Gillieston Public School redevelopment and new public preschool – Waste Management Plan

A Submission to Johnstaff

21st January 2025

MRA Consulting Group

Prepared by

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Version History

Ver	Date	Status	Author	Approver	Signature
0.1	04/10/2024	Draft	Harri Mayjor	James Cosgrove	-
0.2	04/10/2024	Review	James Cosgrove	-	-
1	21/01/2025	Final	Harri Mayjor	James Cosgrove	

Disclaimer

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.

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Glossary

Terminology	Definition
AS	Australian Standard
C&D	Construction and Demolition
C&I	Commercial and Industrial
DCP	Development Control Plan
ENM	Excavated Natural Material
EPA	Environment Protection Authority
ILU	Independent Living Unit
LGA	Local Government Area
MGB	Mobile Garbage Bin
MRA	MRA Consulting Group
MSW	Municipal Solid Waste
MLEP	Maitland Local Environmental Plan 2011
MDCP	Maitland Development Control Plan 2011
VENM	Virgin Excavated Natural Material
WMP	Waste Management Plan
WSP	Waste Service Provider
WSA	Waste Storage Area

1 Introduction

MRA Consulting Group (MRA) was engaged by Johnstaff to prepare a Waste Management Plan (WMP) related to the proposed activity located at 100 Ryans Road, 19 Northview Street, Gillieston Road, Ryans Road, and Northview Street, Gillieston Heights in NSW. The site is located within the Maitland Local Government Area (LGA).

The proposed activity involves the development of three buildings on the existing Gillieston High School campus. The proposed activities are to include:

- Demolition of select existing structures.
- Site preparation activities, including demolition, earthworks, tree clearing.
- Construction of 3 new buildings comprising of:
  - 32 general learning spaces and 3 support teaching spaces,
  - administration and staff hubs,
  - hall, canteen and out of school hours care,
  - library,
  - public preschool, and
  - covered Outdoor Learning Areas (COLAs).
- outdoor play areas, including games courts and yarning circle.
- new at grade parking.
- extension of the existing drop-off / pick-up area and bus bay.
- realignment of the existing fencing.
- associated stormwater infrastructure.
- associated landscaping.
- pedestrian and associated road upgrade works to adjoining roads.

This WMP addresses the requirements of the Review of Environmental Factors (REF) and conforms to the following environmental planning instruments and reference documents:

- Maitland Development Control Plan 2011 (MDCP).
- Maitland Local Environmental Plan 2011 (MLEP).

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

- NSW EPA (2019) *Better Practice Guide for Resource Recovery in Residential Developments.*

A Waste and Recycling Management Plan has been prepared in accordance with (DCP), and states the following objectives for waste management:

- To minimise resource requirements and construction waste through reuse and recycling and the efficient selection and use of resources.
- To encourage building designs, construction and demolition techniques in general which minimise waste generation.
- To assist applicants in planning for sustainable waste management, through the preparation of a site waste minimisation and management plan. This plan is to be completed in the planning stages of an activity.
- To facilitate effective waste minimisation and management for activities in a manner consistent with the principles of ESD.

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 activity.

2 Background

2.1 Significance of Environmental Impacts

Based on the identification of potential impacts and an assessment of the nature and extent of the impacts of the proposed activity, it is determined that all potential impacts can be appropriately mitigated to ensure that there is minimal impact on the locality, community and/or the environment.

2.2 Description of the Proposed Activity

The Site is identified as 100 Ryans Road and 19 Northview Street, Gillieston Heights, legally described as Lot 51 DP 1162489 and Lot 2 DP1308605.The Site is located within the Maitland Local Government Area (LGA) and is zoned RU2 Rural Landscape and R1 General Residential zone under the provisions of the Maitland Local Environmental Plan 2011 (MLEP2011).

Existing attributes of the subject site are noted as follows:

- The subject site exhibits an area of approximately 23,385m² and is located in the suburb of Gillieston Heights;
- The subject site has a frontage to Ryans Road to the east, Gillieston Road to the north, and Northview Street to the south;
- In its existing state, the subject site comprises the existing Gillieston Public School. Existing school buildings are primarily located in the west portion of the subject site with a large area of open space situated in the eastern portion. There are limited permanent structures located on the subject site with thirteen (13) existing demountable classrooms currently occupying the subject site. Permanent buildings consist of the Main Administration Building, Original Brick Cottage, Library and GLS building located in the centre of the subject site; and
- Carparking is provided from Gillieston Road for staff. Pedestrian access is available via this main entrance from Gillieston Road and via a separate pedestrian-only access gates on Northview Street and Ryans Road.

