

International Maarif Schools of Australia – Gallipoli Campus

Operational Waste Management Plan

JULY 2018



**WASTE AUDIT AND
CONSULTANCY SERVICES**

Level 21 / 133 Castlereagh Street
Sydney, NSW 2000

Telephone (02) 9199 4521
www.wasteaudit.com.au

This report contains confidential information. It has been compiled by Waste Audit and Consultancy Services (Aust) Pty Ltd on behalf of the Australian Turkish Maarif Foundation for the International Maarif Schools of Australia – Gallipoli Campus project.

This Operational Waste Management Plan is not a substitute for legal advice on the relevant environmental legislation, which applies to the Australian Turkish Maarif Foundation, contractors or other bodies. Accordingly, Waste Audit and Consultancy Services (Aust) Pty Ltd 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 Waste Audit and Consultancy Services (Aust) Pty Ltd's negligence.

Table of contents

Table of contents.....	3
1. Introduction	4
2. Waste Generation.....	6
2.1 Waste Streams	6
2.2 Waste Generation Estimates.....	6
3. Waste Management Systems	8
3.1 Spatial Requirements by Stage.....	8
3.2 Waste Systems – Entire Development	10
3.3 Waste Systems – Stages 1 and 2	10
3.4 Waste Systems – Stages 3a and 3b	11
3.5 Summary of Management process	11
3.6 Waste Storage Design	12
3.7 Disposal of Waste/Recyclables.....	13
4. Waste Stream Acceptance Criteria	14
4.1 Acceptance Criteria	14
4.2 Bin Requirements	14
5. Staff and Student Education.....	15
6. Other Systems	16
7. Ongoing Management	17
Appendix A – Waste Storage Areas and Collection Points.....	18
19	
Appendix B – Waste Room Colour Coding	20
Appendix C – Waste Management Equipment	21
Appendix D – Example Signage	25

1. Introduction

This Operational Waste Management Plan has been prepared on behalf of the Australian Turkish Maarif Foundation (ATMF) to accompany a State Significant Development Application for the International Maarif Schools of Australia – Gallipoli Campus development, located at 2 Percy, Auburn NSW.

This Plan has been developed with consideration of Cumberland Councils and other Authority's requirements. It is intended to inform the design of the waste services by identifying the estimated waste profile for the development and providing the total area required for the recommended equipment/systems.

In doing so this Plan, which includes waste estimates and related management requirements, has been developed in accordance with Cumberland Council's *Auburn Development Control Plan 2010*.

The project involves the refurbishment of an existing office building, and the construction of a K-12 co-ed, two-stream school. In relation to this Plan the key components of this development are:

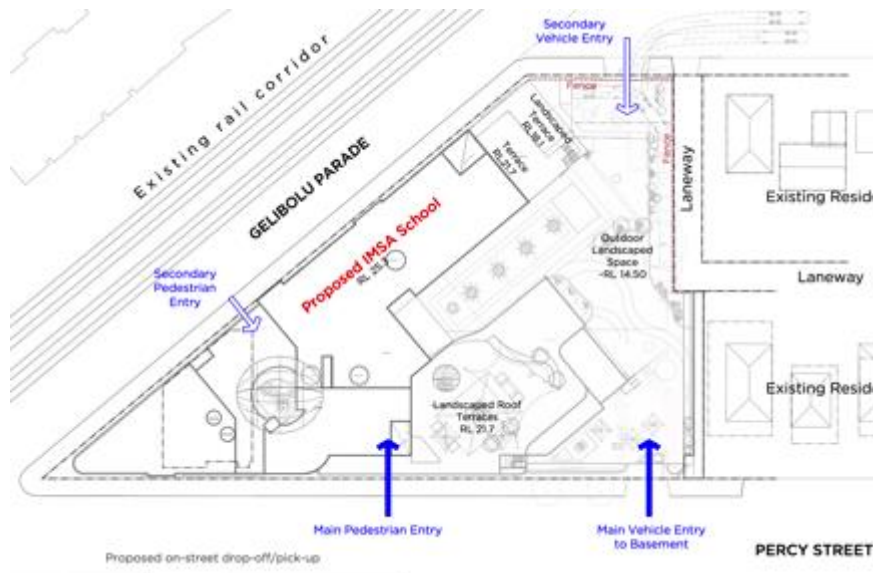
- Teaching and learning areas;
- ATMF offices;
- School administration and office areas;
- Communal, multi-purpose and lounge areas;
- Canteen and food tech facilities;
- A library; and
- A ground level waste storage room.

