

Broadwater Public School- Waste Management Plan

A Submission to ADCO Constructions on behalf of
School Infrastructure NSW (SINSW)

24 October 2023



Broadwater Public School - Waste Management Plan


Prepared by

MRA Consulting Group (MRA)
Registered as Mike Ritchie & Associates Pty Ltd
ABN 13 143 273 812

Suite 408 Henry Lawson Building
19 Roseby Street
Drummoyne NSW 2047

+61 2 8541 6169
info@mraconsulting.com.au
mraconsulting.com.au

Version History

Ver	Date	Status	Author	Approver	Signature
0.1	13/07/2023	Draft	Jake Stanaway-Dowse	Louisa McMullan	-
0.2	13/07/2023	Review	Louisa McMullan	Jake Stanaway-Dowse	-
1	24/10/2023	Final	Louisa McMullan	James Cosgrove	

Disclaimer

This report has been prepared by MRA Consulting Group for ADCO on behalf of School Infrastructure NSW (SINSW). MRA (ABN 13 143 273 812) does not accept responsibility for any use of, or reliance on, the contents of this document by any third party.

In the spirit of reconciliation MRA Consulting Group acknowledges the Traditional Custodians of country throughout Australia and their connection to land, sea and community. We pay our respects to Aboriginal and Torres Strait Islander peoples and to Elders past, present and emerging.

Table of contents

Glossary.....	3
1 Introduction.....	4
2 Background.....	5
2.1 Description of Proposed Development.....	5
2.2 Location.....	5
2.3 Zoning and Land Use.....	6
2.4 Assumptions.....	7
3 Construction and Demolition.....	8
3.1 Demolition Waste.....	8
3.2 Construction Waste.....	11
3.3 Waste Contractors and Facilities.....	15
3.4 Site Documentation.....	15
4 Use & Ongoing Waste Management.....	16
4.1 Waste Management Strategies.....	16
4.2 Current Waste Management Scenario.....	17
4.3 Ongoing Waste Generation.....	17
4.4 Waste Storage Requirements.....	17
4.5 Waste Collection Scheduling and Bin Hold Area.....	18
4.6 Alternative Waste Management Strategies (for consideration).....	18
5 Waste Management Systems.....	21
5.1 Waste Disposal and Recycling Method.....	21
5.2 Collection Method and Loading Areas.....	21
5.3 Waste Management System and Responsibilities.....	22
5.4 Waste Storage Areas.....	22
5.5 Signage and Education.....	23
5.6 Prevention of Pollution and Litter Reduction.....	23
6 References.....	24

List of Tables

Table 1: Demolition waste generation estimates.....	9
Table 2: Building waste material by percentage and conversion factor for volume and weight.....	11
Table 3: Construction waste generation estimations.....	12
Table 4: Waste service contractors and facilities	15
Table 5: MGB capacity and footprint	16
Table 6: Empire Vale Public School waste generation and bin allocation	17
Table 7: Compostable and Non-compostable Materials List.....	19
Table 8: Collection and loading requirements and specifications	21

List of Figures

Figure 1: Site and surrounding area	6
Figure 2: Zoning and land use	7
Figure 3: On-site collection point	18
Figure 4: Waste Flow Diagram	21
Figure 5: Examples of standard signage for bin uses	26
Figure 6: Example and layout of safety signage.....	26

Glossary

Terminology	Definition
AS	Australian Standard
C&D	Construction and Demolition
C&I	Commercial and Industrial
DC	Development Consent
DCP	Development Control Plan
DoE	Department of Education
EFSG	Education Facilities Standards and Guidelines
ENM	Excavated Natural Material
EPA	Environment Protection Authority
FOGO	Food Organics and Garden Organics
LEP	Local Environmental Plan
LGA	Local Government Area
MGB	Mobile Garbage Bin
SINSW	School Infrastructure NSW
VENM	Virgin Excavated Natural Material
WMP	Waste Management Plan
WSP	Waste Service Provider

1 Introduction

MRA Consulting Group was engaged by ADCO on behalf of SINSW to prepare a Waste Management Plan (WMP) related to the proposed development at Broadwater Public School, located at 9 Byrnes St, Broadwater in the Northern Rivers region of NSW. The site is situated in the Richmond Valley Council Local Government Area (LGA).

The existing buildings at Broadwater Public School, 9 Byrnes Street, Broadwater (Lot 4 & 5, Deposited Plan (DP) 1043232 and Lot 501 DP 755624) were significantly inundated during the February 2022 floods and most of the structures are no longer habitable due to the damages caused by the flood waters. As a result, the NSW Department of Education is proposing to demolish the existing school buildings and construct a new elevated school building to replace it. The floor level of the new building will be located above the design flood level to increase flood resistance and create useable undercroft spaces.

A development application will be submitted to Richmond Valley Council for these works.

Works will comprise the following:

- Site preparation including site establishment works, earthworks and relocation of heritage bell.
- Demolition of existing school buildings.
- Construction of a new elevated school building, with at-grade (undercroft) amenities and Storage

It is not proposed to increase staff or student numbers as a result of these works.

The site is situated in the Richmond Valley Council area. This WMP conforms to the following reference documents:

- *Richmond Valley Local Environmental Plan (RVLEP) 2012;*
- *Richmond Valley Development Control Plan (RVDCP) 2021.*

Consideration has also been given to the following supplementary documents in the preparation of this WMP:

- *Better practice guide for Resource Recovery in Residential Developments* (NSW EPA, 2019); and
- *Better Practice Guideline for Waste Management and Recycling in Commercial and Industrial Facilities* (NSW EPA, 2012).

This WMP is used to inform the building design to deliver best practice waste management and promote sustainable outcomes at the demolition, construction and operational phases of the development. The WMP addresses waste generation and storage associated with the construction works throughout the development, and ongoing occupation of the proposed use.

