

Narrabeen Education Precinct- Narrabeen Sports High School: Waste Management Plan

A Submission to School Infrastructure NSW (SINSW),
NSW Department of Education

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Narrabeen Education Precinct – Narrabeen Sports High School Waste Management Plan

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Disclaimer

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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
DC	Development Consent
DCP/PDCP	Development Control Plan / Pittwater Development Control Plan
DoE	Department of Education
EFSG	Education Facilities Standards and Guidelines
ENM	Excavated Natural Material
EPA	Environment Protection Authority
FOGO	Food and Garden Organic
LEP/PLEP	Local Environmental Plan / Pittwater Local Environmental Plan
LGA	Local Government Area
MGB	Mobile Garbage Bin
NBC	Northern Beaches Council
NEP	Narrabeen Education Precinct
NSHS	Narrabeen Sports High School
SINSW	Schools Infrastructure New South Wales
VENM	Virgin Excavated Natural Material
WARR	Waste Avoidance and Resource Recovery
WMP	Waste Management Plan
WSP	Waste Service Provider
WNDP	Waste Not Development Control Policy

1 Introduction

MRA Consulting Group was engaged by School Infrastructure NSW (SINSW) to prepare a Waste Management Plan (WMP) related to the proposed development for Narrabeen Sports High School (NSHS) located in the Narrabeen Education Precinct (NEP) at 10 Namona St, North Narrabeen. The site is situated in the Northern Beaches Council (NBC) (previously Pittwater Council) Local Government Area (LGA).

The project involves development at the Sports High School to facilitate an update and redevelopment of the school facility. The works at NSHS upgrade the school including addition of new two (2) storey extension to Building A, construction of new single storey amenities building and refurbishment of four (4) existing buildings (Buildings A, B, C and K).

The design focus at NSHS is to upgrade the core facilities to support the delivery of modern pedagogy. Additionally the design focus will address some of the key asset condition issues of learning spaces to allow for improved education outcomes.

This WMP addresses the requirements of the Consent Authority and conforms to the following reference documents:

- The *Pittwater Local Environmental Plan 2014* (PLEP 2014).
- The *Pittwater 21 Development Control Plan* (PDCP).
- The *Northern Beaches Council Waste Management Guidelines* (2016).
- NSW EPA *Better Practice Guidelines for Resource Recovery in Residential Developments* (2019).

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.

This WMP has been prepared in accordance with best practice local and state waste and recycling policy documents and has been prepared with reference to the Council's waste objectives as stated in Section C1.12 of the PDCP, which include:

- To facilitate sustainable waste management in a manner consistent with the principles of Ecologically Sustainable Development.
- To encourage environmentally protective waste management practices on construction and demolition sites which include:
 - Sorting of waste into appropriate receptors (source separation, reuse and recycling) and ensure appropriate storage and collection of waste and to promote quality design of waste facilities;
 - Adoption of design standards that complement waste collection and management services offered by Council and private service providers;
 - Building designs and demolition and construction management techniques which maximises avoidance, reuse and recycling of building materials and which will minimise disposal of waste to landfill; and
 - Appropriately designed waste and recycling receptors are located so as to avoid impact upon surrounding and adjoining neighbours and enclosed in a screened off area.
- To encourage the ongoing minimisation and management of waste handling in the future use of premises.
- To ensure waste storage and collection facilities complement waste collection and management services, offered by Council and the private service providers and support on-going control for such standards and services.
- To minimise risks to health and safety associated with handling and disposal of waste and recycled material and ensure optimum hygiene.
- To minimise any adverse environmental impacts associated with the storage and collection of waste.
- To discourage illegal dumping.

2 Background

2.1 Description of Proposed Development

The proposed Narrabeen Education Precinct development includes redevelopment of Narrabeen North Public School (NNPS) and Narrabeen Sports High School (NSHS). The Public School and High School have been identified by the NSW Department of Education (DoE) as requiring upgrade works.

The works at NSHS upgrade the school including addition of new two (2) storey extension to Building A, construction of new single storey amenities building and refurbishment of four (4) existing buildings (Buildings A, B, C and K).

The works the subject of the Development Application (DA) at NSHS comprise:

Alterations and additions to Building A (Gymnasium) to create new stage for gymnasium and new two (2) storey addition comprising canteen, boys and girls changing rooms and staff room on the ground floor; and movement studio and two (2) new General Learning Spaces (GLS) on the first floor.