Constructions works will take place over four stages, with each stage's areas to be utilised upon completion. The development's staging plan is as follows:

- Stage 1: Refurbishment of an existing office building, to be used as a temporary primary school until Stage 2 is built, and then as an ATMF office until construction of Stage 3b.
- Stage 2: Construction of a new lift, basement level, primary school building and playground area.
- Stage 3a: Construction of new multipurpose areas, high school building and playground.
- Stage 3b: Construction of central staircases, new admin, library, school staff ATMF building, including the demolition of the Stage 1 refurbished ATMF offices.

Figure 1 provides an overview of the site and location of the school buildings.

Figure 1 – Site Plan



Waste audit and management strategies are recommended for new developments to provide support for the building design and promote strong sustainability outcomes for the building. All recommended waste management plans will comply with council codes and any statutory requirements. The waste management plan has three key objectives:

- i. **Ensure waste is managed to reduce the amount of waste and recyclables which are to minimise the environmental impacts of the operations of the development** – this will be achieved by ensuring maximum diversion of waste from landfill; correct containerisation and transport of materials; correct segregation of materials into appropriate management streams; awareness among tenants of waste avoidance practices.
- ii. **to minimise the impact of the management of waste within the development on local residents** – this will be achieved by ensuring waste is managed so as to avoid odour and litter and collected during suitable times.
- iii. **to ensure waste is managed so as to reduce the amount landfilled and to minimise the overall quantity generated** – this will be achieved by implementing systems that assist tenants to segregate appropriate materials that can be recycled; displaying signage in all tenant areas to remind and encourage avoidance and recycling to staff; and through associated signage in the commercial areas to reinforce these messages.

2. Waste Generation

2.1 Waste Streams

Based on the development profile, the following are the predominant waste streams that would be expected on a regular basis:

- General Waste
- Commingled Recycling
- Cardboard/Paper Recycling
- Green Waste

2.2 Waste Generation Estimates

Calculations for the types and quantities of waste that will be generated are based on averages for quantity of waste generated and composition as determined by industry data (ie., data/information provided by WACS' waste audits conducted in a broad range of sectors) as well as consideration of the waste generation rates as detailed in the NSW Environment Protection Authority's *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities*. In addition, reference has also been made to Cumberland Council requirements, while management aspects have incorporated both Council and relevant Industry guidelines/best-practice waste management approaches.

Tables 1-4 show the estimated waste and recyclables generated for each stage in terms of volume per week.

Table 1 – Waste generation estimate per week – Stage 1

	L/week
General Waste	171
Commingled Recycling	25
Paper & Cardboard Recycling	108
Green Waste	120
Total	424

Table 2 – Waste generation estimate per week – Stage 2

	L/week
General Waste	1,068
Commingled Recycling	237
Paper & Cardboard Recycling	508
Green Waste	240
Total	2,053

Table 3 – Waste generation estimate per week – Stage 3a

	L/week
General Waste	1,881
Commingled Recycling	462
Paper & Cardboard Recycling	968
Green Waste	480
Total	3,791

Table 4 – Waste generation estimate per week – Stage 3b (entire development)

	L/week
General Waste	2,456
Commingled Recycling	523
Paper & Cardboard Recycling	1,232
Green Waste	480
Total	4,691

Note: Estimated generation rates for Stage 3b take into the account the removal of Stage 1 ATMF offices.

3. Waste Management Systems

3.1 Spatial Requirements by Stage

The following tables show the recommended systems required to manage the estimated waste profile for the development as detailed in Section 2.2. The systems refer to the waste storage room system rather than the internal bins that may be used within the development.

The provided space for waste storage (for each stage), is sufficient to meet the minimum requirements for bins based on the required number of bins, their footprint and ensuring an allowance for bin movement.

Table 5 – Spatial Requirement – Stage 1

Waste Stream	Bin Size	No. of bins	Clearance (frequency/ week)	Capacity (Weekly)	Estimated Volume/ Week	Footprint per bin (m2)	Total Footprint
General waste	240	1	1	240	171	0.43	0.43
Commingle Recycling	240	1	0.5	120	25	0.43	0.43
Paper & Cardboard Recycling	240	1	0.5	120	108	0.43	0.43
Green Waste	240	1	0.5	120	120	0.43	0.43
TOTAL		4		600	424		1.72
Plus Bin Wash Area							3.72
Plus 30%							4.84

Based on the estimates of waste generation and the number of bins required (with the collection schedule as noted), as well as allowing for a bin wash area and 30% space for bin movement, the minimum size of the waste storage area following Stage 1 of construction should be approximately 5 m².

