Pacific Brook Christian School

Operational and Construction Waste Management Plan (For Stage 1)

SEPTEMBER 2021

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 NBRS Architects for the Pacific Brook Christian School project.

This Waste Management Plan is not a substitute for legal advice on the relevant environmental legislation, which applies to NBRS Architects, its 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 Management **5**

2.1 Waste Streams 5
2.2 Waste Generation Estimates 5
2.3 Waste Collection 6
2.4 Operational Procedures 6
2.5 Education 7
2.6 Container Deposit Scheme 7
2.7 Public Place Recycling 7

3 Construction Waste Management Principles **10**

3.1 Introduction 10
3.2 Waste Management Principles 10
3.3 Liquid Waste 12
3.4 Stormwater Pollution Prevention 12
3.5 Litter Management 12
3.6 Records 13
3.7 Waste/recyclables storage (on-site) 13
3.8 Waste/recyclables treatment (on-site) 13

4 Construction Waste Profile **14**

4.1 Introduction 14
4.2 Waste Volumes 14

5 Contracts and purchasing **17**

6 Training and Education **18**

Appendix A – Site Plan **19**

Appendix B – Example Signage **20**

1 Introduction

This Operational and Construction Waste Management Report has been prepared on behalf of NBRS Architects to accompany a Development Application for the Pacific Brook Christian School project.

In summary, the project involves development of a new school having student capacity of 656 students when completed (including all stages). This Waste Management Plan is for stage 1 works only. Upon completion of stage 1 construction, it is expected that the school will cater to needs of approximately 140 students. See Appendix A for Site Plan.

The Plan has been developed with consideration of Muswellbrook Shire Council's 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 by the recommended equipment/systems.

In doing so this Plan, which includes waste estimates and related management requirements, has been developed in accordance with *Muswellbrook Shire Development Control Plan 2009* (Section 24 Waste Minimisation and Management).

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:

1. ***Ensure waste is managed to reduce the amount of waste and recyclables to land fill*** by assisting staff to segregate appropriate materials that can be recycled; displaying signage to remind and encourage recycling practices; and through placement of recycling and waste bins to reinforce these messages.

2. ***Recover, reuse and recycle*** generated waste wherever possible.

3. ***Compliance*** with all relevant legislation, codes and policies.

Management strategies reflect current best-practice requirements, and relevant Sections of the *Protection of the Environment Operations Act 1997* and the NSW Environment Protection Authority *Waste Classification Guidelines, Part 1: Classifying Waste*, as well as consideration of industry best practice for this type of development.

Section 143 of the Protection of the Environment Operations Act 1997 requires waste to be transported to a place that can lawfully accept it. It will be the responsibility of the site developers to ensure all contractors clearly specify where all wastes are to be transported, the capacity of the nominated facilities to receive/manage the waste and to ensure that reports on management aspects (types, quantities and disposal pathways) are provided.

2 Waste Management

2.1 Waste Streams

Based on the development profile (as per Section 1), the following are the waste streams that would be expected on a regular basis:

- Comingled recycling (eg., cardboard/paper, glass and plastic containers);
- General waste; and
- Garden waste.

All garden waste will be managed by the appointed gardener. There will be a requirement that this waste be either used on site, or disposed of at a composting facility. Disposal to landfill will not be a permitted option.

2.2 Waste Generation Estimates

Based on averages for quantity of waste generated and composition as determined by industry data (i.e. 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 Environmental Protection Authority's *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities,* it is estimated that the development will generate a total of **4,900** litres of waste and recyclables per week.

The following table summarises the expected quantities of waste and recyclables generated for the development in terms of volume per week.