The existing site context is shown in Figure 1 and Figure 2 below.

Figure 1: Site Aerial Map

Source: Near Map, 2024.

2.3 Zoning and Use

The site is zoned as RU2 Rural Landscape and R1 General Residential according to the MDCP 2011. The objectives of the zone are:

RU2:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture.
- To provide for a range of non-agricultural uses where infrastructure is adequate to support the uses and conflict between different land uses is minimised.

R1:

- To provide for the housing needs of the community.
- To provide for a variety of housing types and densities.

- To enable other land uses that provide facilities or services to meet the day to day needs of residents.

Figure 2: Land use zone map

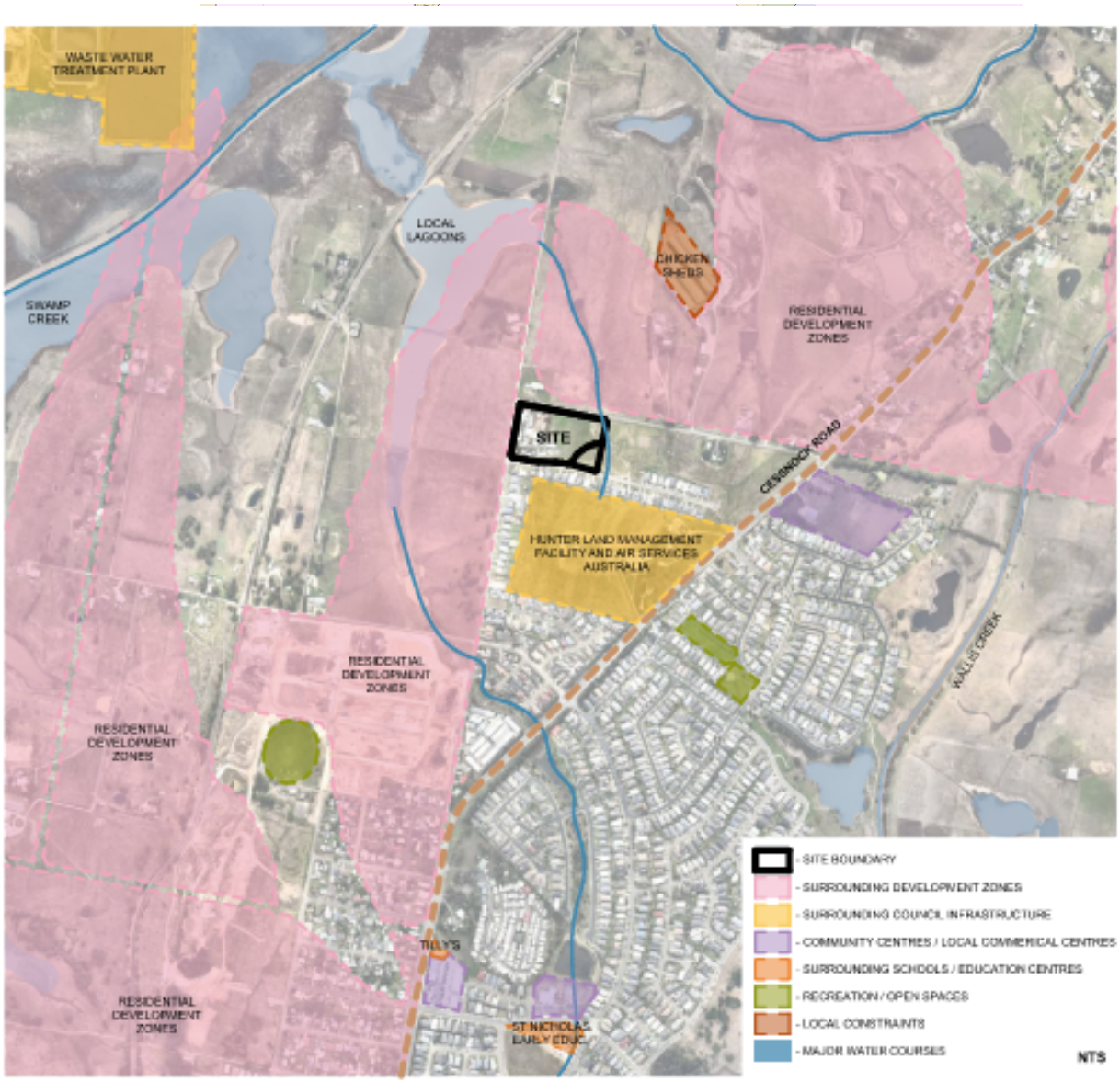


Figure 3: Cadastral Map

Source: NSW Spatial Viewer, 2024

2.4 Strategies

Waste management for the site considers better practice, necessary equipment, and integration with other guidance documents including the NSW Waste and Sustainable Materials Strategy (NSW EPA, 2021), and National Waste Policy: Less Waste, More Resources (DAWE, 2018). The key policy aims that are considered are:

- Avoidance (to prevent the generation of waste);
- Reduce the amount of waste (including hazardous waste) for disposal;
- Manage waste as a resource; and
- Ensure that waste treatment, disposal, recovery and re-use are undertaken in a safe, scientific and environmentally sound manner.

Management of waste generated onsite according to directives of the NSW Strategy will assist in achieving the target of 80% diversion from landfill in the C&D sector.

2.5 Assumptions

This report is a Waste Management Plan (WMP), forming part of the activity documentation and assumes:

- Drawings and information that have been used in waste management planning for this WMP are the final design set for the activity plan from the project architect, Shac Architects, 06/09/2024;
- Waste and recycling volumes are based on information provided from the MDCP 2011; 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.
- This WMP has assumed general waste bins are 70% full upon current collections noting an onsite observation. This has been incorporated into weekly general waste generation calculations.

3 Construction and Demolition

Demolition and construction activities at the site will generate a range of construction and demolition (C&D) waste. Throughout the activity 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 wheeled 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 activity will require demolition of existing structures prior to commencement of excavation and construction operations. Demolition activities will include the removal of multiple single storey school buildings and associated landscaping and trees.