2 Background

2.1 Description of Proposed Development

The proposed development at Broadwater Public School includes the following works:

- Site preparation including site establishment works, earthworks and relocation of school bell
- Demolition of existing school buildings.
- Construction of a new elevated school building, with at-grade (undercroft) amenities and storage, including:
 - *Ground Level:*
 - Open undercroft space for covered outdoor learning and play.
 - Male and female amenities and accessible toilet / change room facility.
 - Cleaners' store.
 - Equipment store.
 - Sport equipment store.
 - *Elevated Level:*
 - New administration comprising interview room, clerical spaces, Principal's office, staff room, sick bay, store and male, female and accessible amenities.
 - School library with computer room, store, main communications room and library office.
 - Three (3) General Learning Spaces (GLS) with learning commons and multi-purpose space.
 - Canteen with open servery space.
 - Store.
 - Male, female and accessible amenities.
 - Mechanical plant.
- New hard and soft landscaping including replacement playing field, playground, half games court and vegetable garden and new yarning circle.

It is not proposed to increase staff or student numbers as a result of these works.

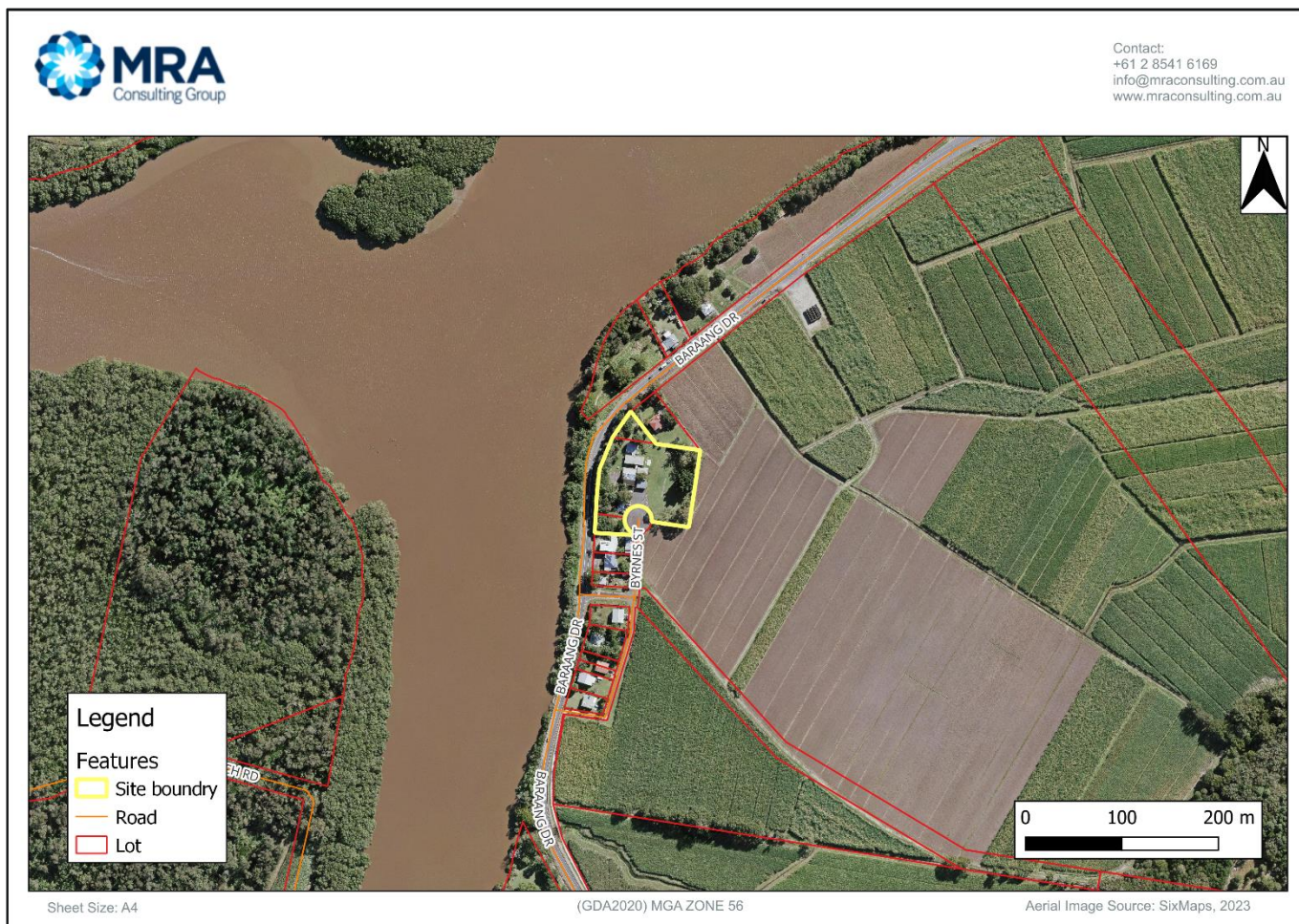
2.2 Location

The subject site is located at 9 Byrnes Street in Broadwater in the Northern Rivers region of NSW. The site is legally known as (Lot 4 & 5, DP 1043232 and Lot 501 DP 755624 in the Richmond Valley LEP 2012. It has a size of approximately 7530m².

The site has a primary frontage to Byrnes Street to the south. Baraang Drive borders the site to the west, which separates the site from the Richmond River located approximately than 35 metres to the west. The surrounding area primarily features agricultural uses, farmland and rural residential properties. The site is located around 1.3 kilometres from the Broadwater Town Centre to the South.

The following image is an aerial view of the site and surrounds (Figure 1).