Table 6 – Spatial Requirement – Stage 2

Waste Stream	Bin Size	No. of bins	Clearance (frequency/ week)	Capacity (Weekly)	Estimated Volume/ Week	Footprint per bin (m2)	Total Footprint
General waste	240	5	1	1,200	1,068	0.43	2.15
Commingle Recycling	240	1	1	240	237	0.43	0.43
Paper & Cardboard Recycling	240	3	1	720	508	0.43	1.29
Green Waste	240	1	1	240	240	0.43	0.43
TOTAL		10		2,400	2,053		4.30
Plus Bin Wash Area							6.30
Plus 30%							8.19

Based on the estimates of waste generation and the number of bins required (with the collection schedule as noted), as well as allowing for a bin wash area and 30% space for bin movement, the minimum size of the waste storage facility following Stage 2 of construction should be approximately **9 m²**.

Table 7 – Spatial Requirement – Stage 3A

Waste Stream	Bin Size	No. of bins	Clearance (frequency/ week)	Capacity (Weekly)	Estimated Volume/ Week	Footprint per bin (m2)	Total Footprint
General waste	240	8	1	1,920	1,881	0.43	3.44
Commingled Recycling	240	2	1	480	462	0.43	0.86
Paper & Cardboard Recycling	240	5	1	1,200	968	0.43	2.15
Green Waste	240	2	1	480	480	0.43	0.86
TOTAL		17		4,080	3,791		7.31
Plus Bin Wash Area							9.31
Plus 30%							12.11

Based on the estimates of waste generation and the number of bins required (with the collection schedule as noted), as well as allowing for a bin wash area and 30% space for bin movement, the minimum size of the waste storage facility following construction of Stage 3a should be approximately **13 m²**.

Table 8 – Spatial Requirement – Stage 3B (entire development)

Waste Stream	Bin Size	No. of bins	Clearance (frequency/ week)	Capacity (Weekly)	Estimated Volume/ Week	Footprint per bin (m2)	Total Footprint
General waste	240	11	1	2,640	2,456	0.43	4.73
Commingled Recycling	240	3	1	720	523	0.43	1.29
Paper & Cardboard Recycling	240	6	1	1,440	1,232	0.43	2.58
Green Waste	240	2	1	480	480	0.43	0.86
TOTAL		22		5,280	4,691		9.46
Plus Bin Wash Area							11.46
Plus 30%							14.90

Based on the estimates of waste generation and the number of bins required (with the collection schedule as noted), as well as allowing for a bin wash area and 30% space for bin movement, the minimum size of the waste storage facility following construction of Stage 3b should be approximately **15 m²**.

3.2 Waste Systems – Entire Development

The following summarises the recommended waste and recycling systems and procedures that will be implemented across the entire development. These recommendations are based on Cumberland Council requirements and systems implemented for similar developments.

All staff students will be briefed on the proper use of waste management systems, as it is imperative that recycling streams remain free of contamination to ensure compliance with contractor collection protocols. Staff and students will be encouraged to maximise the separation of general waste and recyclables to aid the proper disposal of all materials.

Appendix C contains illustrations of bins (and other waste management equipment), that could be used onsite. The pictures provide examples of the different options for equipment such as MGBs, tugs for transporting bins, trolley unit and a wheelie-safe trolley.

Waste and recycling collection services will be provided by a commercial waste contractor (TBA). At present a collection frequency of once per week for general waste and recyclables has been determined, as indicated in Section 3.1. However utilising a commercial waste contractor will afford each the development greater flexibility regarding collection schedules and the appropriate collection frequencies will be determined in consultation with the waste contractor once appointed, and once operational may need to be further adjusted accordingly depending on actual waste generation (types and quantities).

Signage will be a crucial element of the waste management system. Appendix D contains examples of signage. These are the type of signs that should be used throughout office areas, school buildings and waste storage area. Other signs can be accessed from the NSW EPA website at: <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>.

