St Luke's Grammar School

Operational Waste Management Plan March 2020

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1. Introduction

This waste management plan for St Luke's Grammar School has been prepared by Waste Audit & Consultancy Services (Aust) Pty Ltd for Midson and St Luke's Grammar School to provide guidance on the management of operational general waste and recyclable materials generated by the proposed State Significant Development (SSD) at 800 Pittwater Road and 224 Headland Road, Dee Why, NSW.

St Luke's Grammar School (SLGS) is a K-12 co-educational school that is located at 210 Headland Road, Dee Why. SLGS proposes to expand its existing campus to incorporate 224 Headland Road as a sports centre and 800 Pittwater Road as a designated senior school for 600 senior school students.

The proposed development will bring total enrolment to 1,600 students, with 600 students at 800 Pittwater Road and 1,000 at 210 Headland Road.

The new senior school at 800 Pittwater Road will consist of the following facilities:

- Science & Maths Precinct
- Arts Precinct
- Design & Technology Precinct
- Humanities Precinct
- Wellness Precinct, including indoor pool
- Administration & Staff Areas
- Social, Library, & Study Hubs
- Assembly Hall
- Drama Theatre
- Café & Atrium
- Parking

The sports centre will, when completed, consist of the following facilities and features:

- 2 x Basketball Courts
- 1 x ½ size Basketball Court
- Gym
- Dance/Exercise Floor
- School Clothing Store
- Parking
- A vertical connection linking 224 Headland Road and 800 Pittwater Road

The development will take place in three stages to suit the availability of the site, commencing at 224 Headland Road in the second half of 2022.

Arrangements for management of the general waste and recyclable materials that will be generated during the development's operational phase have been designed to take these development stages into account, with each stage requiring different procedures and storage areas. These are detailed in Section 6, with demolition and construction waste addressed in a separate report.

All waste management provisions, including internal bins, central storage areas, management and handling protocols, and contractor requirements, have been designed to ensure safe and sustainable management of all materials, consistent with best practice standards and the SEARs requirements applicable to the development.

2. Site Boundary

The site boundary relevant to this waste management plan is shown in the drawing below:

3. The Development

The development will result in the creation of the following new areas producing general waste and recycling (excluding service areas, stairwells, foyers, air locks etc.):

Table 1: Accommodation Areas - 800 Pittwater Road

Area	GFA m^2
Teaching/Office/Support/Admin	10,662
Café	130
Total	**10,762**

Table 2: Accommodation Areas - 224 Headland Road

Area	GFA m^2
Basketball Courts	1,400
Half Court	224
Dance/Exercise Floor	185
Gym	327
Bathrooms/Change Rooms	68
Training	91
School Clothing Store	129
Total	**2,424**

4. Operational General Waste & Recycling: Generation Rates

To calculate total operational volumes, the following rates in litres/day/100 m^2 of GFA have been used for each area type as shown in Table 3. These rates are based on typical waste and recycling generation rates for educational facilities and other supporting functions.

Table 3: Waste Generation Rates in Litres/Day per 100 m^2

Area	General Waste	Paper/Cardboard Recycling	Commingled Recycling
Teaching/Office/Support/Admin	10.0	7.0	3.0
Café	10.0	6.0	3.0
Basketball Courts, Gym, etc.	5.0	3.0	2.0
Clothing Store	3.0	4.0	1.0

Calculations showing expected operational volumes of materials based on full occupancy of the development (Stage 3) are shown in Section 5.

5. Operational General Waste & Recycling: Total Volumes

Total predicted daily and weekly operational general waste and recycling volumes are shown in Tables 5 and 6, based on completion of Stage 3 and full occupancy, with 5 days per week (Monday-Friday) operation.

