New High School for Jordan Springs
Cnr Armoury Rd & Infantry St, Jordan Springs East NSW
Educational Facility

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

18/12/2024
Revision F

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SCOPE

This WMP applies only to the **construction** and **demolition** phases of the proposed high school. The requirements outlined in this WMP must be implemented on site during construction and demolition and may be subject to review upon any change to the design. Construction and demolition waste management requirements will also be subject to review as part of the Construction Management Plan.

The waste management for the **operational** phase of the high school is not addressed in this report. An operational WMP has been provided separately.

REVISION REFERENCE

Revision	Date	Prepared by	Reviewed by	Description
A	12/11/2024	E. Abetian	R. Jayaratnam	Draft
B	27/11/2024	E. Abetian	R. Jayaratnam	Amendment
C	6/12/2024	R. Jayaratnam	J. Parker	Amendment
D	12/12/2024	R. Jayaratnam	J. Parker	Amendment
E	17/12/2024	R. Jayaratnam	J. Parker	Amendment
F	18/12/2024	R. Jayaratnam	J. Parker	Amendment

CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 ACKNOWLEDGEMENT OF COUNTRY

Elephants Foot Consulting acknowledges that every project we work on takes place on First Peoples Land. We recognise Aboriginal and Torres Strait Islander People as Traditional Custodians of this land. We pay respect to ancestors and Elders, past and present.

2 INTRODUCTION

2.1 Background

This construction and demolition waste management plan has been prepared to accompany a Review of Environmental Factors (REF) for the Department of Education (DoE) for the construction and operation of a New High School for Jordan Springs (the activity) under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and *State Environmental Planning Policy (Transport and Infrastructure) 2021* (SEPP TI).

Waste management strategies and auditing are a requirement on construction sites to promote strong sustainability outcomes. It is EFC's belief that a successful waste management strategy contains three key objectives:

i. ***Promote responsible source separation*** to reduce the amount of waste that goes to landfill, by implementing convenient and efficient waste management systems.

ii. ***Ensure adequate waste provisions and robust procedures*** that will cater for potential changes during the operational phase of the development.

iii. ***Comply*** with all relevant Australian Standards, council codes, policies, and guidelines.

2.2 Proposed Activity Description

The proposed activity for the construction and operation of a New High School for Jordan Springs is proposed to have a capacity of 1,000 students and 80 staff to meet forecast enrolment demand associated with population growth in Jordan Springs and Ropes Crossing. The school will provide permanent General Learning Spaces (GLS), Support Learning Spaces (SLS), staff facilities and a library across three (3), three storey buildings, a single storey hall, half playing field, three (3) outdoor sport courts, 72 operational at grade parking spaces (including two (2) accessible spaces), 100 bicycle spaces and landscaping. Public domain works and the permanent off-site OSD Basin are to be constructed by others under separate planning pathways.

2.3 PROPOSED ACTIVITY SCENARIOS

The project scope of works includes two (2) Scenarios, to allow construction and operation of the school, with (Scenario 1 – preferred option) or without (Scenario 2 – Interim Solution) the public domain works and permanent off-site basin being constructed by others under a separate planning pathway.

2.3.1 SCENARIO 1 – PREFERRED OPTION - ROAD NETWORK COMPLETED AND PERMANENT OSD BASIN CONSTRUCTED

- **External works undertaken by others to facilitate Scenario 1**
  - Construction of Park Edge Road;
  - Any adjustments to Infantry Street;
  - Kiss and drop zone along Park Edge Road;
  - Support kiss and drop zone located along Infantry Street; and
  - Construction and operation of permanent OSD Basin off site.

Note – Scenario 1 is not to proceed if external works undertaken by others is not completed.

- **Scenario 1**
  - Construction and Operation of the New High School for Jordan Springs, including:
    - Decommissioning of existing on-site OSD basin;
    - Demolition of roads and associated services within the site boundary;
    - Tree removal within the site boundary
    - Earthworks;
    - Three (3) multi-storey classroom buildings;
    - One (1) school hall;
    - Three (3) outdoor sport's courts;
    - One (1) sport's field;
    - 72 at grade car parking spaces, including two (2) accessible parking spaces, and waste services, accessed via Park Edge Road;
    - 100 bicycle parking spaces across the site; and
    - Landscaping.

2.3.2 SCENARIO 2 - INTERIM SOLUTION – ROAD NETWORK NOT COMPLETED, PERMANENT OSD BASIN NOT CONSTRUCTED.

- **Scenario 2 - Stage 1**
  - Construction and operation of a temporary on-site OSD Basin;
  - Construction and operation of the New High School for Jordan Springs, including;
    - Demolition of roads and associated services within the site boundary;
    - Tree removal within the site boundary
    - Earthworks;
    - Three (3) multi-storey classroom buildings;
    - One (1) sport's field;
    - Temporary carpark - 72 at grade car parking spaces, including two (2) accessible parking spaces and waste services, located on the northwest corner of the site, accessed off Armoury Road;
    - 100 bicycle parking spaces across;
    - Temporary Kiss and drop facilities on Armoury Road; and
    - Associated landscaping.