3.3 Waste Systems – Stages 1 and 2

The following summarises the recommended waste and recycling systems that will be implemented following Stages 1 and 2 of construction, as detailed in Section 3.1. These recommendations are based on Cumberland Council requirements, and take into account the operational staging of the development and the ongoing construction works onsite.

Waste and recyclables from the ATMF commercial offices and primary school building will be collected on a daily basis by building cleaners and transported to the ground floor outside bin enclosure, located within the site's parking facilities.

The Stage 1 bin storage is via the Council's weekly waste collection service. For Stage 2 a temporary bin storage has been located in the basement carpark. As waste collection vehicles cannot fit into this basement carpark due to height restrictions, collection by the private operator will be coordinated with the school for collection along the street.

It will be the responsibility of site management and cleaners to ensure that waste areas remain clean and that waste and recyclables are disposed of correctly into the bins provided. They will, in turn, ensure that bins are then accessible via the parking facilities on collection day. The commercial waste contractor will service bins from the parking facilities, after which it will be the responsibility of site management to ensure bins are returned and correctly organised within the outside bin enclosure. Appendix A contains the location of the outside bin enclosure and collection point.

3.4 Waste Systems – Stages 3a and 3b

The following summarises the recommended waste and recycling systems that will be implemented following Stages 3a and 3b of construction, as detailed in Section 3.1. These recommendations are based on Cumberland Council requirements and take into account the operational staging of the development and the ongoing construction works onsite.

Waste and recyclables from the entire development will be collected on a daily basis by building cleaners and transported to the ground floor waste storage room. Collection will then take place from the loading dock adjacent to the waste storage room. This will involve the commercial waste contractor wheeling out bins from the waste storage room, servicing said bins, and returning them to the waste storage room. Appendix B contains the swept path for an HRV waste collection vehicle.

In order to ensure the safe and effective servicing of bins onsite, collection will be required to take place outside of school hours and normal loading dock hours of operation.

It will be the responsibility of site management and cleaners to ensure bins are returned and correctly organised within the waste storage room. In addition, site management and cleaners will be responsible for monitoring the correct disposal of waste and recyclables and for maintaining a clean and well-organised waste storage room.

3.5 Summary of Management process

The following summarises the management system for the wastes and recyclables generated onsite.

Table 8 – Overview of management process

Stream	System	Comment
General Waste	240L MGBs	Staff, students and cleaning staff separate general waste and deposit directly into smaller bins located throughout the school grounds. Cleaners transport general waste from smaller bins into waste storage room general waste MGBs for collection.
Commingled Recycling	240L MGBs	Staff, students and cleaning staff separate commingled materials and deposit directly into smaller bins located throughout the school grounds. Cleaners transport commingled recycling from smaller bins into waste storage room commingled MGBs for collection.
Paper & Cardboard Recycling	240L MGBs	Staff, students and cleaning staff separate paper and cardboard and deposit directly into smaller bins located throughout the school grounds. Cleaners transport paper and cardboard from smaller bins into waste storage room paper and cardboard MGBs for collection.
Green Waste	240L MGBs	Cleaners, grounds keepers and/or contractors deposit green waste directly into MGBs, located in the waste storage room for collection.

3.6 Waste Storage Design

In order to reflect the staged construction and operations of this development two different waste storage areas will be designed onsite. The first of which will be a temporary outside bin enclosure that will store waste and recyclables produced by Stages 1 and 2 of the development. Following the construction of Stage 3a a ground level waste storage room will service the development on a permanent and ongoing basis.

In keeping with best practice sustainability programs, all waste areas and waste and recycling bins will be clearly differentiated through appropriate signage and colour coding to Australia Standards to reflect the materials contained. Each stream will be located in a designated area. This will assist in easy identification of correct bins by those with authorised access. Appendix B contains examples of correct waste room colour coding.

There will also be a need to ensure that there is sufficient space to allow for bin movement. As a general rule, it is recommended that an additional 30% of the estimated footprint for bins be allocated to this (and this has been calculated in estimating the waste storage space requirements).

The following parameters will apply to the design of the outside bin enclosure:

- constructed with a concrete base;
- enclosed with metal grate fencing to minimise visual impacts and to prevent public use;
- enclosed area will be able to be locked so as to prevent illegal and/or incorrect use;
- waste collection area must hold all bins – bin movements should be with ease of access; and
- conform to the Building Code of Australia, Australian Standards and local laws.