The MDCP 2011 states:

a) An area shall be allocated for the storage of materials for use, recycling and disposal, giving consideration to slope, drainage, location of waterways, stormwater outlets, vegetation and access and handling requirements.

b) Waste and recycling materials are to be separated.

c) Measures are to be implemented to prevent damage, minimise health and order risks, and windborne litter.

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)	Disposal	Estimated % Landfill	Estimated % of landfill diversion	Methods for re-use, recycling or disposal
Concrete	200 – 300	✓	✓	✓	-	<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.
Glass	<5	✓	✓	✓	-	<10%	>90%	On site: to be separated wherever possible to enhance resource recovery. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Bricks/pavers	25 – 50	✓	✓	✓	-	<5%	>95%	Onsite: Separated wherever possible and reused or crushed for landscaping and driveways. The activity 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	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.

Type of Material	Estimated volumes (m^3)	Re-use on-site	Recycle (Separate collection)	Recycle (Off-site)	Disposal	Estimated % Landfill	Estimated % of landfill diversion	Methods for re-use, recycling or disposal
Timber (Clean)	5 - 10	✓	✓	✓	-	0	100	Onsite: To be separated wherever possible to enhance resource recovery. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Plasterboard	5 – 10	-	✓	✓	-	<10%	>90%	Onsite: To be separated wherever possible to enhance resource recovery. Offsite: Removed to C&D facility for crushing and recycling for recovered products.
Metals (ferrous & non-ferrous)	5 – 10	-	✓	✓	-	<10%	>90%	Onsite: Separated wherever possible to improve resource recovery. Offsite: Removed to C&D facility for recovery and recycling.
Floor covering	10 – 20	-	✓	✓		50%	50%	Should be removed in bulk and sent to carpet recycler or C&D facility for recovery where possible.
Residual waste	15 – 30	-	-	-	✓	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 activity involves the following constructions:

- Construction of 3 new buildings comprising of:
  - 32 general learning spaces and 3 support teaching spaces,
  - administration and staff hubs,
  - hall, canteen and out of school hours care,
  - library,
  - public preschool, and
  - covered Outdoor Learning Areas (COLAs).
- outdoor play areas, including games courts and yarning circle.
- new at grade parking.
- extension of the existing drop-off / pick-up area and bus bay.
- realignment of the existing fencing.
- associated stormwater infrastructure.
- associated landscaping.
- pedestrian and associated road upgrade works to adjoining roads.