Other development works are occurring on the site under separate planning pathways including:

- Development without consent (REF); and
- Exempt development

The proposed development does not seek to increase staff or student numbers.

2.2 Location

The subject sites are located at 6 and 10 Namona Street, North Narrabeen (referred to as the Narrabeen Education Precinct) and falls within the local government area of Northern Beaches Council. The Narrabeen Education Precinct has a total area of 9.84 hectares.

Narrabeen Sports High School (NSHS) is located on the southern side of Namona Street and is legally described as Lot 12 DP 1119562. NSHS is surrounded by Pittwater Road to the east, Pittwater Sports Centre to the south and Mullet Creek to the west.

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

Figure 1: Site and surrounding area



Source: SixMaps NSW, 2022

2.3 Zoning and Land Use

The site is zoned SP2 – Infrastructure (Educational Establishment) in the PLEP 2014 (See Figure 2).

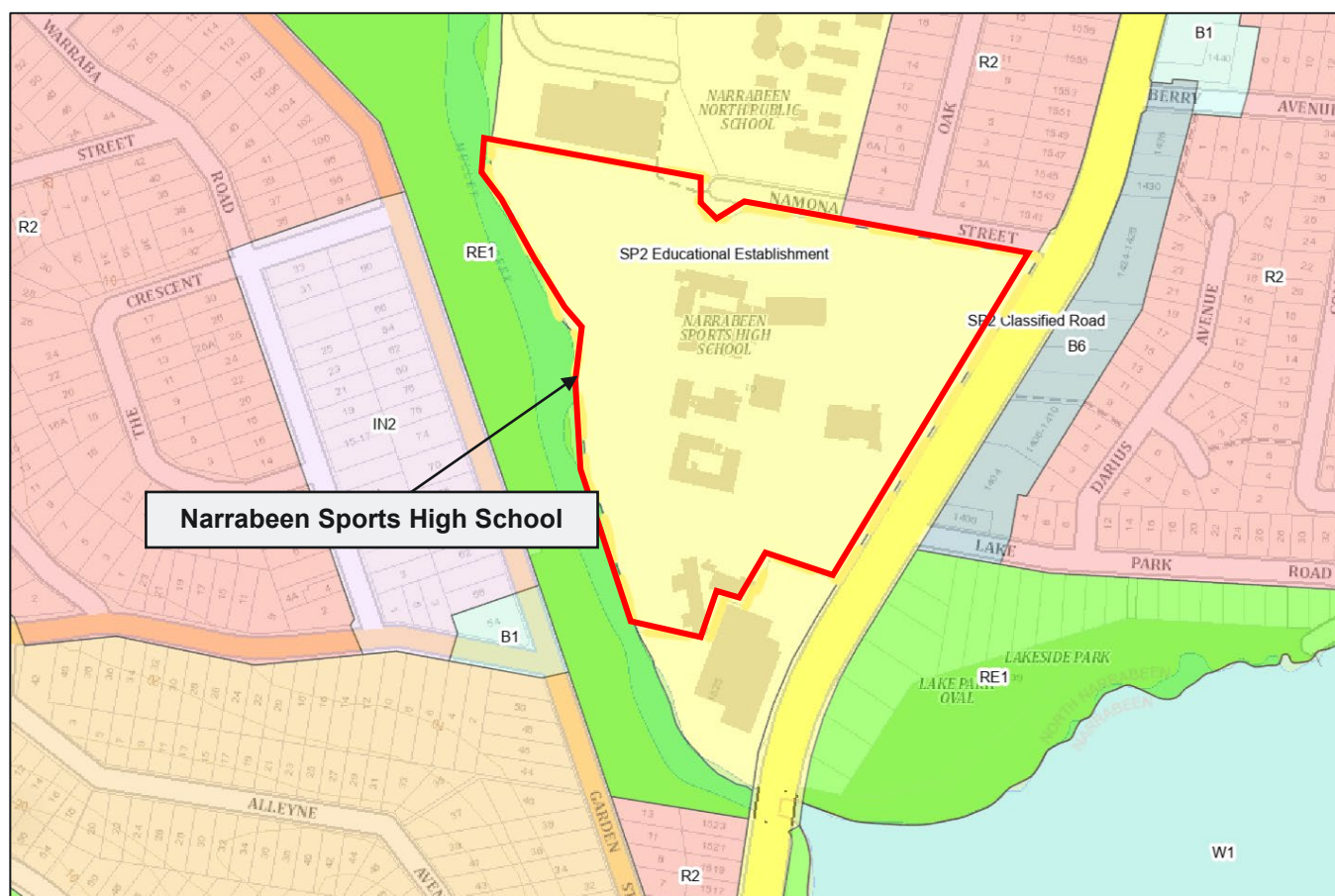
Objectives of the zone are:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

The proposed school use is permitted with consent within the zone, as it is consistent with the purpose shown on the Land Zoning map.