Figure 1: Site and surrounding area



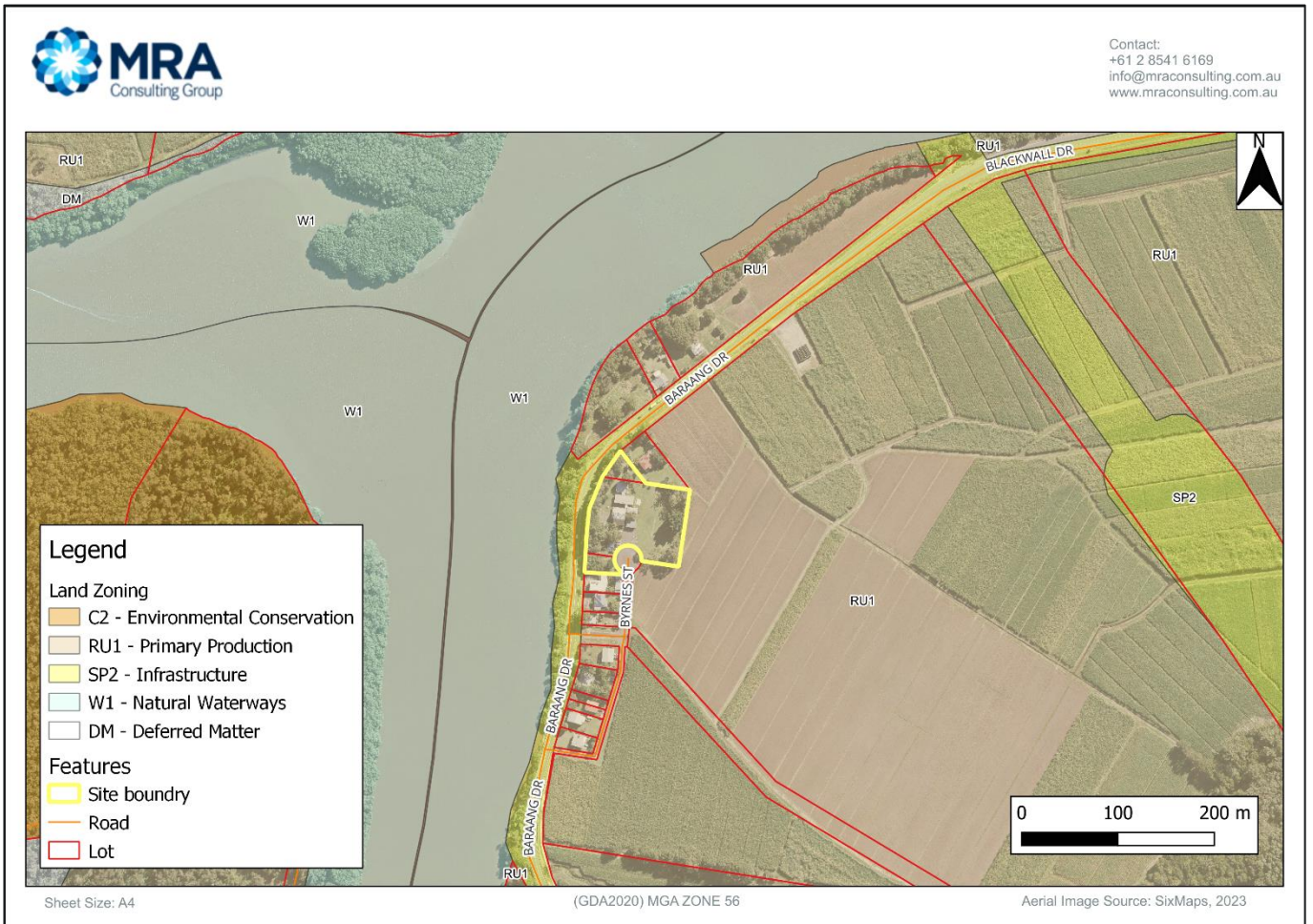
Source: SixMaps, 2023.

2.3 Zoning and Land Use

The site is zoned RU1 – Primary Production in the BLEP 2012 (See Figure 2). Despite being prohibited within the zone, it is a pre-existing school.

Zones surrounding the site include SP2 – Classified Road, W1 – Natural Waterways and C2 – Environmental Conservation.

Figure 2: Zoning and land use



Source: NSW Department of Planning, Environmental Planning Instrument - Land Zoning, 2023.

2.4 Assumptions

This report is a WMP, forming part of the developmental documentation and assumes:

- Drawings and information that have been used in waste management planning for this WMP are the final reference/indicative design set for the developmental plan from the project architect, Pedavoli Architects;
- Waste generation rates have been derived from existing site operational data, and referenced against NSW EPA guidance documentation in relation to primary education uses; and
- This WMP is a living document and therefore, waste management equipment and systems described in this report are subject to change based on future operations and available technology.

3 Construction and Demolition

Demolition and construction activities at the site will generate a range of construction and demolition (C&D) wastes. Throughout the development process, all materials will be reused and recycled where possible, minimising the disposal (landfilling) of materials other than those that are contaminated or unsuitable for reuse or recycling processes.

Waste storage during construction operations will involve some stockpiling of reusable material, as well as placement of bins for the separation of construction materials for recycling. A bin for residual waste or contaminated material will also be made available at the site for disposal where necessary. Bins may require alternative placement across construction operations to facilitate the safe and efficient storage of materials and will be retained within property boundaries to avoid illegal dumping.

A waste storage area shall be designated by the demolition or construction contractor and shall be sufficient to store the various waste streams expected during operations. Waste storage areas will be kept clear to maintain access and shall also be kept tidy to encourage separation of waste materials and for WHS reasons. The waste storage area will retain multiple bins to allow for source separation of waste to allow for ease of recovery and reuse of materials.

Waste management principles, management measures and facilities in use on the site shall be included as part of the site induction for all personnel working on the site.

3.1 Demolition Waste

The proposed development will require demolition of flood-damaged structures prior to commencement of excavation and construction operations. Demolition works will include:

- Removal and demolition of existing buildings on site;
- Trees to be demolished subject to arborist advice;
- Existing water tanks to be demolished;
- Existing septic tanks to be demolished; and
- Existing playing equipment to be demolished and replaced.

Table 1 outlines the expected demolition waste quantities to be generated at the site, in addition to the appropriate management methods for each material type. Other materials with limited reuse potential either on or offsite will be removed in bulk bins for recycling at an appropriately licenced and capable recycling facility.