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

Table 2: Indicative volume to weight conversion factors for common construction materials

Building waste material	Tones per m^3	Waste as % of the total material ordered
Soil/aggregate	1.4 – 1.6	–
Bricks	1.2	5–10%
Concrete	1.5	3–5%
Tiles/ceramics	0.5 – 1	2–5%
Timber	0.3	5–7%
Plasterboard	0.2	5–20%
Metals	0.15 – 0.9	–

Source: Green Building Code of Australia C&D Waste Criteria.

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

The information below presents multiple options for materials reuse, recycling and disposal where applicable (e.g. return to manufacturer, recycled at construction and demolition (C&D) processor, or disposed to landfill if contaminated).

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	750 - 1000	✓	✓	✓	<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	10 – 15	✓	✓	✓	<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	20 – 40	✓	✓	✓	<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	<5	✓	✓	✓	<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 (clean)	5 - 10	-	✓	✓	<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.
Plasterboard	5 – 10	-	✓	✓	<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	<5	✓	✓	✓	<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)	5 – 10	-	✓	✓	<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.
Floor covering	10 - 15	✓	✓	✓	<10%	>90%	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. C&D processor: 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
Fixtures and fittings	Minor	✓	✓	✓			On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. C&D processor: recovery and recycling.
Electronic waste	Minor	-	✓	✓	<10%	>90%	Offcut wires and electronics separated where possible or returned to supplier for reuse.
Packaging materials (pallets, wrap, cardboard, etc)	Minor	-	✓	✓	<10%	>90%	Returned to supplier where possible or separated by material type for resource recovery.
Residual waste	10 - 15	-	✓	✓	100%	-	Resource recovery dependant on facility destination capability.
Total % Diversion from Landfill Estimated						**>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	The following are local skip bin operators for consideration in the management of excavation and construction waste for the site: • Big Rat Skip Bins; • JR Richards and Sons; • Hunter Valley Mini Skips; Or another supplier as elected by the building contractor.
Principal Off-Site Recycler	The following are local C&D processing facilities for consideration in the management of C&D waste generated at the site: • Hunter Resource Recovery; • Maitland Resource Recovery Facility; • Recycle Central; Or another appropriate facility as elected by the waste management contractor.
Principal Licensed Landfill Site	• Cleanaway Beresfield – Newcastle Solid Waste Services Or other appropriate facility as elected by the waste management contractor.

3.4 Site Documentation

This WMP will be retained on-site during the construction phases of the activity, 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 activities.

4 Operational Waste Management

4.1 Overview

Operational waste requirements of the site arise from the daily activities at the site. 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 strategies related to site operations have been established according to Chapter B.6 Waste Not – Site Waste Minimisation and Management of the MDCP 2011 and NSW EPA guideline documents.

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

Table 5: Mobile Garbage Bin (MGB) and Bulk Bin capacity and footprint

Bin Capacity (L)	Height (mm)	Depth (mm)	Width (mm)	Footprint (Approx. m^2)
120	940	560	485	0.30- 0.33
240	1,100	735	580	0.41- 0.43
660	1,250	850	1,370	0.86-1.16
1,100	1,470	1,245	1370	1.33-1.74

Source: NSW EPA's Better practice guide for resource recovery in residential developments (2019).

4.2 Existing Waste generation

The site currently accommodates for the following waste arrangement:

- **General waste: 4 x 3 m^3 bins collected twice per week (generally not all bins are completely full)**
- **Paper/cardboard recycling: 4 x 3 m^3 bins collected fortnightly**

Table 6 details the existing capacity of the school and the corresponding waste outputs.

Table 6: Existing waste generation

Existing Number of Students	Waste Stream	Weekly Generation (L)
339	General Waste	*16,800
	Paper/Cardboard Recycling	6,000

**Note: Observations from the current waste contractor not that general waste bins are currently not full upon most collections. This WMP assumes general waste bins are currently 70% full upon collections when calculating existing weekly generation sums.*

4.3 Future Waste Generation

The capacity of students is set to increase from 339 to 736 with the proposed activity. The expected waste generation of the site has been calculated using the existing waste outputs found in Table 6. It is noted that currently general waste bins are 70% full upon collection. This has been incorporated into the future weekly generation sums outlined in Table 7.

