



Kellyville South Public School

21-23 Fairway Drive, Kellyville

Operational Waste Management Plan

This report is based on information provided by The NSW Department of Education c/o Tanner Kibble Denton (TKD) Architects Pty Ltd coupled with Foresight Environmental's knowledge of waste generated within the commercial and education 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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Table of Contents

1.	<u>INTRODUCTION</u>	4
2.	<u>SPATIAL USE</u>	5
3.	<u>WASTE GENERATION ESTIMATE</u>	5
3.1	ESTIMATED WASTE GENERATION	6
4.	<u>WASTE MANAGEMENT SYSTEMS</u>	7
4.1	OTHER WASTE/RECYCLING	8
5.	<u>WASTE AND RECYCLING STORAGE AREA</u>	8
5.1	SIGNAGE AND COLOUR-CODING	10
6.	<u>ONSITE MANAGEMENT PROTOCOLS</u>	11
6.1	WASTE SYSTEMS ON EACH LEVEL	11
6.2	OUTDOOR AREAS	12
6.3	WASTE STREAM COLLECTION PRACTICES	13
6.4	WASTE STREAM ACCEPTANCE CRITERIA	14
7.	<u>ADDITIONAL OPPORTUNITIES</u>	15
7.1	WASTE DIVERSION OPPORTUNITIES	15
7.1.1.	ORGANICS RECOVERY/RECYCLING	15
8.	<u>APPENDIX</u>	17

1. Introduction

This operational waste management plan (WMP) has been prepared by Foresight Environmental on behalf of the New South Wales Department of Education (the 'Applicant'). It accompanies an Environmental Impact Statement (EIS) prepared in support of State Significant Development Application SSD 16_7787 for the development of 'Kellyville South Public School' at Nos. 21-23 Fairway Drive, Kellyville (the 'site').

The site, Lot 11 DP 247442 and Lot 501 DP 1130020 is located within the Hills Shire Local Government Area at the Balmoral Road Release Area. The site is rectangular in shape, has a total area of 35,004m² and contains a 180m street frontage to Fairway Drive to the east.

Kellyville South Public School (the 'School') is proposed to facilitate up-to 1000 students to take enrolment pressure off surrounding primary schools exceeding student capacity. The primary school will contain high quality classrooms, collaborative learning spaces, open play spaces, sports courts and associated facilities. The purpose of this operational waste management plan is to outline the systems and practices involved in managing waste and recycling during the ongoing operation of the School as detailed within the EIS.

The proposed school development includes construction of the following:

- Two storey school buildings and sports hall in the west and east section of the site
- A hardstand amphitheatre, play area and sports field
- Open space play areas

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 and equivalent full time (EFT) staff numbers. These figures do not represent the total GFA of the new development – only the areas that will actually contribute to the waste estimate.

Table 1 – Waste generating areas by location and type

	Teaching Areas	Office / Admin	Common Areas	Amphitheatre/ Hall	Amenities	Canteen	Total
Lower Ground	1699	0	250	0	144	0	2093
Ground	2316	280	200	101	640	112	3649
First floor	1101	0	198	0	134	0	1433
Total	5116	280	648	101	918	112	7175

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.