Zones surrounding the site include RE1 – Public Recreation, R2 – Low Density Residential, and SP2 Infrastructure (Classified Road).

Figure 2: Zoning and land use



Source: NSW ePlanning Spatial Viewer, 2022

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, Design Inc (15 September 2022).
- The NSW EPA's *Better practice guide for resource recovery in residential developments* (2019) outlines waste generation rates and services available for new developments which have been considered in the preparation of this report; 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 Demolition and Construction Waste

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 and separation of reusable material, as well as placement of skip bins for the separation of construction materials for recycling. A skip bin for residual waste or contaminated material will also be made available at the site for disposal where necessary. Skip 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 and construction contractor and shall be sufficient to store the various waste streams expected during operations. Waste storage areas will be kept clear to maintain vehicular access and shall also be kept tidy to encourage separation of waste materials and for WHS reasons. A potential location for skip bins and material stockpiles has been identified in Appendix B.

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

Minor demolition works are proposed as part of this application. Waste materials volumes have been estimated and management options are proposed for materials reuse, recycling, and disposal in line with the DCP.

Table 1 below describes appropriate management methods for the various materials related to demolition or deconstruction works. Demolition works consist of the removal of the Block A wing addition.

Table 1: Demolition waste material by volume

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Concrete	30-50m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).
Bricks/Pavers	20-40m ³	✓	✓	-	On site: cleaned and separated wherever possible for reuse or to enhance resource recovery. C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products.
Tiles (Roof)	Minor	✓	✓	-	On site: cleaned and separated wherever possible for reuse or to enhance resource recovery. C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products.
Tiles (Interior)	Minor	✓	✓	-	
Timber (Engineered/Treated)	<5m ³	-	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse. C&D processor: recovery and recycling for recovered product (e.g. mulch) or other organics processing.
Metals (Ferrous and Non-Ferrous)	<10m ³	-	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.
Plasterboard	10-15m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse.

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Glass	<5m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. Glass recycler: recovery and recycling.
Fixtures and Fittings	<10m ³	✓	✓	-	On site: reuse wherever possible or return to manufacturer. Reuse: surplus and offcut material returned to manufacturer for reuse where possible C&D processor: recovery and recycling.
Floor Coverings	<5m ³	✓	✓	-	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.
Garden Organics (vegetation)	Minor	✓	✓	-	Garden organic waste from landscaping. C&D processor: storage on-site (from minor excavations) processing for recovered product (e.g. mulch or other blended recovered fines) or organics treatment.
Residual Waste (General Waste)	Minor	-	-	✓	Separate recyclables where possible and disposal at principal licensed waste facility.
Hazardous/Special Waste (e.g. Spills/Contaminated Waste)	Unknown	-	-	✓	Management by a licensed asbestos and site hygienist should hazardous or special waste be found at the site.

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Asphalt	Unknown	-	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).

3.2 Construction

Construction works related to the development include the following installations of:

- addition of new two (2) storey extension to Building A; and
- refurbishment of Block A.

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	Tonnes 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 Management Plan Application Template 2017.

Table 3 outlines the expected construction waste quantities for materials through construction of the proposed new development 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 material by volume

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Excavation material	N/A	✓	✓	-	On site: testing if necessary for contamination and stockpiling material for reuse as backfilling or landscaping material. C&D processor: reuse/recycling of VENM and ENM Landfill: only if contaminated.
Concrete	<30m ³	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: crushing and recycling for recovered products (aggregates).
Bricks/pavers	Minor	✓	✓	-	On site: cleaned and separated wherever possible for reuse or to enhance resource recovery. C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products.
Tiles (interior)	Minor	✓	✓	-	On site: cleaned and separated wherever possible for reuse or to enhance resource recovery. C&D processor: recovery for reuse where possible, crushing and recycling for recovered aggregate products.
Timber (engineered/treated)	<20m ³	-	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse. C&D processor: recovery and recycling for recovered product (e.g. mulch) or organics processing.