Table 1: Demolition waste generation estimates

Type of Material	Estimated volumes (m ³)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Estimated % Landfill	Estimated % of landfill diversion	Methods for re-use, recycling or disposal
Concrete	250-350	✓	✓	✓	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for filling, levelling or road base. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Bricks/pavers	100-200	✓	✓	✓	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. The development will be able to reuse a number of existing building bricks as paving in landscaped areas. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Tiles (ceramic)	5-10	✓	✓	✓	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Timber (clean)	25-50	-	✓	✓	0%	100%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Removed to C&D facility for recovery.
Timber (treated)	25-50	-	✓	✓	50%	50%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Removed to C&D facility for recovery where possible.
Plasterboard	<20	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery.

Type of Material	Estimated volumes (m ³)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Estimated % Landfill	Estimated % of landfill diversion	Methods for re-use, recycling or disposal
							Offsite: Removed to C&D or plasterboard recovery facility for recovery where possible.
Glass	<10	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Metals (ferrous & non-ferrous)	<25	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Removed to C&D facility for recovery and recycling.
Floor covering	<10	-	✓	✓	50%	50%	Should be removed in bulk and sent to carpet recycler or C&D facility for recovery where possible.
Residual waste	10-20	-	-	-	100%	-	Resource recovery dependant on facility destination capability.
Hazardous Waste	Unknown	-	-	-	100%	-	Existing buildings may contain potentially hazardous materials. Should contaminated or potentially hazardous materials be discovered they would be handled according to the demolition and/or materials management plan
Total % Diversion from Landfill Estimated						>80%	

3.2 Construction Waste

The proposed development will involve the construction of a new elevated school building, with at-grade (undercroft) amenities and storage, detailed in 2.1

Table 2 outlines indicative volume to weight conversion factors for common construction materials.

Table 2: Building waste material by percentage and conversion factor for volume and weight

Building waste material	Tones per m ³	Waste as % of the total material ordered
Bricks	1	5-10%
Concrete	2.4	3-5%
Tiles	0.75	2-5%
Timber	0.5	5-7%
Plasterboard	-	5-20%
Ferrous metal	2.4	-

Source: Parramatta Waste Plan Application Template 2017.

Table 3 outlines the estimated waste generation rates for materials through construction of the proposed development, in addition to the appropriate management methods for each material type.

Table 3: Construction waste generation estimations

Type of Material	Estimated Volumes (m ³)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Landfill	% of landfill diversion	Methods for re-use, recycling or disposal
Excavated material	<100	✓	✓	✓	<5%	>95%	Onsite: Reuse for fill and levelling. Offsite: Removed from site for reuse as recycled fill material or soil. Disposal: Removal of any contaminated material for appropriate treatment or disposal.
Bricks/pavers	35-75	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products.
Concrete	50-100	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for filling, levelling or road base. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Tiles	<10	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products.

Type of Material	Estimated Volumes (m ³)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Landfill	% of landfill diversion	Methods for re-use, recycling or disposal
Timber (Treated)	<100	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier for reuse removed to C&D facility for recovery where possible.
Timber (Paling)	<100	-	✓	✓	50%	50%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier for reuse removed to C&D facility for recovery where possible.
Plasterboard	<20	-	✓	✓	<10%	90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier or removed to a C&D/plasterboard recovery facility for recovery where possible.
Glass	<10	✓	✓	✓	<10%	>90%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. Offsite: Returned to supplier for reuse or removed to C&D facility for crushing and recycling for recovered products.
Metals (ferrous) Metals (non-ferrous)	<25	-	✓	✓	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Returned to supplier for reuse or removed to C&D facility for recovery and recycling.

Type of Material	Estimated Volumes (m ³)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Landfill	% of landfill diversion	Methods for re-use, recycling or disposal
Floor covering	<5	-	✓	✓	<10%	>90%	Offcut carpet separated where possible and returned to supplier for reuse.
Electronic waste	<5	-	✓	✓	<10%	>90%	Offcut wires and electronics separated where possible or returned to supplier for reuse.
Packaging materials (pallets, wrap, cardboard, etc)	15-25	-	✓	✓	<10%	>90%	Returned to supplier where possible or separated by material type for resource recovery.
Residual waste	10-20	-	✓	✓	100%	-	Resource recovery dependant on facility destination capability.
Total Diversion %						>90%	

3.3 Waste Contractors and Facilities

To ensure best practice waste management, appropriate contractors and facilities have been proposed based on their location and service offerings (Table 4).

Table 4: Waste service contractors and facilities

Role	Details
Recommended Waste Collection Contractor	<p>The following are local skip bin operators for consideration in the management of excavation and construction waste for the site:</p> <ul style="list-style-type: none"> • Lennox Head Skip Bins • Lismore Skips Bins • Richmond Waste <p>Or another supplier as elected by the building contractor.</p>
Principal Off-Site Recycler	<p>The following are local C&D processing facilities for consideration in the management of C&D waste generated at the site:</p> <ul style="list-style-type: none"> • Byron Resource Recovery Centre <p>Or another appropriate facility as elected by the waste management contractor.</p>
Principal Licensed Landfill Site	<p>Byron Resource Recovery Centre or another appropriate facility as elected by the waste management contractor.</p>

3.4 Site Documentation

This WMP will be retained on-site during the construction phases of the development, along with other waste management documentation (e.g. contracts with waste service providers).

Responsibility for the WMP, waste documentation and processes during the excavation and construction phases will be with the site manager or builder.

A logbook that records waste management and collection will be maintained on site, with entries including:

- Time and date of collections;
- Description of waste and quantity;
- Waste/processing facility that will receive the waste; and
- Vehicle registration and company name.

Waste management documentation, the logbook and associated dockets and receipts must be made available for inspection by an authorised Council Officer at any time during site works.

4 Use & Ongoing Waste Management

The proposed development works are not expected to result in an increase in the total waste generation at the site. Waste management strategies related to site operations are existing and are outlined under Section 4.3.

Ongoing waste management practices onsite will aim to contribute towards the NSW Waste and Sustainable Materials Strategy 2041 target to achieve an 80% average recovery rate from all waste streams by 2030. Waste management practices have been developed in accordance with Council requirements.