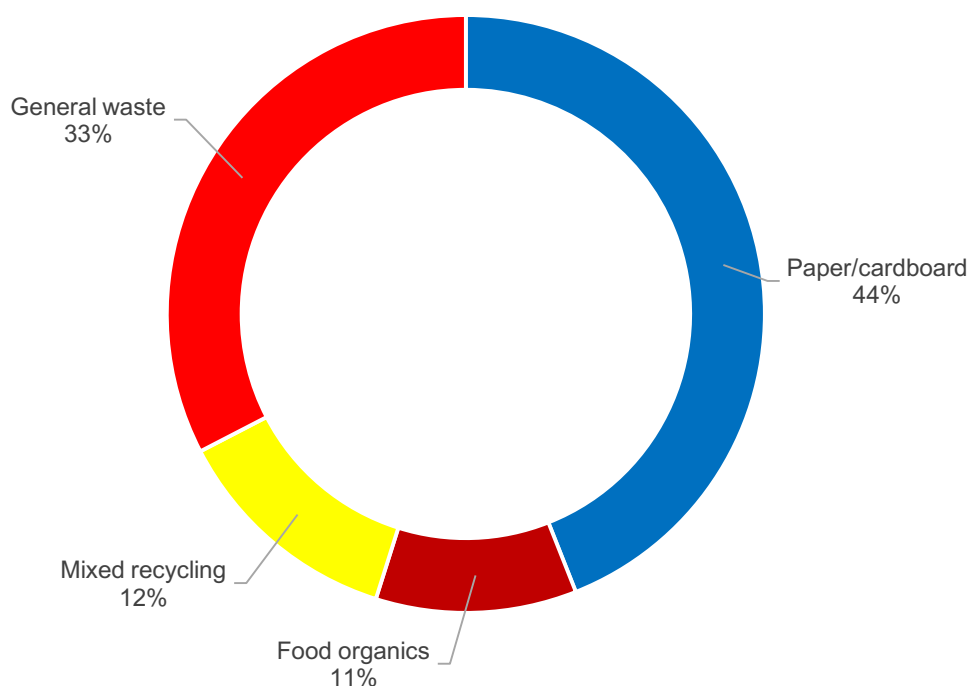
3.1 Estimated Waste Generation

Based on industry averages and historical audit data, it is estimated that the proposed facilities will generate a total of **166 kilograms and 2,286 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 1000.

Table 2 – Waste generation estimate

	kg/day	L/day	kg/wk	L/wk
Paper/cardboard	71	1,006	357	5,030
Food organics	50	248	248	1,242
Comingled recycling	11	286	57	1,432
General waste	34	745	168	3,727
Total	166	2,286	830	11,431

Chart 1 – Waste profile (volume)



4. Waste Management 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	1	1	1,100	5,030	1.05	1.4
	240L MGB	16**	1	3,840		0.43	6.8
Comingled Recycling	660L MGB	1	3	1,980	1,432	0.43	1.1
General Waste*	1100L MGB	1	5	5,500	4,968	1.37	1.4
TOTAL				12,420	11,431		10.6
Recommended Storage Area (including circulation space)							20m²

*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.

4.1 Other waste/recycling

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

- 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 off Ernesta Place provides sufficient capacity for the bins proposed in table 4 above.