Table 7: Future waste generation

Number of Students	Waste Stream	Generation Rate (L/student/week)	Total Weekly Generation (L)
736	General waste	50	39,800
	Paper & Cardboard	18	14,328
TOTALS	**General waste**		**39,800 L**
	Paper & Cardboard		**14,328 L**

4.4 Waste Storage Requirements

Waste storage space has been calculated considering estimations of bin type and collection frequency as described in Table 8. The number of bins and storage space recommended in Table 8 encapsulate the expected operational waste from both the school and pre-school buildings.

Table 8: Waste storage and collection frequency

Waste stream	Waste generation (L/week)	Waste management options (bins and collection frequency)	*Minimum Storage Area (m^2)
General waste	39,800	12 x 1,100L bins collected **3 – 4 times per week**	28
Paper & Cardboard	14,328	7 x 1,100L bins collected **twice per week**	17
		Total minimum space requirement:	**45 m^2**

*Notes: *Storage space requirement considers additional space of approximately (m^2 x 1.5) for manoeuvring of bins. Food waste stored in bins recommended to be collected at least three times per week to reduce risk of odour impact.*

***General waste bin fullness is to be monitored by site management once the activity is operational to determine collection frequencies.*

The storage, access and manoeuvrability space required for bins to be collected at the proposed activity is estimated at 45 m^2. The proposed area of the waste storage area located adjacent to the school carpark is sufficient in supporting these space requirements.

It is acknowledged that the waste generation estimated in this report may be higher or lower than the actual amount, thus site management will be required to monitor bin fullness and adjust collections or bin allocation as necessary. The waste management areas provide enough flexibility to cater to the needs of the activity should they deviate from the recommendations within this report.

4.4.1 Temporary Waste Storage

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 from both pre-school and school buildings into respective bins in the waste storage area. Maintenance and grounds staff will use the primary waste bins directly.

4.5 Alternative Waste Management Strategies for Consideration

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

4.5.1 Additional Waste Streams

The NSW Department of Education has released an Education Facilities Standards and Guidelines (EFSG) which provide assistance to 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 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 Garden 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).

It is noted that the EFSG is a best-practice guideline and not a requirement for schools in NSW. Gillieston Public School can initially opt for a two-bin system (being general waste and commingled recycling) and over time introduce greater separation of waste streams (paper and cardboard, FOGO, soft plastics, and CDS-eligible containers).

4.5.2 Food Waste

Food waste will be generated around 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. The collection of food waste is encouraged for consideration given upcoming NSW mandates.

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 onsite 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 9 below outlines a list of compostable materials that may be generated through regular operations at the school.

Table 9: Compostable and Non-Compostable materials list

Compostable	Not Compostable
✓ Vegetable and food scraps	× Meat and dairy products
✓ Fallen leaves (in layers)	× Diseased plant material
✓ Tea leaves and tea bags	× Metals, plastic, glass
✓ Coffee grounds	× Animal manures (especially the droppings of cats and dogs)
✓ Vacuum cleaner dust	× Fat
✓ Soft stems	× Magazines
✓ Dead flowers	× Large branches
✓ Old potting mix	× Weeds that have seeds or underground stems
✓ Used vegetable cooking oil	× Bread or cake (may attract mice)
✓ Egg shells	× Bones
✓ Old newspapers (wet)	× Sawdust from treated timber
✓ Grass cuttings in layers	
✓ Weeds	
✓ Sawdust (from non-treated timber)	
✓ Wood ash	
✓ Human and animal hair	

4.5.3 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).

4.5.4 Bulky Waste Storage

Some bulky wastes will be generated because of typical school activities. Sufficient space will be provided for the temporary storage of these wastes prior to scheduled collection. Bulky waste is proposed to be managed similarly to current operations and be disposed of via skip bin or collected by the commercial waste contractor at the end of each term during school break, or whenever the quantity of such waste is generated in a sufficient quantity. Management and access of the bulky storage area will be the responsibility of school management and cleaning personnel.

4.5.5 Problem Waste Management

The Gillieston Public School is encouraged to 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 collection 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 WGS. 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.