Type of waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Metals (ferrous and non ferrous)	<10m ³	-	✓	-	On site: to be separated wherever possible to enhance resource recovery. C&D processor: metals recovery and recycling.
Plasterboard	Minor	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse.
Glass	Minor	✓	✓	-	On site: to be separated wherever possible to enhance resource recovery. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. Glass recycler: recovery and recycling.
Fixtures and fittings	Minor	✓	✓	-	On site: reuse wherever possible or return to manufacturer. Reuse: surplus and offcut material returned to manufacturer for reuse where possible. C&D processor: recovery and recycling.
Floor coverings	<5m ³	✓	✓	-	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 waste generated	Quantity	Reuse	Recycling	Disposal	Methods for reuse, recycling and disposal
Garden organics (vegetation)	N/A	✓	✓	-	Garden organic waste from landscaping. Organics processor: storage on site (from minor excavations) processing for recovered product (e.g. mulch or other blended recovered fines) or organics treatment.
Containers (cans, plastic, glass)	Minor	-	✓	-	Commercial contractor: recycling.
Paper/cardboard	Minor	-	✓	-	Commercial contractor: segregation of paper, cardboard or other streams.
Residual waste (general refuse)	<10m ³	-	-	✓	Separate recyclables where possible and disposal at principal licensed waste facility.
Hazardous/special waste (e.g. spills and contaminated wastes)	Unknown	-	-	✓	Management by a licensed asbestos and site hygienist should hazardous or special waste to be found at the site.

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"> Northern Beaches Skip Bins Brown Bros. Skip Bins Skip Hire Mona Vale CJ Skip Bins Northern Beaches <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"> Kimbriki Resource Recovery Centre Benedict Recycling (Belrose) Cleanaway Resource Recycling Centre (Belrose) <p>Or another appropriate facility as elected by the waste management contractor.</p>
Principal Licensed Landfill Site	<p>The following are local landfill sites for consideration of the waste generated at the site:</p> <ul style="list-style-type: none"> Greenwood Landfill & Waste Recovery Facility <p>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 excavation and construction phase 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;
- Descriptions 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 following sections outline the overall waste management strategy for the school, for DA, REF and other planning pathways. 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 4.2.

Ongoing waste management practices onsite will aim to contribute towards the NSW Waste Avoidance and Resource Recovery (WARR) Strategy target recycling rate of 70% for commercial and industrial waste, by 2021-22. 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 spatial calculations are based on 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: MGB capacity and footprint

Bin Capacity (L)	Height (mm)	Depth (mm)	Width (mm)	Footprint (Approx. m ²)
240	1,180	740	570	0.50
660	1,250	850	1,370	1.46
1,100	1,470	1,245	1,370	2.51

Source: *Better practice guide for resource recovery in residential developments* (2019).

Table 6: Bulk bin capacity and footprint

Bin Capacity (L)	Height (mm)	Depth (mm)	Width (mm)	Footprint (Approx. m ²)
1.5m³	910 – 1,250	905 – 1,000	1,805 – 2,010	1.63 – 2.01
3m³	1,020 – 1,580	1,470 – 1,700	1,400 – 2,010	2.1 – 3.4
4.5m³	1,440 – 2,014	1,605 – 1,900	1,800 – 2,010	2.9 – 3.8

Source: *Better practice guide for resource recovery in residential developments* (2019).

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 4.5.

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 Narrabeen Sports High School:

General Waste

Most of the general waste is produced by students during recess and lunch periods. Temporary general waste bins are placed in common areas. General waste bins are also placed in the kitchen and various other locations such as pathways and library. Some general waste is produced by students during classroom activities other than the waste from consumable products (food and beverages). In each classroom there are small bins for the collection of general waste.

This waste is collected by the cleaner daily and deposited in one of three cubic metre waste bins stored in the existing bin hold area adjacent to Block F (see Appendix A).

Paper and Cardboard

All classrooms and offices have small cardboard and paper bins for the students to utilise and they are emptied daily into the paper and cardboard 3 cubic metre bulk bin for collection. School management encourages the use of paper and cardboard bins to minimise 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 the commercial 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 Ongoing Waste Generation

The school's current student capacity is 990 student enrolments.

The school maintains the following bin infrastructure, which are generally full at the time of collection:

- 3 x 3m³ (total of 9,000L) general waste weekly
- 1 x 3m³ (total of 3,000L) paper and cardboard fortnightly

4.3 Waste Storage Requirements

Bin storage requirements are not expected to change as a result of the upgrade works. The school will maintain existing waste management infrastructure and collect waste in 3m³ bulk bins. Collection frequencies will remain the same.