Figure 1 – Waste storage area location

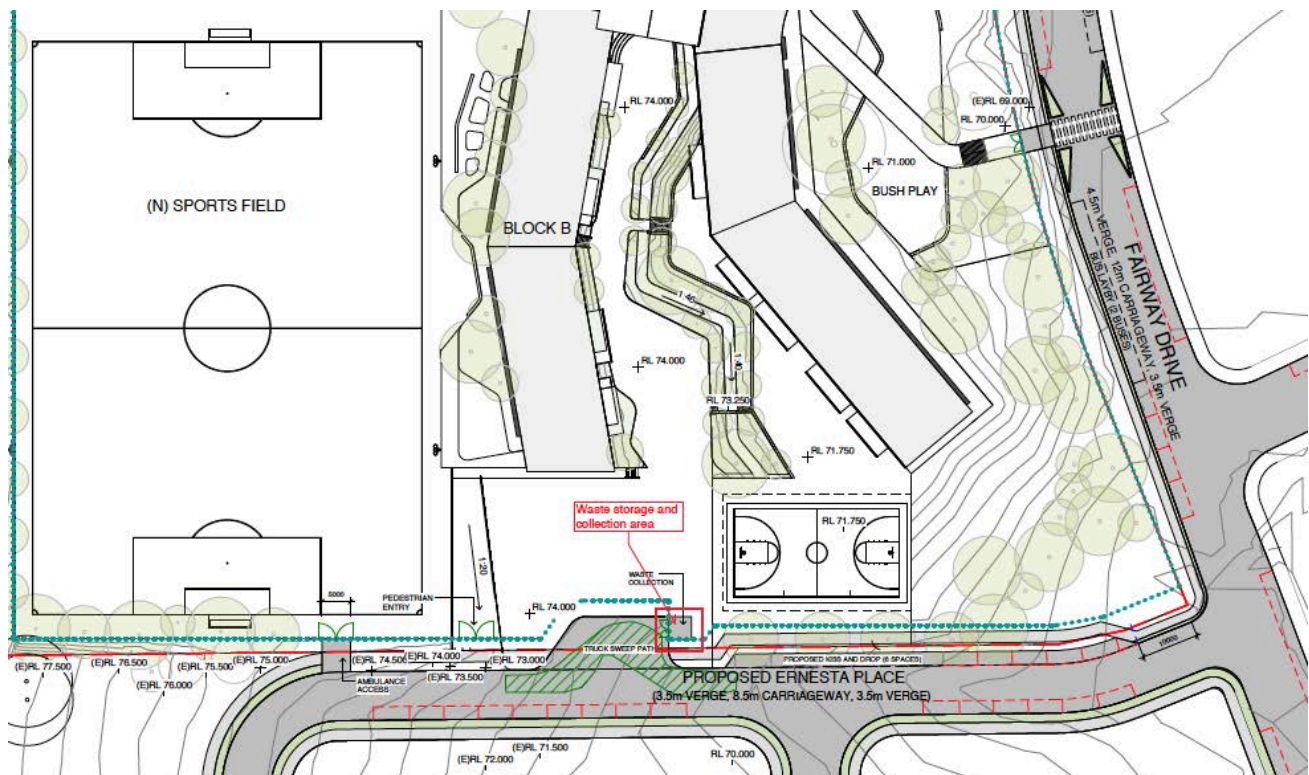
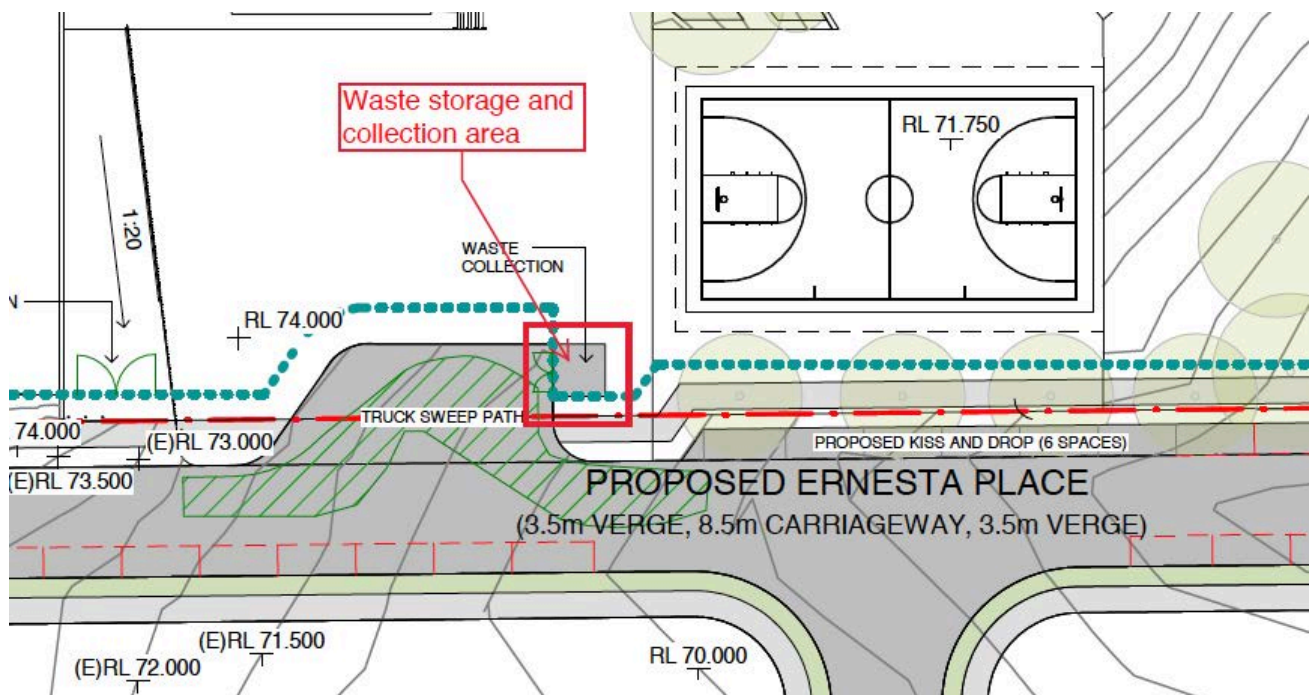