Table 5: Predicted Total Waste Generation - 800 Pittwater Road (Stage 3)

Area	General Waste	Paper/Cardboard Recycling	Commingled Recycling
Teaching/Office/Support/Admin	1,066.2	746.3	319.9
Café	80.0	15.0	10.0
Total Daily Waste	**1,146.2**	**761.3**	**329.9**
Total Weekly Waste	**5,731.00**	**3,806.70**	**1,649.30**

Table 6: Predicted Total Waste Generation - 224 Headland Road (Stage 1)

Area	General Waste	Paper/Cardboard Recycling	Commingled Recycling
Basketball Courts, Gym, etc.	110.2	66.1	44.1
Clothing Store	3.9	5.2	1.3
Total Daily Waste	**114.1**	**71.3**	**45.4**
Total Weekly Waste	**570.4**	**356.4**	**226.9**

6. Storage Facilities & Equipment

6.1 Storage Space Requirements - Stages 1 & 3

Total predicted Stages 1 and 3 weekly operational general waste and recycling volumes are shown in Tables 7 and 8.

Table 7: Storage Space Calculations - 800 Pittwater Road (Stage 3)

Material Stream/Function	Weekly Litres Generated	Bin Size Litres	No. of Bins	Collections per Week	Required Area (m^2)*
General Waste	5,731.0	1100	4	3	8.87
Paper/Cardboard Recycling	3,806.7	1100	4	2	8.87
Commingled Recycling	1,649.3	660	4	2	6.06
Bulky/Reusable Waste	Variable	N/A	N/A	On demand	10.00
Bin Wash Area	N/A				5.00
TOTALS	**11,187.0**				**39.79 m^2**

* Includes 30% allowance for circulation space between bins and bin movement in and out of the storage room

Table 8: Storage Space Calculations - 224 Headland Road (Stage 1)

Material Stream/Function	Weekly Litres Generated	Bin Size Litres	No. of Bins	Collections per Week	Required Area (m^2)*
General Waste	570.4	1100	1	2	1.71
Paper/Cardboard Recycling	356.4	660	1	2	1.16
Commingled Recycling	226.9	660	1	1	1.16
TOTALS	**2,333**		**3**		**4.03 m^2**

The above bin numbers and weekly collection frequencies are predicated on the maximum predicted generation of each of the expected materials streams, based on the development's area schedule and full student and staff occupancy following completion of Stage 3.

For 224 Headland Road, bins will be stored in a dedicated enclosure of 4-5 m^2 size in the building's car park area. Any bulky or reusable waste generated from this building will be removed by special arrangement, as there will be no dedicated storage facility in this area.

Similarly, there will be no bin washing area provided, so this will be carried out on site by a specialised contractor with a vehicle having a facility for containing and capturing waste water from the bin cleansing process, so that none enters stormwater drains.

For 800 Pittwater Road (Stage 2) a temporary storage area of 10-12 m^2 will be located near the south boundary of the site. Stage 3 will see construction of a permanent 55 m^2 room for storage of all operational general waste and recycling.

Stage 2 bin and storage area calculations are shown in Section 6.2.

6.2 Storage Space Calculations - Stage 2

Predicted Stage 2 daily and weekly operational general waste and recycling volumes for 800 Pittwater Road are shown in Table 9. Equipment requirements are based on Stage 2 general waste and recycling generation being approximately 50% of Stage 3 generation.

As this will be a temporary storage area for Stage 2 only, there will be no areas set aside for bulky waste or a bin wash facility. These will be managed by the same process as for 224 Headland Road, as detailed above in Section 6.1.

Table 9: Storage Space Calculations - 800 Pittwater Road (Stage 2)

Material Stream/Function	Weekly Litres Generated	Bin Size Litres	No. of Bins	Collections per Week	Required Area (m^2)*
General Waste	2,865.5	1100	2	3	4.43
Paper/Cardboard Recycling	1,903.4	1100	2	2	4.43
Commingled Recycling	824.7	660	2	2	3.03
TOTALS	**5,593.5**		**6**		**11.89 m^2**

6.3 Storage Space Requirements

Stage 2 (temporary) and Stage 3 (operational) bin storage areas for 800 Pittwater Road and 224 Headland Road are shown in Appendices 1 and 2 respectively. All storage areas as currently designed are adequately sized to accommodate bins for all waste and recycling generated on the premises between collections in Stages 2 and 3.