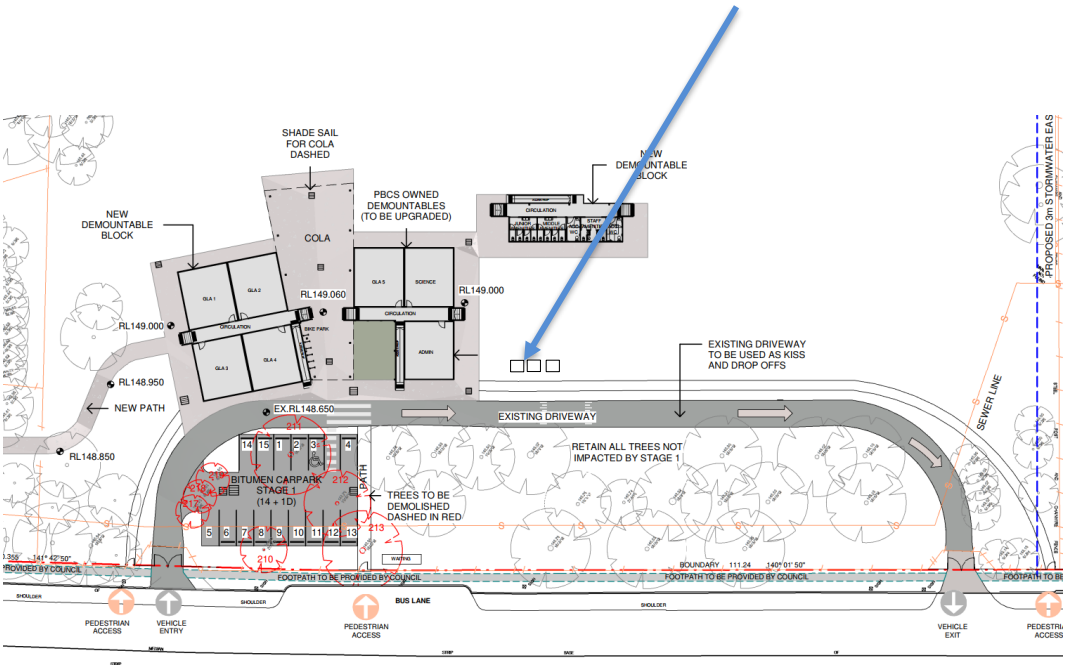
Table 1 – Waste estimates

	L/week
General Waste	2,800
Commingled Recycling	2,100
Total	**4,900**

To manage the volumes, the following bins will be provided:

- General waste: 2 x 1,100 litre Mobile Garbage Bins (serviced twice weekly)
- Commingled recycling: 1 x 1,100 litre Mobile Garbage Bins (serviced twice weekly)

The following diagram illustrates the indicative location for placement of bins.



2.3 Waste Collection

Waste collection services will be provided by a private waste contractor. Private waste contractor will use rear loading waste collection vehicle. The waste collection will occur during non-school hours or at weekends. To service 3 x 1,100 Litre bins, it will take around 3-5 minutes. This arrangement is only for Stage 1 construction.

2.4 Operational Procedures

The following summarises the recommended waste and recycling systems that will be implemented.

- MGB for waste and recyclables are located around the school grounds for use by staff and students.
- All MGB and bins will be managed by school cleaning staff.
- Relevant rooms within the areas will be provided with small (15 litre) bins for both waste and recyclables in each room.
- Staff and students will be provided with information on the proper use of the waste management system and all will be encouraged to maximise the separation of general waste and mixed recyclables to aid the proper disposal of all materials.
- Waste/recyclables from the building will be collected on a daily basis by building cleaners and transported to the main waste storage area.
- Cleaners will be responsible for emptying bins into the 1100 litre MGB's.

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

2.5 Education

Staff and students will be advised as to correct segregation by information conveyed via newsletters, signage and staff advising students, regarding the waste management systems including how to use the system, which items are appropriate for each stream and collection regimes.

2.6 Container Deposit Scheme

The NSW container deposit scheme, Return and Earn, commenced across NSW on 1 December 2017. Under Return and Earn, most empty 150-millilitre to 3-litre drink containers will be eligible for a 10-cent refund when presented to an approved NSW collection point. Container materials that may be eligible for a refund include

- PET
- HDPE
- glass
- aluminium
- steel
- liquid paperboard

This initiative by the NSW Government can be viewed as an opportunity for the School to collect eligible containers and the transport them to a collection point in order to obtain the refund. School staff and students could also deposit eligible containers from other sources as a means of fund raising.
The following NSW Government website provides details and the School can find collection locations (https://www.epa.nsw.gov.au/your-environment/recycling-andreuse/return-and-earn)

2.7 Public Place Recycling

With public open spaces, consideration needs to be taken regarding public place recycling (PPR). General waste and recycling facilities will be provided in public realm areas throughout the development.

Simple, colour-coded and consistent representation of common recycling and waste streams makes it easier for people to know how and what to recycle. Introducing a public recycling system has environmental, social and financial benefits including:

- Responding to community expectations to ‘Do the Right Thing’.
- Reducing the amount of waste sent to landfill and recovering valuable resources to be made into new products.

- Financial benefits over time as materials are diverted from landfill and into recycling.
- Contributing to triple bottom line reporting.

It is important that general waste and recycling bins are always located together in order to make recycling as accessible as general waste disposal. Recycling bins should never be located on their own in isolation from a general waste bin as patrons are likely to contaminate the recycling bin with general waste if there is no other option to dispose their general waste.