Bin infrastructure will be maintained at the site to manage waste associated with the ground floor ancillary services and common use areas. School cleaning and maintenance staff will maintain waste storage and management areas located on the ground level.

The following space calculations are based on the bin dimensions sourced from NSW EPA's *Better Practice Guide for Resource Recovery in Residential Developments* (2019) (Table 5).

Table 5: MGB capacity and footprint

Bin Capacity (L)	Height (mm)	Depth (mm)	Width (mm)	Footprint (Approx. m ²)
120	940	530	485	0.33
240	1,080	735	580	0.43
660	1,250	850	1,370	1.16
1,100	1,470	1,245	1,370	1.74

4.1 Waste Management Strategies

The NSW Department of Education has released an *Education Facilities Standards and Guidelines* (EFSG) to assist those planning, managing, designing, constructing and maintaining new and refurbished school facilities. The EFSG provides a best-practice standard for waste management and guides the preparation and implementation of this Waste Management Plan. The EFSG has been considered and discussion surrounding the collection and separation of additional waste streams is presented for consideration under Section 4.6.

4.1.1 Waste Streams

The EFSG provides a minimum for waste streams for onsite source separation.

Waste streams to be serviced include:

- General Waste (red lid)
- Commingled containers (yellow lid)
- Food and Organics (FOGO) (lime green lid)
- Paper and Cardboard (blue lid)
- Container Deposit Scheme (CDS) materials (white lid); and
- Soft plastics (any colour lid not listed above).

The following waste streams are currently managed by Broadwater Public School:

General Waste

Most of the general waste is produced by students during recess and lunchtime periods. Temporary general waste bins are placed in common circulation areas for accessible waste disposal. Smaller waste receptacles are placed in kitchen canteen and within classrooms. This waste is collected by cleaning staff daily and deposited into one of the 240L MGB waste bins stored in the existing bin hold area (see Appendix A).

Recycling

All classrooms and offices have small recycling bins for the students to utilise. Recycling bins emptied daily into one of the paper and cardboard 240L MGB bins for collection. School management encourages the use of recycling to minimise unnecessary disposal to general waste bins.

Bulky Waste

Bulky waste items are not generated in large quantities at the site. All bulky waste generated at the site, including broken/damaged furniture, e-waste and other materials are stored in a dedicated enclosure. Bulky waste is proposed to be managed similarly to current operations and be disposed of via skip bin or collected by arrangement with the waste contractor at the end of each term (during school break) or whenever the amount of such waste is generated in a sufficient quantity.

The waste systems in place are suitable for the management of general waste and recycling into the future.

4.1.2 Temporary Waste Storage and Transfer

To facilitate waste disposal and separation, bins are stationed across the site, and their contents collected daily by cleaners. Cleaners will deposit the collected waste into respective bins in the consolidated waste storage area. Maintenance and grounds staff will use the primary waste bins directly.

4.2 Current Waste Management Scenario

The waste volumes produced from the existing school are low and managed by the retention of smaller 240L bins for general waste, green (vegetation/organics) waste and recycling. The bins are stored undercover out of the weather, close to the administration area at the front of the site and in proximity to the Byrnes Street where they are serviced.

4.3 Ongoing Waste Generation

Ongoing waste generation relates to the campus used by 55 primary school students. As the school is existing, the waste generation for this development is known and will not change, as there will be no population increases because of the proposed works. The expected rate of generation and number of bins required to capture the total waste and recycling streams of the development is presented in Table 6. Consideration has also been given to the waste generation rates provided in NSW EPA's *Better Practice Guide for Resource Recovery in Residential Developments* (2019) for primary schools.

Table 6: Broadwater Public School waste generation and bin allocation

Waste stream	Waste generation rate	Weekly waste generation (L)	Bin requirement
General Waste	20L / per student	1,100	6
Recycling	15L / per student	825	4
Green Waste	N/A	N/A	2

**Based on a student population of 55 students*

The site will retain a bin for green waste, however it is expected the landscape contractor will be primarily responsible for the management and removal of green waste from the site. Green waste will be collected weekly or fortnightly.

4.4 Waste Storage Requirements

Bin storage and spatial requirements are based on dimensions sourced from Table 5. The school will primarily utilize 240L bins, as is the existing scenario, to accommodate the waste generation of the site. Collection occurs once weekly. Bin storage has been calculated to include clearance and manoeuvring space of 2 x bin footprint (m²).

In total, the spatial requirements of the waste storage area is approximately **5.2m²**.

The existing waste storage area is able to accommodate the waste storage requirements for the school. The waste management areas have adequate space to facilitate changes to waste management arrangements that may occur in the future, should changes be required. The waste management and storage areas proposed for the site fulfil waste management requirements, facilitating safe access and manoeuvring of all bins and equipment for the proposed development.

Waste management areas are screened from general view and bins will be sealed to maintain site amenity while also reducing the risk of windblown litter, vandalism, and illegal dumping.