4.5.6 Waste Avoidance

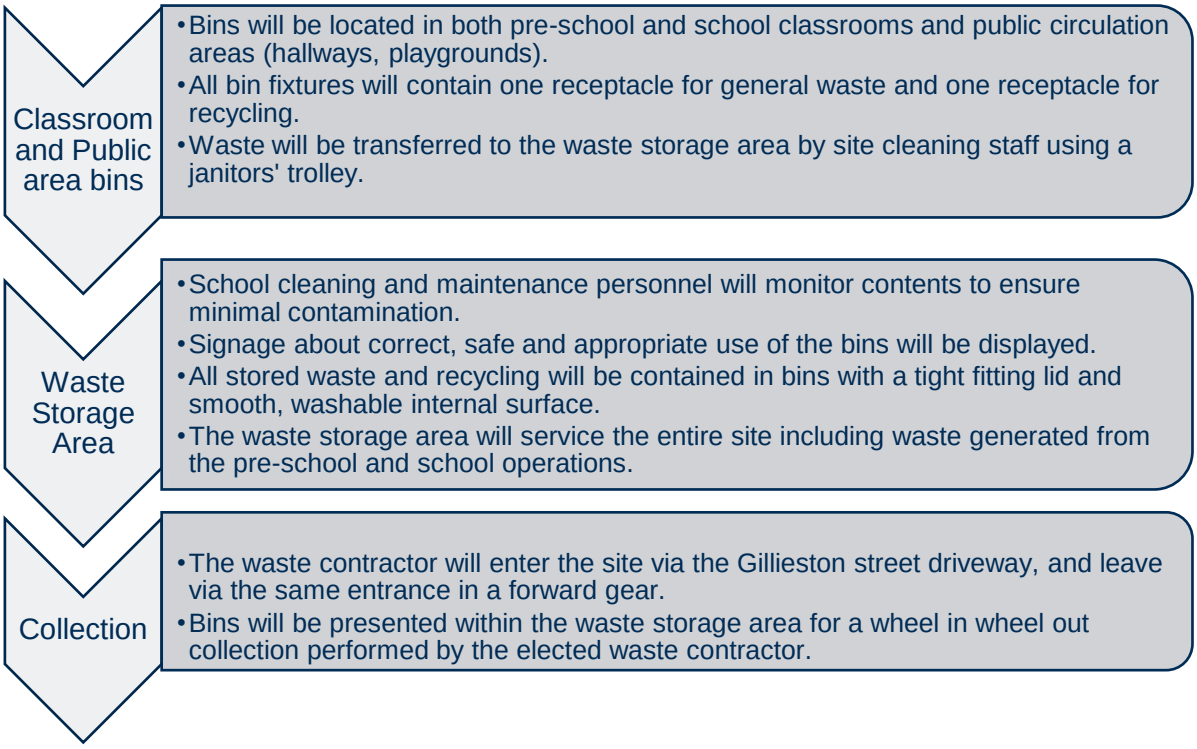
Employing purchasing strategies to avoid the generation of waste: purchasing products with recyclable, compostable, minimal, or no packaging.

5 Waste Management Systems

5.1 Waste Management and Recycling Method

The flow of **waste and recycling** goes from generation to collection through several steps:

Figure 4: Waste Flow



5.2 Management System and Responsibilities

Site management will engage site 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 building management and site cleaning staff.

Site management is responsible for:

- Use of this waste management plan 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 building;
- 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 area;
- Arranging access to bins on collection days and to liaise with the WSP for operational issues;
- Cleaning and exchanging all bins; and
- Monitoring any vermin and pest issues and arranging appropriate controls (traps or fumigating) and maintenance of doors or other points of potential entry.

The building management and site cleaning staff are also responsible for ensuring that workplace safety requirements according to WorkCover NSW Occupational Health and Safety are upheld.

5.3 Collection Method and Loading Areas

The waste storage area will service both pre-school and school building's. Site management will use a janitor's trolley to transfer and decant waste captured in smaller bins into larger bins within the waste storage area. The assigned waste contractor will access the WSA via the driveway located on Gillieston Road and service the bins directly using a rear lift loading waste collection vehicle.

Table 10 describes the specifications associated with collection methods for the proposed activity. See Appendix A for site plan WSA and waste vehicle collection route.