The implementation of organics recycling bins is not recommended in public places due to the high levels of contamination commonly observed in such systems.

All bins should be clearly signed and appropriately colour-coded to ensure the streams are readily identifiable. Signage for PPR should be:

- Colour-coded: red for general waste and yellow for recycling
- Large and easily viewed from all angles: this may mean that signs are placed on all sides of the bin or above the bin.
- Simple: don't use jargon (words such as PET, comingled, HDPE and even the recycling triangle can be confusing as this symbol can appear on a number of items that are not necessarily recyclable.
- Unambiguous and uses visual imagery

All public domain waste and recycling bins will be managed and collected by the cleaners as part of their existing waste and recycling operations.

The following are some examples of public place recycling bins that could be used within the School precinct. Contacting providers of these type of bins will enable the development to obtain bins that are "fit for purpose" as well as integrating into the development design.


RECYCLING
LANDFILL

3 Construction Waste Management Principles

3.1 Introduction

This Plan details the management of waste during the construction phases of the development.

The aim of this Plan is to ensure that all waste resulting from construction activities are managed in an effective, safe and environmentally aware manner. Specifically,

- To minimise the generation of waste to landfill
- To maximise waste material avoidance and reuse on site
- To ensure that where practicable, an efficient recycling procedure is applied to waste materials
- To raise awareness among employees and subcontractors of their waste management responsibilities

This Plan has been developed with reference to Muswellbrook Shire Council's requirements and relevant Sections of the *Protection of the Environment Operations Act 1997* and the NSW Environment Protection Authority *Waste Classification Guidelines, Part 1: Classifying Waste*, as well as consideration of industry best-practice for this type of development.

3.2 Waste Management Principles

The following waste hierarchy will be used as a guiding principle:

Avoid and Reduce

Minimise the production of waste materials in the construction process by:

- Assessing and taking into consideration the resultant waste from different design and construction options
- Purchasing materials that will result in less waste, which have minimal packaging, are pre-cut or fabricated.
- Not over ordering products and materials

Reuse

Ensure that where ever possible, materials are reused either on site or offsite.

- Identify all waste products that can be reused
- Put systems in place to separate and store reusable items
- Identify the potential applications for reuse both onsite and offsite and facilitate reuse

Recycling

Identify all recyclable waste products to be produced on site.

- Provide systems for separating and stockpiling of recyclables
- Provide clear signage to ensure recyclable materials are separated
- Process the material for recycling either onsite or offsite

Note: In some cases, it may be more economical to send the unsorted waste to specialised waste contractors who will separate and recycle materials at an offsite location.

Disposal

Waste products which cannot be reused or recycled will be removed and disposed of. The following will need to be considered:

- Ensure the chosen waste disposal contractor complies with regulatory requirements
- Implement regular collection of bins

Section 143 of the Protection of the Environment Operations Act 1997 requires waste to be transported to a place that can lawfully accept it. It will be the responsibility of the site developers to ensure all contractors clearly specify where all wastes are to be transported, the capacity of the nominated facilities to receive/manage the waste and to ensure that reports on management aspects (types, quantities and disposal pathways) are provided.

3.3 Liquid Waste

Liquid waste may be produced on site for environmental control measures such as:

- Site and vehicle cleaning
- Dust control waste

The following measures will be taken to minimise the impact of liquid waste:

- Ensure water is used in moderation and no taps are left continuously running
- Use any grey water produced on site for irrigation or for dust suppression
- Only discharge clean water into storm water

3.4 Stormwater Pollution Prevention

All actions will be undertaken to avoid pollution entering stormwater drains and for litter generation. The following will be initiated:

i. Prior to commencement of any works a Safe Work Method Statement will be completed and reviewed to determine potential for stormwater pollution and/or litter generation

ii. The proponent (contractor), will need to develop a management strategy to manage the potential for these issues to be realised

iii. Site inspections will be conducted during the working day to monitor potential for stormwater pollution generation and where identified, works will cease until appropriate controls are implemented

iv. Waste water and storm water will be managed and disposed of in accordance with Water Authority requirements.

3.5 Litter Management

i. Daily site inspections will be conducted to identify litter, remedy the situation and investigate the cause so as to reduce the potential for the issue to occur in the future.

ii. Sufficient quantities of bins (and/or bin space), will be made available so as to avoid dumping of materials outside bins

iii. All waste/recycling bins will have covers so as to ensure that wastes cannot be blown out during windy conditions. This will also apply to relevant stocks of materials to be used in construction.

iv. Personnel will be allocated the role of litter management in that they will periodically inspect the site and surrounds for litter and if identified collect and dispose of it.