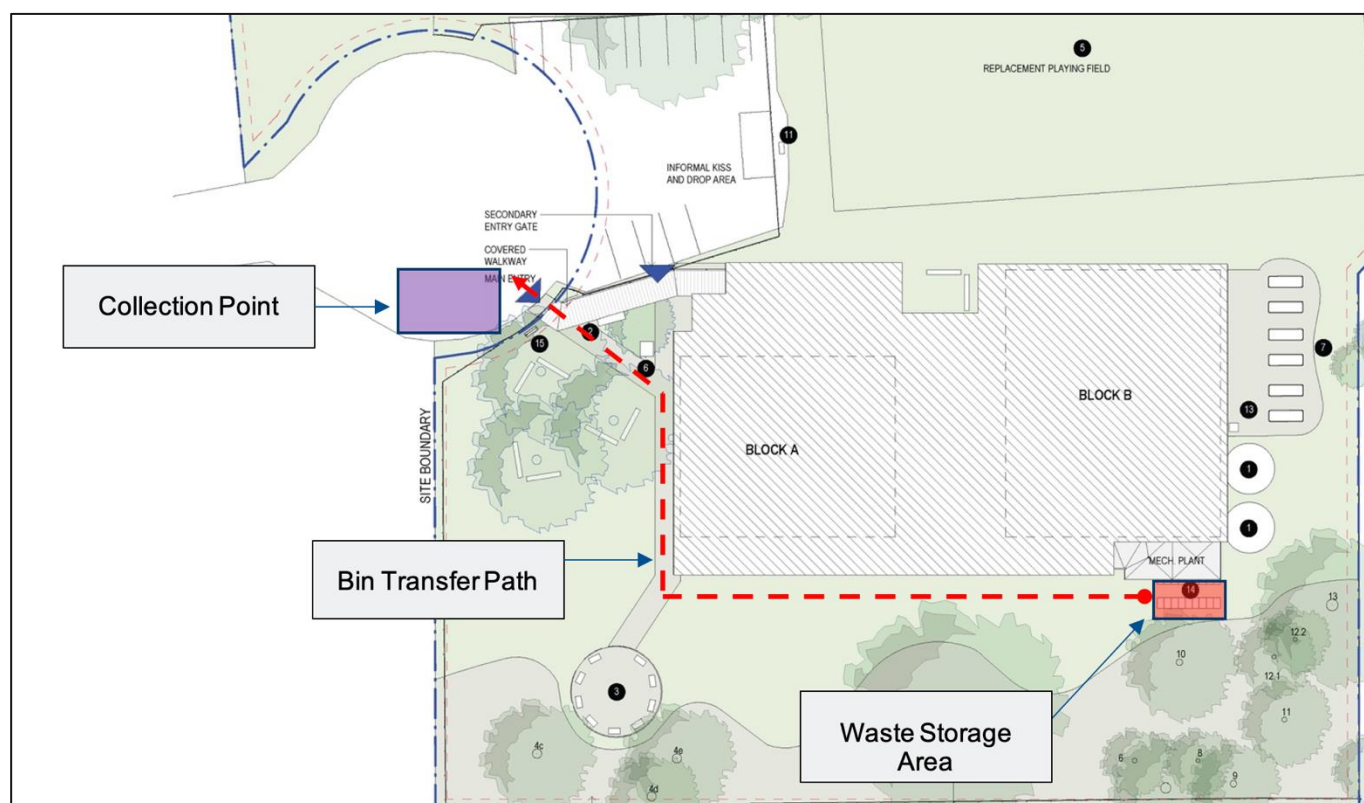
4.5 Waste Collection Scheduling and Bin Hold Area

The Council or a private waste contractor will service the site and collect all waste streams.

Collection times will be scheduled to occur during the early morning outside of school hours so as not to disrupt students and to ensure safe access and collection at a time where minimal vehicle and pedestrian movements are predicted. An early morning collection schedule will also avoid potential traffic impacts on the roadway.

Waste collection vehicles will collect MGBs for all waste streams from the current waste collection point as presented in Appendix A.

Figure 3: Waste collection point



Source: Pedavoli Architects, 2023

4.6 Alternative Waste Management Strategies (for consideration)

The following strategies are proposed for consideration by the Broadwater Public School in future to improve the management of waste at the school by reducing waste disposed to landfill and increased resource recovery.

4.6.1 Food waste

Food waste will be generated in kitchen and canteen areas, as well as by students and staff. Food waste can be managed with a separate food bin and collection service provided by the contracted waste service provider.

Alternatively, compost bins can be retained in garden areas filled with suitable food scraps and soft garden debris and applied to vegetable gardens when mature. Food waste, when not separated from the general (residual) waste

stream, represents between 30 – 40% of waste produced, most of which can be diverted from landfill; therefore, reducing disposal costs.

Compost produced on site presents a free alternative to expensive fertilisers and assist in the retention of water and nutrients in the soil. It is also an excellent opportunity for student education. Table 7 below outlines a list of compostable materials that may be generated through regular operations at the school.

Table 7: Compostable and Non-compostable Materials List

Compostable	Not-compostable
<ul style="list-style-type: none"> ✓ Vegetable and food scraps ✓ Fallen leaves (in layers) ✓ Tea leaves and tea bags ✓ Coffee grounds ✓ Vacuum cleaner dust ✓ Soft stems ✓ Dead flowers ✓ Old potting mix ✓ Used vegetable cooking oil ✓ Egg shells ✓ Old newspapers (wet) ✓ Grass cuttings in layers ✓ Weeds ✓ Sawdust (from non-treated timber) ✓ Wood ash ✓ Human and animal hair 	<ul style="list-style-type: none"> ✗ Meat and dairy products ✗ Diseased plant material ✗ Metals, plastic, glass ✗ Animal manures, including droppings of cats and dogs ✗ Fat ✗ Magazines ✗ Large branches ✗ Weeds that have seeds or underground stems ✗ Bread or cake; may attract mice ✗ Bones ✗ Sawdust from treated timber

4.6.2 Sustainable Ordering of Food and Materials

A significant amount of waste is produced through unsustainable ordering of food and other school related supplies. It may be possible to reduce the waste generation footprint of the school or prevent large increases to waste generation because of the proposed student capacity increase, through the sustainable procurement of food at the canteen, use of recyclable and recycled material products, and reduction in the use of physical mediums of teaching (test papers, worksheets, etc.)

4.6.3 Bulky Waste Storage

Some bulky wastes will be generated as a result of typical school activities, such as broken chairs and furniture or larger items that do not conform to the general waste stream.

Management and access of the bulky storage area will be the responsibility of school management and cleaning personnel.

4.6.4 Problem Waste Management

Broadwater Public School will engage with problem waste management contractors where possible to recover wastes such as E-waste, printer cartridges, batteries, furniture, etc. These systems should be reviewed and increased as necessary with any student population increases resulting from the proposed expansion.