Figure 2 – Waste storage area and truck swept path



The storage area and bins should be clearly signed to assist in differentiating between the streams to ensure waste and recyclables are separated and disposed appropriately.

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 3 – 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.

Photograph 4 – 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	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 660L MGBs 4. Bins collected from the waste storage area directly by waste contractor via Ernesta Place.
Comingled Recycling	1. Cleaners empty bin hubs into cleaner trolleys. Material is then taken to waste storage area via the lift core and transferred into the 240L MGBs comingled bins in waste storage area. 2. Bins collected from the waste storage area directly by waste contractor via Ernesta Place.
General Waste	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 area directly by waste contractor via Ernesta Place.
Toner Cartridge Recycling	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	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 2 – 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/scraps.

7. Additional Opportunities

7.1 Waste Diversion Opportunities

The following initiatives represent opportunities for Kellyville Public 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 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 actually reduce the quantity of waste being taken offsite by waste contractors. An effective solution could incorporate one or all of the following:

- Onsite compost bins
- Onsite worm farms

Figure 3 – example of compost set up



Figure 4 – example of basic worm farm



8. Appendix

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

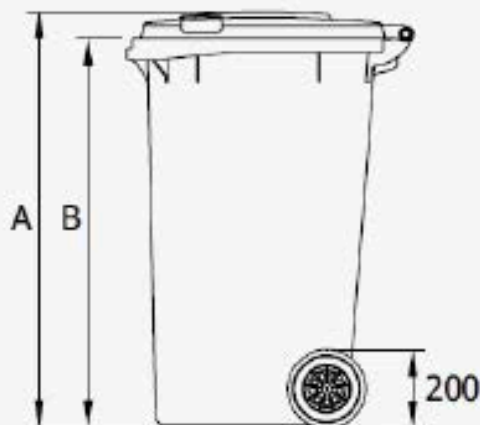
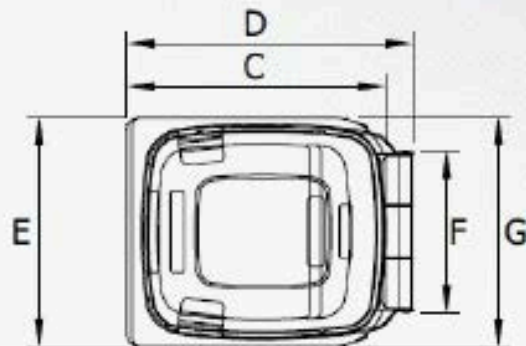
240L MGB

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

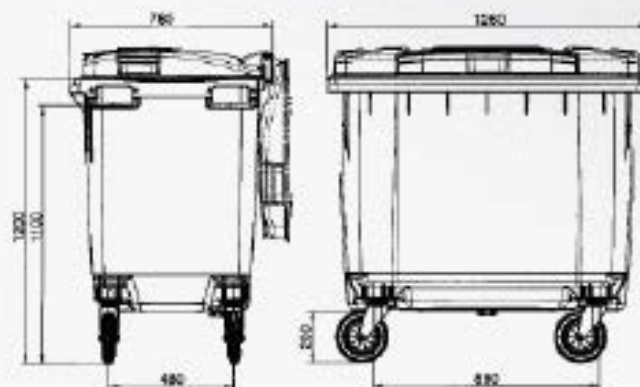


660L MGB

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

