into the 1100L general waste bins. 2. Bins collected from the waste storage areas directly by waste contractor via Belmont St.
Vegetation	<ol style="list-style-type: none"> 1. Managed onsite by grounds staff – transferred to 3m3 bulk bin adjacent to garden store 2. Collected on call by contractor as required by grounds staff
Liquid/hazardous waste	<ol style="list-style-type: none"> 1. Liquids and hazardous chemical waste to be stored within liquid waste cabinet in arts store-room and science lab store-room areas – these materials should be catalogued and managed by head teacher or designated staff member. 2. Specialist contractor will be engaged as required by head teacher to collect materials directly from storage cabinet
Toner Cartridge Recycling	<ol style="list-style-type: none"> 1. Used toner cartridges will be collected by campus operations and placed into the designated toner cartridge recycling bin located in office areas 2. This will be collected on call by a dedicated contractor (i.e. Planet Ark)
Battery Recycling	<ol style="list-style-type: none"> 1. Batteries will be collected in boxes at collection point decided upon by campus management (ideally office common areas, reception areas) 2. This waste stream will be collected on call.

Figure 3 – example of segregated cleaner trolley to transfer waste from bin hubs to waste storage area



6.4 Waste Stream Acceptance Criteria

Paper/cardboard Recycling:

The paper/cardboard recycling stream offered by the Department of Education (DoE) waste contractor accepts all paper and cardboard materials including newsprint, glossy paper and mixed office paper.

Comingled Recycling:

The comingled recycling stream offered by the DoE waste contractor accepts all recyclable plastic containers, aluminium containers, glass bottles and steel cans.

General Waste:

The general waste stream accepts all other non-recyclable materials including food waste/scrap.

6.5 Waste Collection

Waste collections will be conducted by the appointed waste contractor and under the contractual arrangements the collection times will be specifically scheduled strictly within the hours of 7:30am – 6:00pm Monday to Friday. Waste truck specifications will vary slightly between contractors however as a guide, all streams and bins recommended in this report would typically be collected by a MRV rear lift waste truck – figure 4 details the indicative dimensions of a typical MRV rear-lift truck used by most commercial waste contractors and figure 5 demonstrates the swept path analysis confirming the maneuverability of this size truck onsite.

Figure 4: Medium rear-lift commercial waste truck specifications

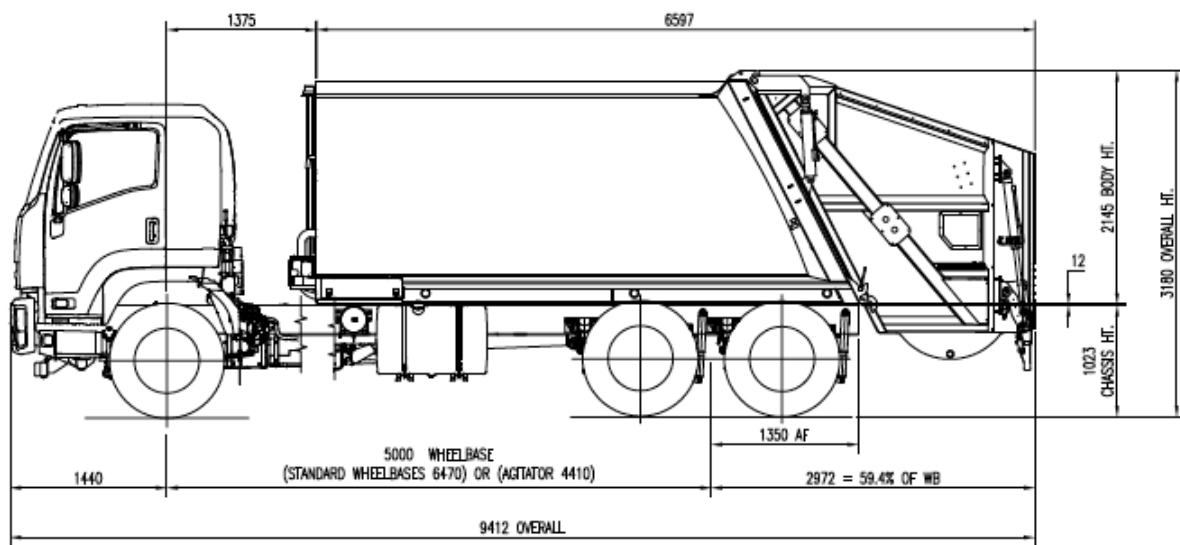
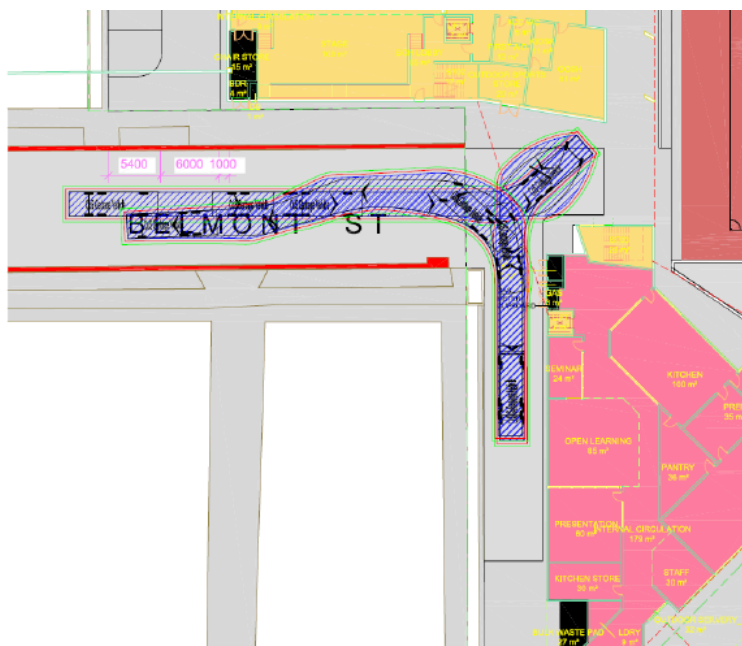


Figure 5: MRV garbage truck swept path



7. Additional Opportunities

7.1 Waste Diversion Opportunities

The following initiatives represent opportunities for Alexandria Park Community School to explore in an effort to reduce total waste generation. These options are not a requirement however should be considered to move towards best practice waste management.