Table 10: Collection points and loading areas requirements and specification

Component	Requirement	Specification
Collection point	Allow safe waste collection and loading operations	- Adequate clearance and manoeuvring space; - Sufficient clearance for the safe handling of materials and equipment; and - Sectioned loading bay does not impede upon traffic and pedestrian safety.
Vehicle manoeuvring and loading space	Truck space for adequate lift clearance, manoeuvring and operation for a contractor collection vehicle	- Collection from each site use loading area by a mini rear lift collection vehicle; - Adequate loading bay dimensions to not impede lift clearance; - 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	- Collection times will be arranged during off-peak times to ensure minimal disturbance to pedestrians and visitors.

5.4 Waste and Recycling Storage Areas

The waste storage area will provide centralised storage that has adequate capacity to receive and store the maximum likely generation of waste and recycling between collection times. In accordance with the MDCP 2011, it is recommended the bin storage areas be designed with the following considerations:

- Storage areas reflect the equipment, infrastructure, manoeuvring space and potential future needs of the activity;
- Provision of separate containers for the separation of waste streams will be available;
- Be located in a position that is convenient for users and waste collection staff, located away from habitable rooms;

- Waste handling, storage and collection systems for residential and non-residential waste to be separate and self-contained;
- All waste and recycling storage areas and access paths to be kept clean and free of obstructions;
- The floor being graded and drained to an approved drainage outlet connected to the sewer and having a smooth, even surface, coved at all intersections with walls;
- The walls being cement rendered to a smooth, even surface and coved at all intersections; and
- The room shall be adequately ventilated (either natural or mechanical) in accordance with the Building Code of Australia.

5.5 Signage

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. 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;
- Contact details for arranging the disposal of bulky items; and
- The area is to be kept tidy.

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 areas are 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 (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.

6 Mitigation Measures

This WMP has considered the proposal's environmental impacts and has recommended the following mitigation measures as they relate to the waste management of the proposed development.

Table 11: Waste Management Mitigation Measures

Project Stage: Design (D) Construction (C) Operation (O)	Mitigation Measures	Relevant Section of Report
D: Waste storage	The existing sites waste generation outputs have been extrapolated to provide the approximate storage space required for bins within the proposed activity.	Section 4.4
D: Waste Collection	Traffic and waste consultants have confirmed that onsite collection via a HRV is possible for the proposed activity.	Section 5.1 and 5.3
D: Council requirements	The waste management strategies proposed in this WMP are based from MDCP 2011 and MLEP 2011 requirements.	Sections 3 - 5
C: Construction waste management	Expected waste generated from C&D activities has been calculated. Specific recovery strategies for each type of C&D waste associated with the construction of the proposed activity are provided.	Section 3
O: Operational waste management	Operational waste generated from the pre-school and school building's have been calculated along with associated storage requirements and suitable collection methods. Alternative waste management strategies are also provided for the consideration of site management. It has been noted that some of these alternative strategies will be mandated in the future.	Section 4

7 References

Australian Department of Sustainability, Environment Water, Population and Communities (2011) Construction and Demolition Waste Guide - Recycling and Re-use Across the Supply Chain.

Australian Standards 4123.7 Mobile Waste Containers.

Maitland Development Control Plan 2011

Maitland Local Environmental Plan 2011

NSW EPA (2012) Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities.

NSW EPA (2021) NSW Waste and Sustainable Materials Strategy 2041.

NSW EPA (2014) Waste Classification Guidelines.

NSW EPA (2016) Recycling Signs, Posters and Symbols. Available at: http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm.

NSW EPA (2019) Better Practice Guide for Resource Recovery in Residential Developments.