The waste storage room will contain the following to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

- waste room floor to be sealed with a two pack epoxy;
- waste room walls and floor surface is flat and even;
- all corners coved and sealed 100mm up, this is to eliminate build-up of dirt;
- a water facility with hose cock must be provided for washing the bins;
- any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board;
- tap height of 1.6m;
- storm water access preventatives (grate);
- all walls painted with light colour and washable paint;
- equipment electric outlets to be installed 1700mm above floor levels;
- the room must be mechanically ventilated;

- light switch installed at height of 1.6m;
- waste rooms must be well lit (sensor lighting recommended);
- optional automatic odour and pest control system installed to eliminate all pest types and assist with odour reduction – this process generally takes place at building handover – building management make the decision to install;
- all personnel doors are hinged and self-closing;
- waste collection area must hold all bins – bin movements should be with ease of access;
- conform to the Building Code of Australia, Australian Standards and local laws; and
- childproofing and public/operator safety shall be assessed and ensured.

Occupational Health and Safety issues such as slippery floors in waste rooms and the weight of the waste and recycling receptacles will need to be monitored. Cleaners will monitor the bin storage area and will attend to all spills immediately, as they occur.

3.7 Disposal of Waste/Recyclables

The following summarises the disposal pathway for the waste and recyclables generated onsite. Note though that this management summary cannot specify the actual locations until the waste and recycling contractor is appointed.

Table 9 – Waste Management Systems

Type of material	Destination
General Waste	Transported to a landfill facility for disposal by the appointed contractor
Commingled Recycling	Transported to a recycling facility for disposal by the appointed contractor
Paper & Cardboard Recycling	Transported to a recycling facility for disposal by the appointed contractor
Green Waste	Transported to a recycling facility for recycling by the appointed contractor

To assist in achieving maximum landfill diversion, building management and staff will be provided with information as to suitable bin systems that could be utilised within the office areas. This will include details such as bin sizes/types, colour coding and signage.

4. Waste Stream Acceptance Criteria

4.1 Acceptance Criteria

General Waste:

General waste bins will be 240L MGBs. The general waste stream does not include hazardous material (such as batteries, fluorescent light tubes, light bulbs and/or toner cartridges), recyclable material or electronic equipment such as computers, TVs and mobile phones. General waste bin lids and signage should be colour-coded red.

Commingled Recycling:

The commingled recycling system will be 240L MGBs. This system accepts all recyclable plastic containers, aluminium containers, glass bottles and steel cans. Commingled recycling bin lids and signage should be colour-coded yellow.

Paper and Cardboard Recycling:

The paper and cardboard recycling system will be 240L MGBs. This system accepts all paper and cardboard excluding waxed cardboard. Paper and cardboard recycling bin lids and signage should be colour-coded blue.

Green Waste:

The green waste system will be 240L MGBs. This system accepts grass clippings, weeds, flowers, garden prunings, small branches (less than 15cm in diameter), leaves and bark. Stumps, large branches and treated timber are not to be deposited into this stream. The lids and signage should be colour-coded green.

4.2 Bin Requirements

Containers located within the school grounds for waste and recycling should be consistent. The following table outlines the colour coding that has been developed by Standards Australia.

Table 10 – Standards Australia waste/recycling container colour coding

Waste Stream	Bin Body Colour	Lid Colour
Paper Recycling	Blue	Blue
Cardboard Recycling	Green	Blue
Commingled Recycling	Green	Yellow
General Waste	Green	Red
Food Organics	Burgundy	Burgundy

5. Staff and Student Education

All staff and students will receive information regarding the waste collection systems including how to use the system, which items are appropriate for each stream and collection regimes. Appropriate signage and updated information will also be provided.

All waste receptacles will be appropriately signed and additional room signage is usually provided from most waste contractors during implementation of the waste contract. Examples of signage are included in Appendix D.

It is recommended that all signs should;

- Clearly identify the waste/recycling stream;
- Use correct waste/recycling stream colour coding;
- Identify what can and cannot be disposed of in the receptacle; and
- Include highly visual elements to accommodate for individuals with inadequate English literacy.
- As part of the staff induction process, a waste and recycling toolkit will be provided. This toolkit will include the details of each of the systems in place; acceptance criteria for each stream and how each stream is managed.

On a six-monthly basis waste and recycling performance reports should be reported back to staff so that they are aware of their performance and areas for improvement.