The following management practices could be incorporated for a range of different problem waste materials:

- **Batteries and printer cartridges** – a company called “Close the Loop” (among others) provides bins and collections for batteries and printer cartridges. Bins are collected on an as needed basis, at the request of the user, when the provided bins become full. Bins for this purpose can be retained in the main photocopy room, administrative office or computer labs;
- **E-waste** – A waste or specialist E-waste management contractor may be engaged to provide bins for the collection on E-waste generated at NSHS. E-waste bins can be serviced on a regular basis or as needed when bins become full, by the engaged contractor; and
- **Light globes and fluorescent tubes** – light globes and fluorescent tubes are typically managed by the electrical contractor, with old and damaged units being taken away upon their replacement.

4.6.5 Soft Plastics

Materials such as soft plastics are serviceable waste streams in the EFSC which are not currently collected at the school. It is noted that the EFSG is a best-practice guideline and not a requirement for schools in NSW. Broadwater Public School can initially opt for a two-bin system (general waste and commingled recycling) and over time introduce greater separation of waste streams (paper and cardboard, FOGO, soft plastics).

4.6.6 Garden Organic Waste

Waste generated from landscaping and garden maintenance will be removed by contracted site maintenance staff.

4.6.7 Waste Avoidance

Employing purchasing strategies to avoid the generation of waste: purchasing products with recyclable, compostable, minimal, or no packaging.

4.6.8 Reuse of Materials

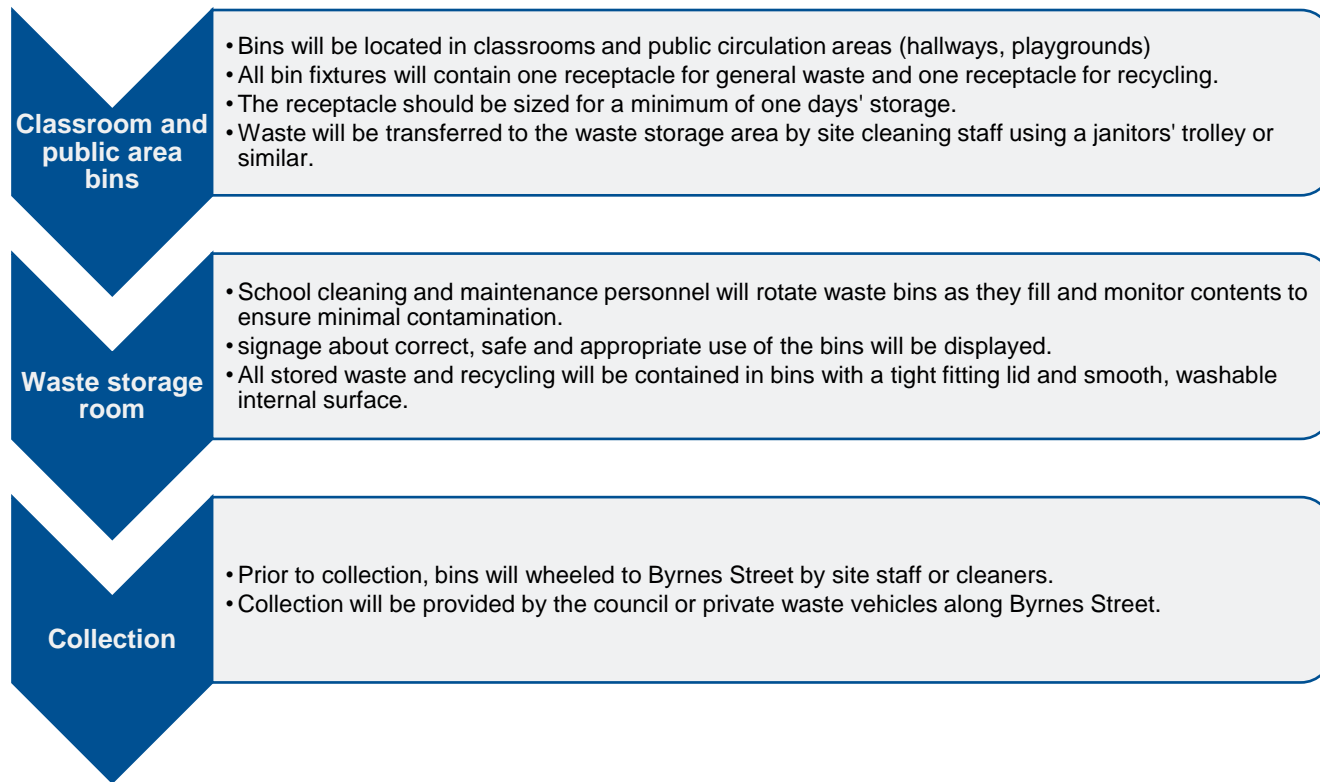
Where possible, reusing drums, cartridges, and containers where possible. Donating of materials where feasible.

5 Waste Management Systems

5.1 Waste Disposal and Recycling Method

The flow of waste goes from generation to collection through several steps (Figure 4)

Figure 4: Waste Flow Diagram



5.2 Collection Method and Loading Areas

The waste on site will continue to be serviced in the same manner that the site is currently serviced.

240L MGBs are currently wheeled from the waste storage area to Byrnes Street for collection.

The collection point in relation to the wastes storage area is presented in Appendix A.

Table 8 presents a summary of the waste collection procedures:

Table 8: Collection and loading requirements and specifications

Component	Requirements	Specification
Collection point	Collection points are to be located so that:	<ul style="list-style-type: none"> - Adequate clearance and manoeuvring space is provided; - Sufficient clearance for the safe handling of materials and equipment; and - Servicing does not impede upon traffic and pedestrian safety. - Distance from the waste store to collection point is less than 10m.

Component	Requirements	Specification
Vehicle manoeuvring and loading space	Truck space for adequate lift clearance, manoeuvring and operation for a contractor collection vehicle	<ul style="list-style-type: none"> - Collection is carried out by a side lift or rear lift collection vehicle; - The collection area is located on Byrnes Street. - Operational clearance for truck manoeuvring in a forward direction; and - The provision of space clear of vehicle parking spaces (level and free of obstructions).
Operating times	Appropriate collection times to limit noise and traffic disturbance.	<ul style="list-style-type: none"> - Collection times will be arranged during off-peak times to ensure minimal disturbance to pedestrians and visitors. - Bin collections will occur early in the morning during non-peak commuter times to ensure that collection does not coincide with school drop-off and pick-ups.