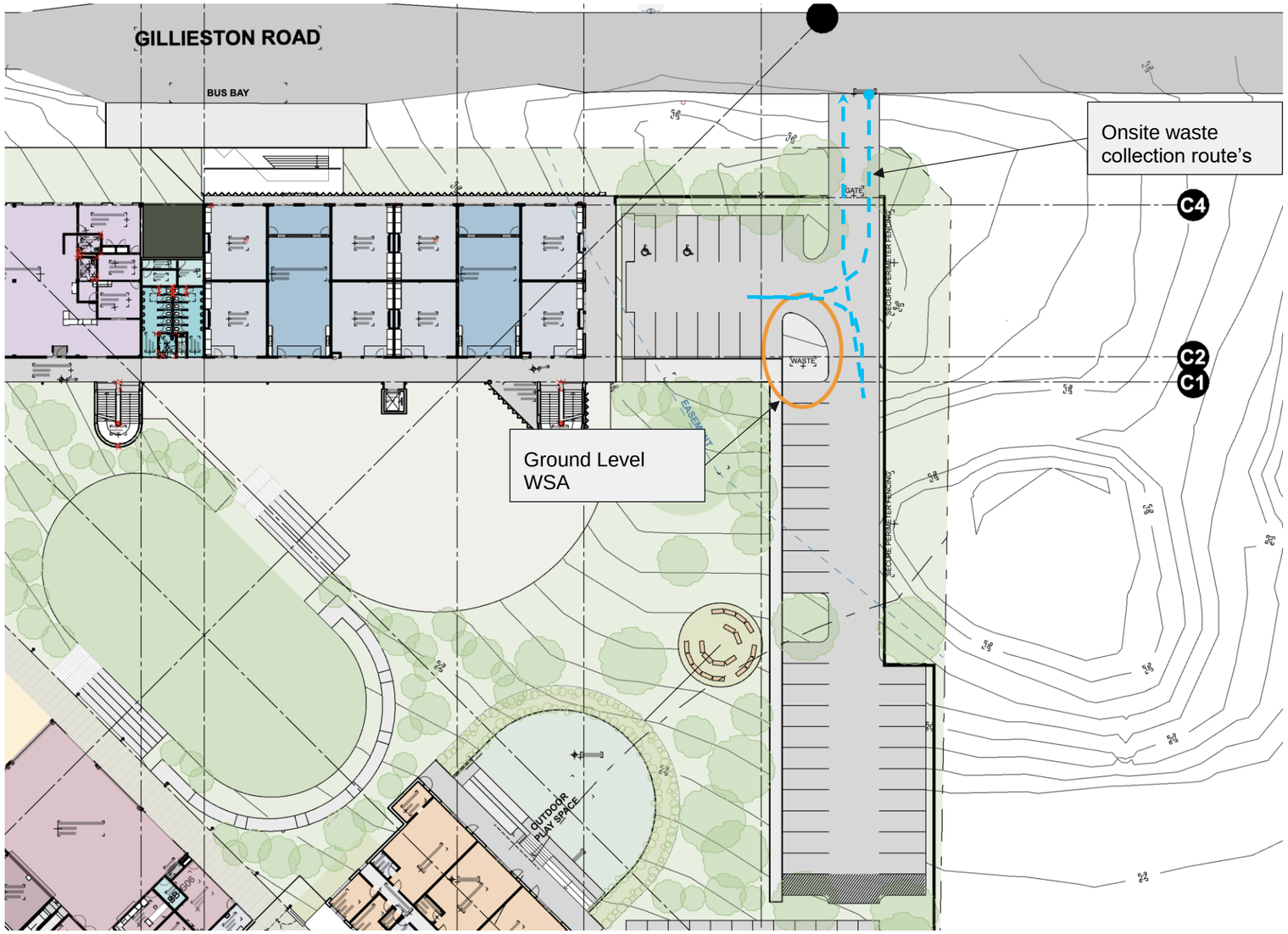
NSW Government (1979) Environmental Planning and Assessment Act.

NSW Government (1997) Protection of the Environment Operations Act.

NSW Government (2000) Environmental Planning and Assessment Regulation.

NSW Government (2001) The Waste Avoidance and Resource Recovery Act

Appendix A Proposed Site Plans (showing WSA and Waste Collection Vehicle Route)



Source: Shac Architects, 2024

Appendix B Standard Signage

Waste Signage

Signs for garbage, recycling and organics bins should comply with the standard signs promoted by the NSW EPA.

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

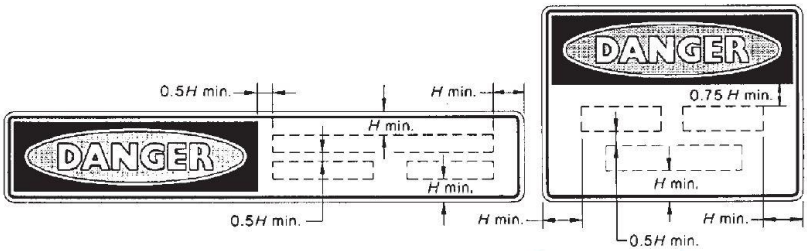
Safety Signs

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



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