These areas have been designed with safety and accessibility in mind, with no steps or grade changes to impede bin movement and loading.

All waste and recycling containers will be clearly differentiated through appropriate signage and colour coding to reflect the materials contained, with each different stream located in a designated area to assist in easy identification by cleaners and other building users.

The storage room will also have the following features:

- Mechanically ventilated (ref. AS 1668.2)
- Walls to be constructed from masonry or similar, washable, and painted with light colour
- Floors to be sealed, with flat and even surface and graded drains to sewer connection
- All corners coved and sealed 100 mm up to eliminate build-up of dirt
- Storm water entrance preventative measures in place
- Brightly lit to Australian standard and light switches at 1.6 m height (sensors recommended)
- All doors are lockable, tightly fitted, hinged, and self-closing and of at least 2 m width
- Conformance with the Building Code of Australia, Australian standards, and local laws
- Childproofing and public/operator safety assessed and ensured
- A regular cleaning schedule and documented pest control regime
- All bin lids to be kept closed when not being used
- Bunded bin wash facilities provided with an adequate supply of hot and cold water mixed through a centralised mixing valve with hose cock, and floor graded to a 100 mm diameter floor drain outlet

7. Demolition & Construction Waste

A separate plan detailing the management of waste resulting from demolition and construction activities has been prepared, using the templates provided by Northern Beaches Council for guidance. Both plans should be submitted as part of the State Significant Development Application (SSDA) for the project.

8. Operational Recycling & General Waste

8.1 Cardboard & Paper Recycling

Most cardboard packaging will originate from deliveries of supplies and stationery. Paper materials such as non-confidential office paper, newspapers, magazines, etc. will be generated from teaching areas, learning spaces, and offices, and will be managed as follows:

- Staff and students dispose of material into designated bins
- Cleaners collect materials and transfer to the bins within storage room
- Recycling contractor services bins to designated schedule

8.2 Commingled Recycling

Commingled recycling consists of all mixed plastic bottles and containers, glass bottles, and steel and aluminium cans. This material will be managed as follows:

- Staff and students dispose of material into designated bins
- Cleaners collect materials and transfer to the bins within storage room
- Recycling contractor services bins to designated schedule

8.3 General Waste

All materials other than those discussed above will be classified as general waste, and will disposed of and collected accordingly as follows:

- Staff and students dispose of material into designated bins
- Cleaners collect materials daily and transfer to the bins within storage room
- Waste contractor services bins to designated schedule

8.4 Monitoring, Measurement & Target Setting

SLGS will implement systems for monitoring, measurement, and reporting of operational waste management performance, with reports and invoices providing weights of general waste and recycling, streams and numbers of bins collected.

SLGS facilities management will conduct annual performance and contract reviews with its waste contractor to assess progress towards annual waste diversion targets and other KPIs, identify operational issues, and address any shortcomings. Waste audits will also be conducted annually to benchmark performance.

We recommend setting an initial diversion target of 50% (proportion of overall waste diverted from landfill disposal through waste avoidance, reuse, and/or recycling). This target should be reviewed by SLGS after the first year of operations, and annually thereafter, and adjusted accordingly based on actual measured performance.

8.5 Roles & Responsibilities

SLGS Facilities Management team will have responsibility for reviewing the Operational Waste Management Plan annually, ensuring that the objectives of the Plan are met, and making adjustments where required, to ensure continued accuracy and relevance to actual operations.

9. Internal Bins

It is recommended that all internal spaces of SLGS are equipped with 3-stream bin hubs for:

- Paper & Cardboard Recycling
- Commingled Recycling
- General Waste

Bins should be situated in areas which effectively service a group of workstations and offices, with no bins under desks; this improves cleaning staff efficiencies by reducing the number of bins that require collection, and also reduces the number of bin liners required.

Examples of bins that are commonly used in office or educational settings are also shown below. Differently coloured bin liners (general waste-black; paper-clear; commingled-blue) are recommended to assist cleaning staff to distinguish the different streams and enable them to identify contamination, prior to final disposal in the bins in the central storage room.