3.6 Records

Records will be kept of all wastes and recyclables generated and either used on site, or transported off–site during the construction stages of the development.

It will be a condition of appointment that all waste/recycling contractors involved in the construction stage provide these records, and that they also contain details of the facilities that the materials are transported to.

These records will be made available to Council on request.

3.7 Waste/recyclables storage (on-site)

All waste and recycling materials will be stored in bins provided by the appointed contractor(s). These bins will be appropriately coloured and signed to indicate what materials are to be deposited into them and located so as to maximise the recovery of reusable/recyclable materials.

As construction activities progress, the designated bins will be moved so as to maximise the collection of materials that will be diverted from landfill. This will also involve relocating signage advising as to correct waste management.

3.8 Waste/recyclables treatment (on-site)

There will be no treatment of wastes or recyclables on-site except for possible removal of contaminants prior to forwarding to off-site recyclers.

4 Construction Waste Profile

4.1 Introduction

Finalisation of the system(s) that will be implemented for the recovery of materials and for disposal of others to landfill will occur following appointment of contractor(s). A component of the appointment will be that contactors will be required to provide data as to the disposal pathway (eg., materials, volumes and final disposal site), as well as a validation process for this information.

The appointed contractor(s) will also be responsible for sourcing speciality recycling facilities for the materials that cannot be reused on site.

4.2 Waste Volumes

The quantity of waste materials to be generated onsite are estimates and therefore the systems that will be put in place need to incorporate flexibility to allow for variation in the total quantities generated. Active site management during the construction phase will ensure all waste/recyclable materials are disposed of appropriately and that all waste receptacles are of sufficient capacity to manage onsite activities.

The following table details the estimated composition by m^2 of construction waste to be generated for the total site.

Composition and Management of Construction waste by m^2

Materials on site		Destination		
Type of material	Estimated volume (m^3)	On-site (Reuse or recycle)	Off-site	Disposal
Concrete	2 m^3	Separated on site and crushed for use in pavement construction where possible	Collected by contractor and disposed at concrete recycling facility	Facility TBA upon appointment of contractor
Plasterboard	3m^3	Unused material taken back by supplier for reuse where possible	Material to be separated and stockpiled onsite.	Facility TBA upon appointment of contractor

Materials on site		Destination		
Type of material	Estimated volume (m^3)	On-site (Reuse or recycle)	Off-site	Disposal
Timber	$4m^3$	Separated and where feasible, reused for further formwork	Unused material to be separated and stockpiled onsite. Collected by specialist timber subcontractor for recycling	Facility TBA upon appointment of contractor
Asphalt	2 m3	Separated on site and crushed for use in pavement and/or temporary access road construction where possible.	Collected by contractor and disposed at recycling facility	Facility TBA upon appointment of contractor. No disposal to landfill.
Metal	1.5 m^3	No on-site reuse	Collected by specialist metal subcontractor for recycling	Facility TBA upon appointment of contractor
Carpet	0.5 m^3	No on-site reuse	This will be disposed of into a designated bin and collected for recycling if of the required quality or disposal to landfill.	Facility TBA upon appointment of contractor
Green waste	18 m3	Where possible green waste material will remain onsite and be reused in landscape areas	Collected and disposed at green waste/mulching facility	Facility TBA upon appointment of contractor. No disposal to landfill.

Materials on site		Destination		
Type of material	Estimated volume (m^3)	On-site (Reuse or recycle)	Off-site	Disposal
Mixed hard plastics	$7m^3$	No on-site reuse	Collected by contractor for recycling.	Facility TBA upon appointment of contractor
Mixed Recyclables	$15m^3$	No on-site reuse	Contractor appointed to collect and recycle	No disposal to landfill
General waste	$35\ m^3$	No on-site reuse	No recycling or reuse	Facility TBA upon appointment of contractor

5 Contracts and purchasing

Each subcontractor working on the site will be required to adhere to this Waste Management Plan.

The Head Contractor will ensure each subcontractor:

- Takes practical measures to prevent waste being generated from their work
- Implements procedures to ensure waste resulting from their work will be actively managed and where possible recycled, as part of the overall site recycling strategy or separately as appropriate
- Ensures that the right quantities of materials are ordered, minimally packaged and where practical pre-fabricated. Any oversupplied materials are returned to the supplier
- Implements source separation of off cuts to facilitate reuse, resale or recycling.