6. Other Systems

In addition to the diversion system that will be implemented, other waste diversion and minimisation practices may also be implemented.

Fluorescent Light Tubes

A fluorescent light tube recycling stream may be required depending on the contractual arrangements for replacing light tubes. Recycling of used fluorescent light tubes could be a contractual requirement of the electrician responsible for servicing the lights. Alternatively if lights are serviced using in-house staff a fluorescent light tube recycling receptacle can be located in the waste storage room.

Toner Cartridges

A toner cartridge recycling bin/box can be placed in key printing areas to capture used cartridges. These can be recycled on an as-needed basis.

E-Waste

Electronic equipment should be recycled on an as-needed basis.

Mobile Phones

Mobile phones can be collected in secure receptacles at centralised collection points. Alternatively, boxes containing postage satchels can be placed in centralised areas for use as needed.

Soft Plastic

Soft plastics such as shrink-wrap, bubble-wrap, shopping bags, plastic strapping and film can be collected in a recyclable plastic bag – supported by a frame and identifiable with the appropriate signage – for recycling.

Secure Paper

Secure destruction/confidential documents can be shredded or securely destroyed and deposited into lockable MGBs – colour-coded blue – for recycling.

Timber

All timber that is suitable for recycling can be collected and deposited into dedicated bins for collection and transport to a recycling facility (to be processed as mulch).

7. Ongoing Management

Having suitable systems in place is only one element of an effective waste management system. Compliance by all stakeholders is essential.

Cleaners are a key element in the effectiveness of the systems in place. Prior to acceptance of the cleaning contract, the contractor will be required to demonstrate how the management of waste and recycling will be carried out so as to ensure that segregated materials are placed in the correct systems. This process will be agreed upon and a training program implemented by the cleaning contractor to ensure full understanding by all cleaners. Throughout the term of the contract the cleaning supervisor and site management will carry out monitoring of the system.

In addition, staff and cleaners will be required to feed back to site management any non-compliance issues they observe during their cleaning activities. This may include contamination of recycling, non-participation in the recycling system, or missing or damaged bins. In this way issues can be promptly dealt with by management.

Waste and recycling contractors will be required to report actual volumes collected by stream so that site management can monitor performance and feed this back to stakeholders.

It is highly recommended that a basic reporting program be set up at the site which would include bin tally sheets that detail the number of bins collected and how full they are at the time of collection, in addition to communication procedures to allow waste contractors to provide feedback regarding contamination and leakage.