5.3 Waste Management System and Responsibilities

Site management and cleaning staff to enact and monitor day to day waste management operations. Should there be any issues that impact on the operational efficiency, safety and suitability of waste management, the site cleaning staff will inform management. Operation of the waste management system is the responsibility of school management and site cleaning staff.

Site management is responsible for:

- Use of this WMP to inform waste management operations, design and infrastructure;
- The provision of educational materials and information to visitors and staff on sorting methods for recycled waste, awareness of waste management procedures for minimisation and recovery;
- The provision of information to visitors and workers about waste management procedures;
- Maintaining appropriate signage in waste service areas and all waste management areas;
- Use of contracts to define the allocation of responsibilities with cleaners and buildings;
- Holding a valid and current contract with licensed collector(s) for waste and recycling collection and disposal;
- Encouraging waste avoidance and achievement of resource recovery targets;
- Providing operational management for delivery of waste objectives;
- Ensuring regular reinforcement of source separation and effective use of waste facilities; and
- Organising waste, recycling and bulky pick-ups by elected contractor for the site/building.

Site cleaning staff duties include:

- Organising, maintaining, and cleaning the waste storage areas;
- Arranging access to bins on collection days and to liaise with the WSP for operational issues;

5.4 Waste Storage Areas

The waste areas will provide centralised storage that has adequate capacity to receive and store the maximum likely generation of waste and recycling between collection times. The proposed waste storage area will be an enclosed space with suitable access for disposal and collection purposes, and storage space to accommodate the bins required to service the site.

The waste storage area will be developed with the following considerations:

- Signage for safety and waste bin identification;
- Safety precautions, staff training and signage for plant;

- Floor made of concrete or other approved solid, impervious material that can be cleaned easily;
- Grading and draining to an approved drainage fitting located in the room to facilitate bin washing;
- Adequate supply of water with hose cock as close as practicable; and
- Suitable construction including limited entry to prevent vermin and vandalism.

5.5 Signage and Education

Signage that promotes resource recovery, waste minimisation, safety and amenity follows the Australian Standard for safety signs for the occupational environment (Standards Australia, 1994).

Signage will be designed to consider language and non-English speaking backgrounds, vision impairment and accessibility. Illustrative graphics must form a minimum 50% of the area of the signage. The area is to be kept tidy. Signage is to be prominently posted in the waste room indicating:

- Details regarding acceptable recyclables;
- Recyclables are to be decanted loose (not bagged)
- *No standing* and *danger* warnings apply to the area surrounding the waste storage area; and
- Contact details for arranging the disposal of bulky items.

Standard signage requirements and guidance for application apply (see Appendix B)

5.6 Prevention of Pollution and Litter Reduction.

To minimise dispersion of litter and prevent pollution (to water and land via contamination of runoff, dust and hazardous materials). Building management and the site cleaning staff will also be responsible for:

- Maintenance of open and common site areas;
- Ensuring waste room is well maintained and kept clean;
- Securing the waste storage area from vandalism and the escape of litter;
- Identification and appropriate disposal of goods with hazardous material content (e.g. paints, e-waste, fluorescent tubes);
- Taking action to prevent dumping and unauthorised use of waste areas; and
- Requiring contractors to clean up any spillage that may occur during waste servicing or other work.
- how ventilation, prevention of vermin, drainage and cleaning of the waste storage area will be undertaken, noting that the waste storage area is enclosed.

6 References

Richmond Valley Development Control Plan. (2021).

Richmond Valley Local Environmental Plan. (2012).

NSW Department of Education. Education Facilities Standards and Guidelines (EFSG)

NSW EPA. (2012). *Better practice guidelines for waste management and recycling in commercial and industrial facilities.*

NSW EPA. (2019). *Better practice guide for resource recovery in residential developments.*

Standards Australia. (1994). *AS 1319: Safety signs for the occupational environment, Homebush, NSW: Standards Australia.*

Standards Australia. (2008). *AS 4123: Mobile waste containers.*

Appendix A Site Plans



Source: Pedavoli Architects, 2023

Appendix B Standard Signage

Waste Signage

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the NSW Office of Environment and Heritage (NSW OEH 2008b).

Standard symbols for use in signage, bin facade and educational materials are promoted through the NSW Environment Protection Authority. They are available for download from the NSW EPA website (NSW EPA 2016b) in black and white and colour versions. The Australian Standard series AS 4123 (Part 7) details colours for mobile waste containers (Standards Australia 2008)

Figure 5: Examples of standard signage for bin uses



Safety Signs

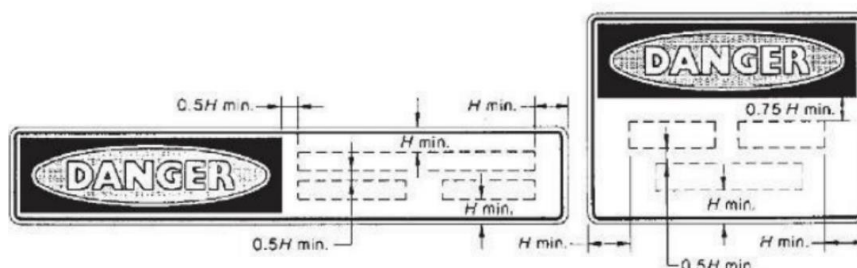
The design and use of safety signs for waste and recycling rooms and enclosures should comply with AS 1319 (Standards Australia 1994). Safety signs should be used to regulate, and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. Below are some examples. Clear and easy to read 'NO STANDING' and 'DANGER' warning signs must be fixed to the external face of each waste and recycling room where appropriate.

Figure 6: Example and layout of safety signage



(d) Horizontal

FIGURE D5 TYPICAL ARRANGEMENTS OF DANGER SIGNS



MRA Consulting Group

Suite 408 Henry Lawson Building
19 Roseby Street
Drummoyne NSW 2047

+61 2 8541 6169
info@mraconsulting.com.au
mraconsulting.com.au