The Site Manager will be responsible for:

- Ensuring there is a secure location for on-site storage of materials to be reused on site, and for separated materials for recycling off site.
- Engaging appropriate waste and recycling contractors to remove waste and recycling materials from the site
- Co-coordinating between subcontractors, to maximise on site reuse of materials
- Monitoring of bins on a regular basis by site supervisors to detect any contamination or leakage
- Ensuring the site has clear signs directing staff to the appropriate location for recycling and stockpiling station/s. And that each bin/skip/stockpile is clearly sign posted
- Proving training to all site employees and subcontractors in regards to the WMP as detailed below.

Should a subcontractor cause a bin to be significantly contaminated, the Site Manager will be advised by a non-conformance report procedure. The offending subcontractor will then be required to take corrective action, at their own cost. The non-conformance process would be managed by the Head Contractors' Quality Management Systems

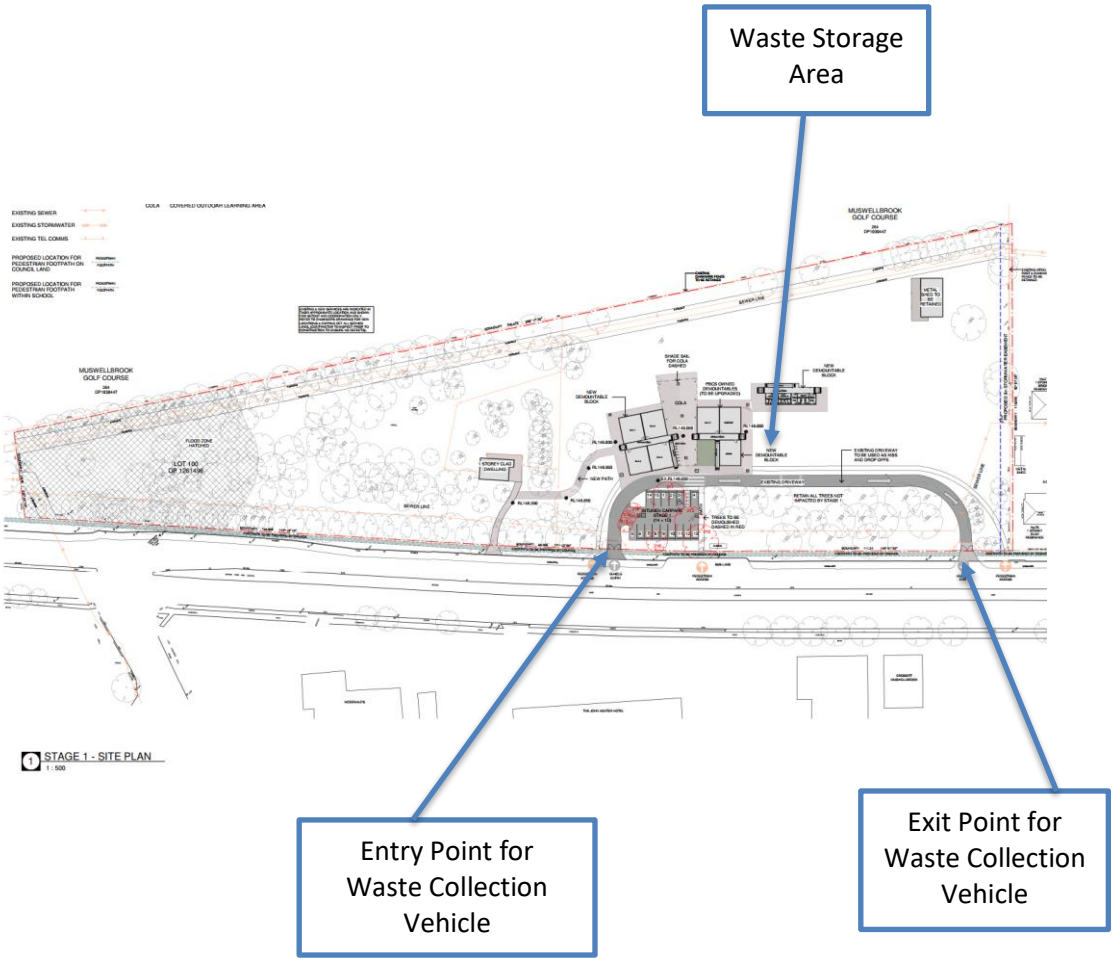
6 Training and Education

All site employees and sub-contractors will be required to attend a site specific induction that will outline the components of the WMP and explain the site specific practicalities of the waste reduction and recycling strategies outlined in the WMP.

All employees are to have a clear understanding of which products are being reused/recycled on site and where they are stockpiled. They are also to be made aware of waste reduction efforts in regards to packaging.

The site manager will post educational signage in relation the recycling activities on site in breakout areas, lunch rooms etc.

Appendix A – Site Plan



Appendix B – Example Signage