For areas with bins kept within housings or pull-out drawers in kitchens and central areas, care must be taken to ensure these systems are well designed and provided with clear signage to foster proper separation. An example of best practice drawer design is shown below which provides for two or three streams (paper recycling, commingled recycling, and general waste).

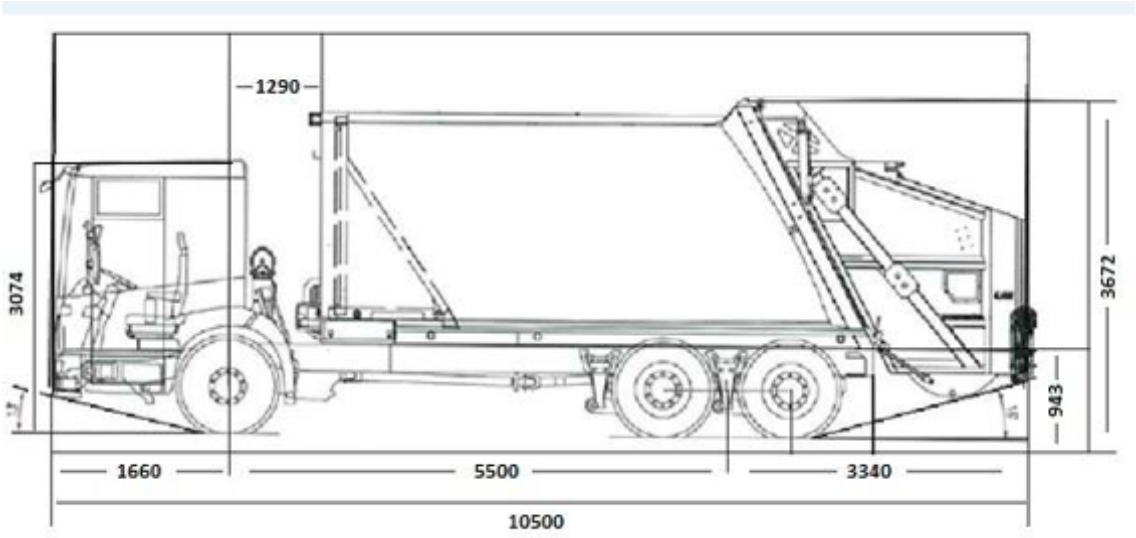

10. Vehicle Access & Site Safety

All contractors responsible for the removal of general waste and recycling will be required to undertake a site-specific induction process to ensure their operational practices are conducted safely and efficiently. This is critical given the steepness of the development site and the heightened need to ensure safe storage and loading of bins on level surfaces.

Additional specific requirements for waste contractors are listed in Section 12.

Appendices 1 and 2 show Stages 2 and 3 waste storage and loading areas for 800 Pittwater Road and 224 Headland Road.

General waste and recycling will be collected in standard trucks as shown below:



11. Stakeholder Education

For the proposed waste management systems to be successful an intensive education program will be implemented for staff and students. Examples of signage that could be used to support these initiatives are shown in Appendix 3.

New procedures may need to be written into contract specifications, including requirements for monitoring and feedback to SLGS on waste management performance (e.g. visual observations of recycling stream contamination, condition of bins and equipment, etc.).

12. Waste Contractor Requirements

SLGS's waste contractors will comply with the following specific requirements:

- Reliable and efficient servicing, and meeting agreed schedules
- Working with the site to achieve continuous improvements in recovery rates
- Providing monthly reports on diversion and financial outcomes
- Providing tenant engagement and education programs
- Maintaining current details of processing facilities used
- Having collection vehicles fitted with weighing technology
- Maintaining evidence of compliance with relevant Green Star reporting criteria

13. Relevant Legislation, Standards and Guidelines

The following guidelines and standards have been used as references in compiling this waste management plan:

- NSW EPA *Protection of the Environment Operations Act 1997* and *Protection of the Environment Operations (Waste) Regulation 2014, Part 11*
- NSW EPA *Waste Classification Guidelines* 2014
- *AS 1668.1 Mechanical Ventilation and Air Conditioning code, Part 1* and *AS 1668.2 Mechanical Ventilation and Air Conditioning code, Part 2*
- GBCA *Green Star Operational Waste* Criteria
- *SEARs Requirements*

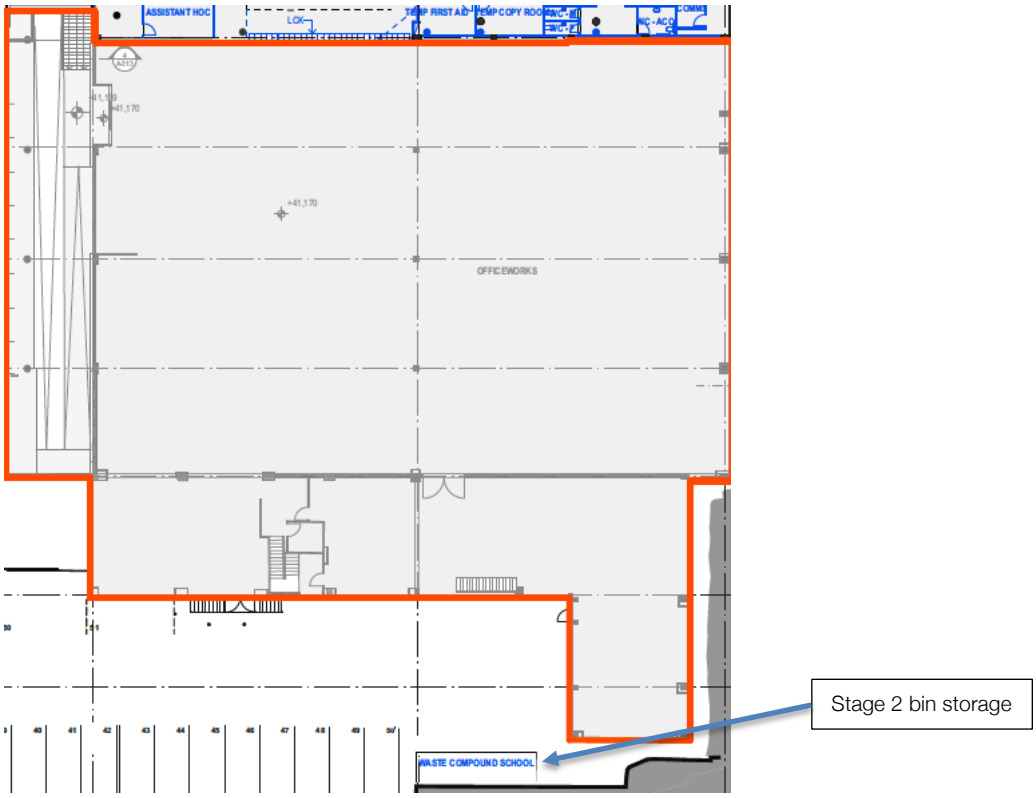
This report has been prepared by:

Peter Hosking

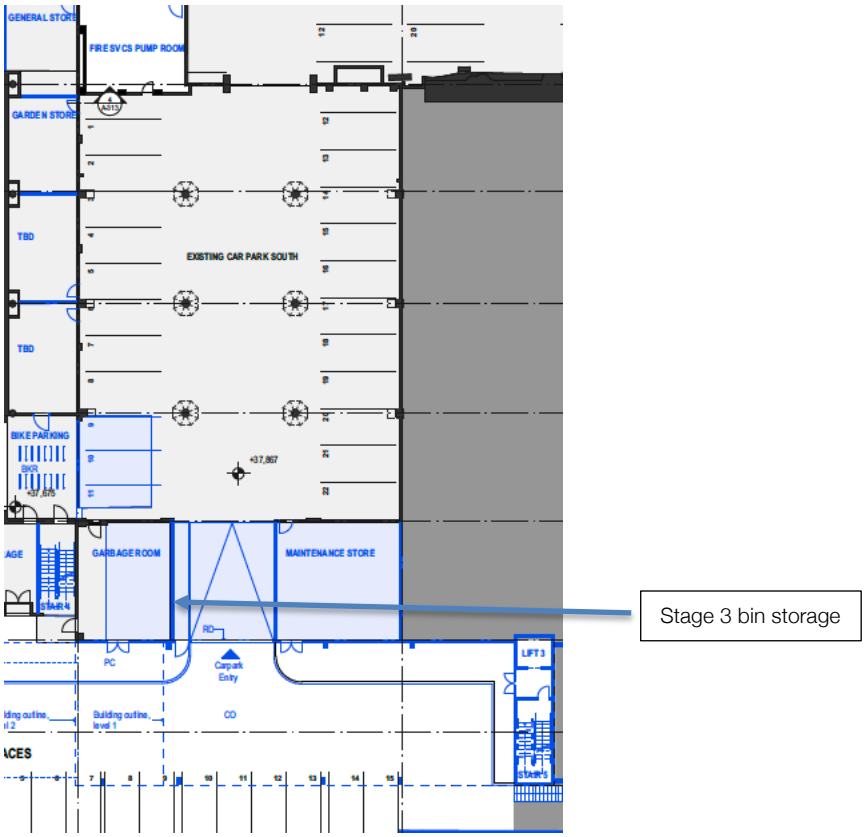
Director
Waste Audit & Consultancy Services (Aust) Pty Ltd
March 3, 2020

Appendix 1: Waste Storage & Loading Areas: 800 Pittwater Road

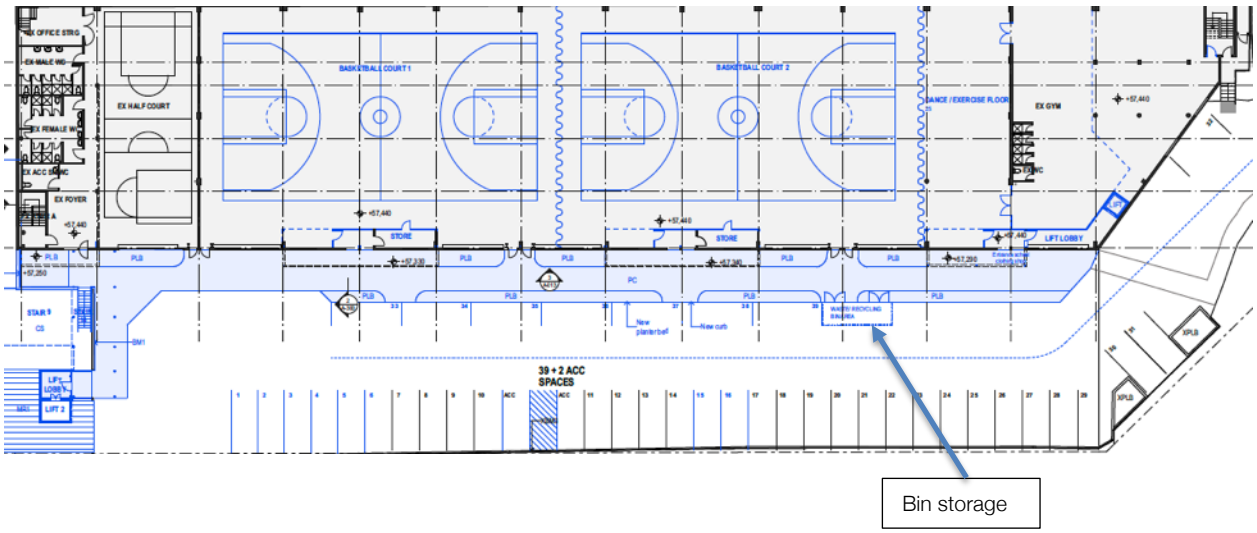
Stage 2



Stage 3



Appendix 2: Waste Storage & Loading Areas: 224 Headland Road



Appendix 3: Signage Examples