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.

4.4 Waste Collection Scheduling and Bin Hold Area

A private waste contractor services the site, for the collection of general waste and paper and cardboard recycling bins. General waste collection occurs on a weekly basis on Monday morning. Paper and cardboard recycling is collected on Thursdays each fortnight. Collection times are scheduled 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.

Waste collection vehicles collect bulk bins for general waste and recycling from the bin hold area, in the school carpark adjacent to Block F inside electronic gate.

4.5 Alternative Waste Management Strategies (for consideration)

The following strategies are proposed for consideration by the Narrabeen Sports High 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 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

4.5.2 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.)

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

4.5.4 Problem Waste Management

NSHS will continue 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 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.

4.5.5 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. NSHS 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).

4.5.6 Garden Organic Waste

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

4.5.7 Waste Avoidance

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

4.5.8 Reuse of Materials

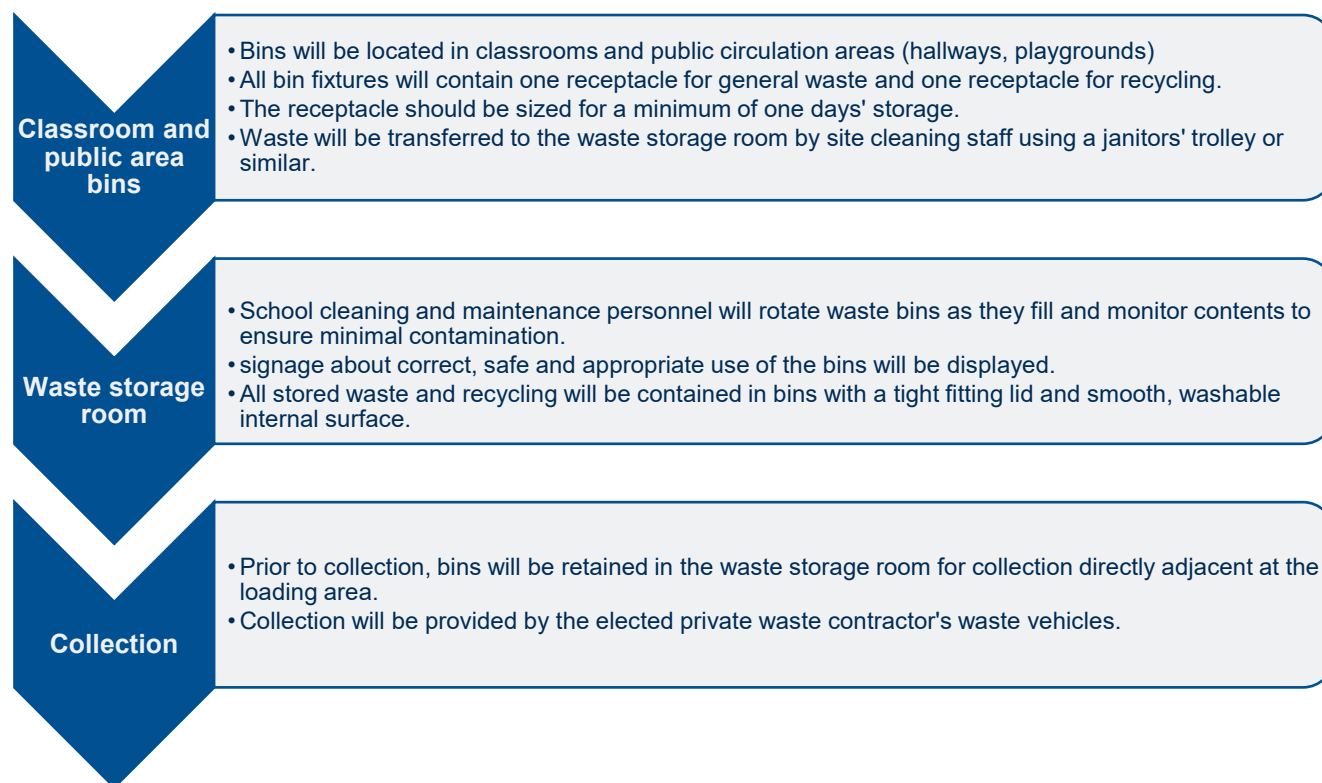
Where possible, reusing drums, cartridges, and containers where possible. Donating of materials where feasible.