7.1.1. Organics Recovery/recycling

It should be noted that offering food/organic recycling throughout all areas of the school is not recommended due to the challenges of contamination, however options should be investigated for the canteen and within food technology classrooms where there is more control over the type of materials being disposed ensuring that organics bins would remain free of contaminants.

The waste contractor should be consulted to explore the commercial options they offer for dedicated organics recycling. Alternatively, other onsite options should be investigated which would reduce the quantity of waste being taken offsite by waste contractors. An effective solution could incorporate one or all the following:

- Onsite compost bins
- Onsite worm farms

Figure 6 – example of compost set up



Figure 7 – example of basic worm farm



8. Appendix

The following figures provide the approximate dimensions of the proposed bin systems.

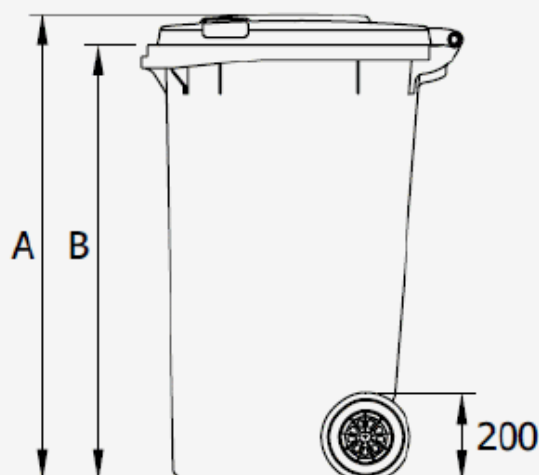
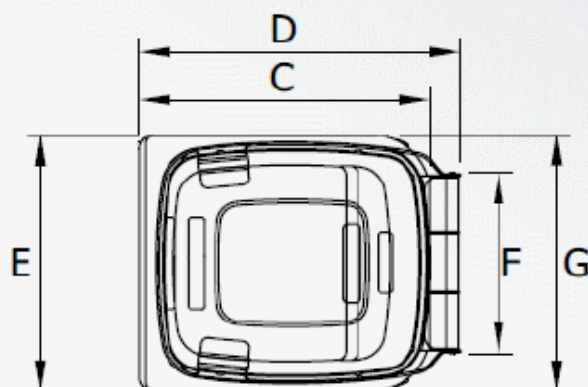
240L MGB

Dimensions - Weights - Standards

■ Nominal volume:	240 litres
■ Net weight:	approx 13 kg
■ Max load:	96 kg
■ Permitted total weight:	110 kg

■ A	1060 mm	■ D	730 mm	■ G	550 mm
■ B	990mm	■ E	585 mm		
■ C	660 mm	■ F	400 mm		

Measurements to be used as a guide only – variations will occur

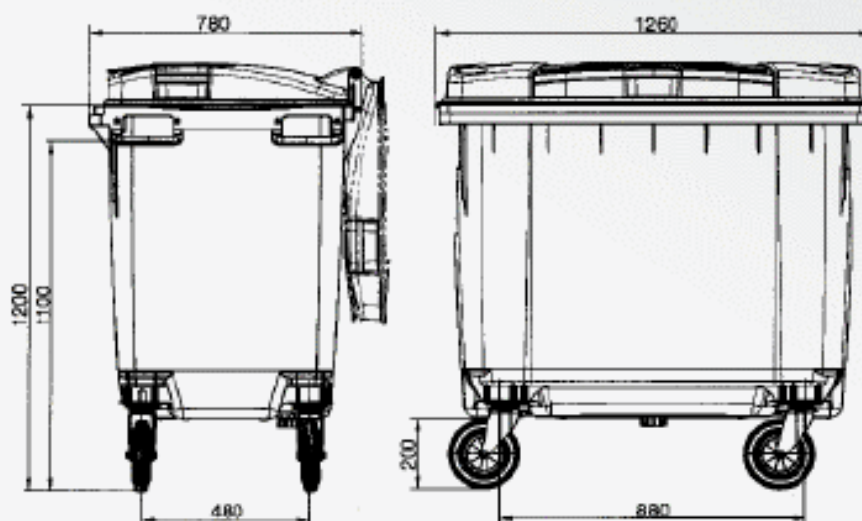


660L MGB

Dimensions - Weights - Standards

■ Nominal volume:	660 litres
■ Net weight:	43 kg
■ Max. load:	265 kg
■ Permitted total weight:	310 kg

Measurements to be used as a guide only - variations will occur



1100L MGB

Dimensions - Weights - Standards

■ Nominal volume:	1100 litres
■ Net weight:	approx. 65 kg
■ Max. load:	440 kg
■ Permitted total weight:	510 kg

Measurements to be used as a guide only - variations will occur