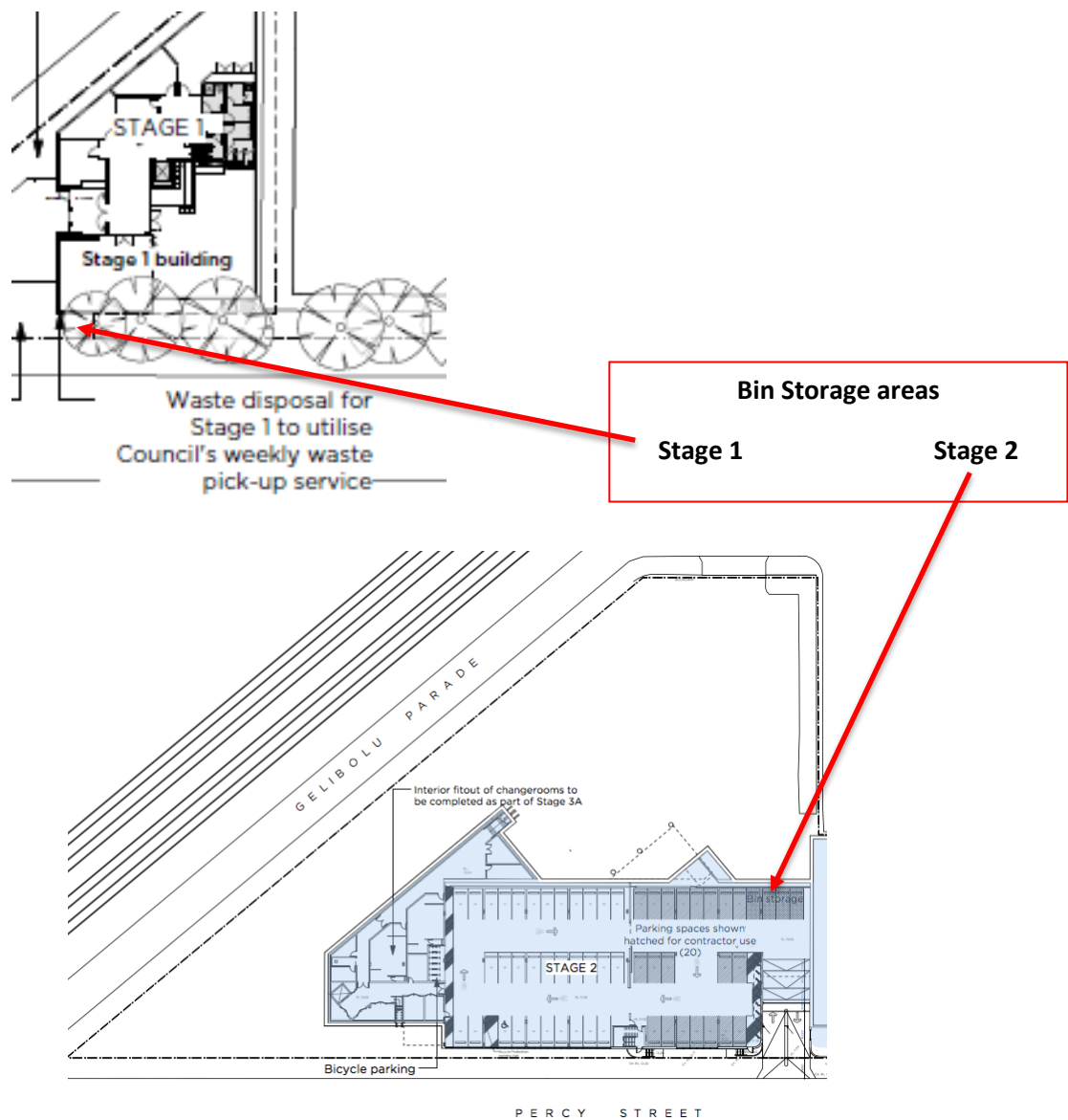
All staff and students should be educated and made aware of any changes to the existing waste systems.

If a public place recycling system was implemented it would need to be accompanied by clear signage and colour coding to help differentiate the systems. It is likely that staff would also be required to inform the public about the systems and to guide their waste disposal practices. Additionally, notices and information sheets could be placed on public notice boards informing the public of the changes at the centre.

Appendix A – Waste Storage Areas and Collection Points

The following diagrams illustrate the temporary and permanent waste storage areas and collection points to be utilised onsite.

Diagram 1 – Outside Bin Enclosure and Collection Point – Stages 1 and 2



Diagrams 2 & 3 – Waste Storage Room and Collection Point – Stages 3A and 3B



Appendix B – Waste Room Colour Coding

Photographs 1 and 2 - Examples of waste room colour coding



Photograph 3 - Examples of outside bin enclosure colour coding



Appendix C – Waste Management Equipment

The following diagrams illustrate colours and sizes of different bins that could be used within the development.

Figure 1 – MGB bin



Figure 2 – MGB bin



Figure 3 – Indicative size of MGB



Figures 4, 5 and 6 – Source separation systems



Figures 7, 8, 9 and 10 – Bin movers and tugs

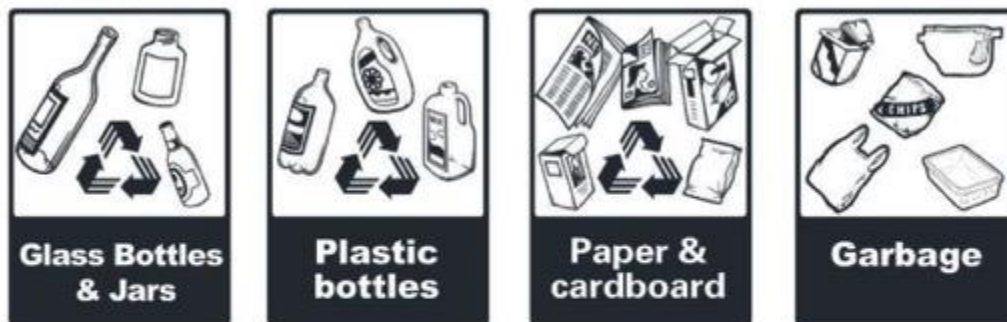




Appendix D – Example Signage



Example wall posters



Example bin lid stickers