5 Waste Management Systems

5.1 Waste Disposal and Recycling Method

The flow of waste goes from generation to collection through several steps (Figure 3)

Figure 3: Waste Flow Diagram



5.2 Collection Method and Loading Areas

Collection point for the waste service provider and areas for handling and loading are as follows:

- Waste storage area and collection area are open to the sky and will not be impacted by any overhead obstructions for the purpose of waste collection (see Appendix A).
- Collection and loading from the waste storage area, providing convenient access for the collection of waste.
- Waste collections will be scheduled to occur outside of peak school periods, to avoid times of high pedestrian and vehicle traffic associated with student drop-off or pick-up.
- Clear, safe, accessible, and convenient space is provided for handling of bins and loading of collection vehicles; and
- Identifiable areas where visitors and workers can recognise and avoid any risk associated with moving vehicles, bin moving and handling.

Bins will be collected from the bin storage area directly by the waste service provider collection vehicle (see Appendix A) safely entering the site in a forward direction via Namona Street and completing a single reversing manoeuvre up to the waste storage area.

Bulk bins require collection by a front or rear lift collection vehicle which typically have a maximum height clearance of 3.5 m (travel and operational height). The school will consult with a commercial contractor and agree on a suitable waste servicing solution for the site, considering waste storage requirements and accessibility.

Table 8: Onsite collection point and loading requirements and specifications

Component	Requirements	Specification
Collection point	Collection points are to be located so that:	<ul style="list-style-type: none"> - Bins are wheeled no more than 75 m from storage area. - All bins are presented in a single file with a minimum 30 cm gap between bins. - Has a minimum height clearance of 4.2 m from overhanging tree branches, power lines and other obstructions. - Collections are not undertaken in a 'No Stopping' zone.
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"> - The waste collection area is located away from any vehicle parking spaces or overhead obstacles.
Operating times	Appropriate collection times to limit noise and traffic disturbance.	<ul style="list-style-type: none"> - Collection times will be arranged to ensure minimal disturbance to students, staff, pedestrians and visitors.

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 open 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 C)

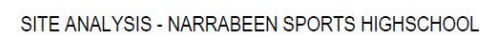
5.6 Prevention of Pollution and Litter Reduction.

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.

6 References

- City of Parramatta Council. (2016). *Waste Management Guidelines for new Development Applications*.
- Northern Beaches Council. (2016). *Waste Management Guidelines*.
- 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*.
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- Pittwater 21 Development Control Plan*. (2007). Retrieved from
<https://eservices.northernbeaches.nsw.gov.au/ePlanning/live/pages/plan/book.aspx?exhibit=PDCP>
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- Standards Australia. (1994). *AS 1319: Safety signs for the occupational environment, Homebush, NSW: Standards Australia*.
- Standards Australia. (2008). *AS 4123: Mobile waste containers*.



ARCHITECTURE:	
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1000	GENERAL ARRANGEMENT PLANS
2000	GA RCPS
3000	GA SECTIONS & ELEVATIONS
4000	REFERENCE PLANS
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6000	VERTICAL CIRCULATION
7000	INTERIOR DESIGN DETAILS
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1	07/07/2022	FOR INFORMATION
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3	09/09/2022	FOR INFORMATION
A	15/09/2022	ISSUE FOR DA

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TITLE

SITE ANALYSIS

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AR-H-0200	A

Appendix B Storage Location for C&D Waste and Material Stockpiles

Figure 4: C&D waste material skip bin location



Source: SixMaps, 2022

Appendix C 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

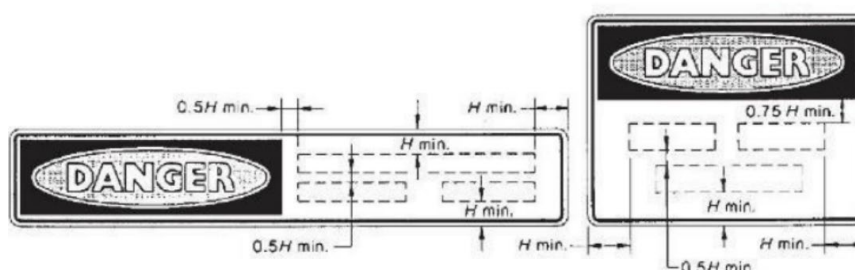
The design and use of safety signs for waste and recycling rooms and enclosures should comply with AS 1319 (Standards Australia 1994). Safety signs should be used to regulate, and control safety related to behaviour, warn of hazards and provide emergency information, including fire protection information. 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



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