- **Scenario 2 - Stage 2**
  Stage 2 is not to be undertaken until the temporary on-site OSD basin under stage 1 works is completed and operational.
  - Decommissioning of existing on-site OSD basin, prior to the following works being undertaken:
    - 72 at grade car parking spaces, including two (2) accessible parking spaces, and waste services, located on the southeast corner of the site. This car park cannot be constructed until the decommissioning of the existing OSD basin is completed and will be non-operational with no road connection until completion of Scenario 2 – Stage 3;
    - One (1) school hall;
    - Three (3) outdoor sport's courts; and
    - Associated landscaping.

  External works undertaken by others to facilitate Stage 3
  - Construction of Park Edge Road;
  - Any adjustments to Infantry Street;
  - Kiss and drop zone along Park Edge Road;
  - Support kiss and drop zone located along Infantry Street; and
  - Construction and operation of OSD Basin off site.

  Note – Scenario 2 - Stage 3 is not to proceed until the external works undertaken by others have been completed.

- **Scenario 2 - Stage 3**
  - Connection of the southeast carpark to Park Edge Road;
  - Rectification works along Armoury Road to remove temporary kiss and drop facilities and cross over for temporary carpark;
  - Demolition of temporary carpark, once permanent car park is operational; and
  - Decommissioning of temporary OSD basin.

2.4 Site Location

The project site is located on the corner of Armoury Road and Infantry Street in Jordan Springs and is legally described as part of Lots 2 and 3 in DP 1248480. The site has frontages to Armoury Rd and Infantry St, with vehicle access via Armoury Road(deliveries) and Park Edge Road(carpark and waste) for Scenario 1. For Scenario 2 Stage 1 and 2, the vehicle access is via Armoury Road(deliverables, carpark and waste) and Scenario 2 Stage 3, the vehicle access is via Armoury Road(deliverables) and Park Edge (carpark and waste). The project site is within the Central Precinct of the St Mary's Release Area in the Penrith Local Government Area.

Figure 1: Aerial Photograph

The project site is within the Central Precinct of the St Mary's Release Area in the Penrith Local Government Area.

2.5 OTHER APPROVALS

- External works and construction of the permanent off-site OSD Basin are to be constructed by others.

Table 1: Summary of Relevant Section of the Part 5 Guidelines and EP&A Regulation

Regulation/ Guideline Section	Requirement
Section 3.37a	**(1) Development for the purposes of a government school may be carried out by or on behalf of a public authority without consent on land—** **(a) in a prescribed zone, and** **(b) on which there is no existing or approved school.** **(2) A building resulting from development carried out on land under this section must not have a height of more than the greater of—** **(a) the maximum height permitted for a building under an environmental planning instrument applying to the land, and** **(b) 4 storeys.**

	(3) Development must not be carried out under this section unless— **(a) the public authority is satisfied that appropriate consultation has been undertaken having regard to—** **(i) the SCPP—new health services facilities and schools, and** **(ii) the *stakeholder and community participation plan*, and** **(b) the public authority has considered—** **(i) the design quality of the development, evaluated in accordance with the design quality principles set out in Schedule 8, and** **(ii) the design principles set out in the design guide.** **(4) In this section—** ***government school* includes a relevant preschool**
Section 3.38a	**(1) This section applies to development permitted under section 3.37A.** **(2) Before development to which this section applies is carried out, the public authority must—** **(a) give written notice of the intention to carry out the development to—** **(i) if the public authority is not the relevant council—the relevant council, and** **(ii) Transport for NSW, and** **(b) consider any response to the notice that is received within 28 days after the notice is given.** **(3) A notice given under subsection (2)(a) must include—** **(a) the information required by the SCPP—new health services facilities and schools, and** **(b) the information required by the Division 5.1 assessment guidelines for environmental factors, and** **(c) the information required by the stakeholder and community participation plan.** **(4) If notice of the intention to carry out development is given under this section to the relevant council or Transport for NSW—** **(a) notice is not required to be given under sections 3.8–3.10 or 3.12 to the relevant council or Transport for NSW, and** **(b) for notice required to be given under sections 3.8–3.10 or 3.12 to another authority—a reference to 21 days in the section is taken to be a reference to 28 days.** **(5) The public authority must also give written notice of the intention to start work at least 2 days before the work starts to—** **(a) the occupiers of any dwelling located within 20m of the site boundary of the proposed development, and** **(b) if the public authority is not the relevant council—the relevant council.** **(6) If the development is carried out by a person on behalf of the public authority, a reference to *public authority* in this section is taken to be a reference to the person.** **(7) In this section—** ***relevant council* means the council for the area in which the development is proposed to be carried out.**
Schedule 8	**1 Responsive to context** **Schools should be designed to respond to and enhance the positive qualities of their surroundings.** **In designing built forms and landscapes, consideration should be given to a Country-centred approach and respond to site conditions such as orientation, topography, natural systems, Aboriginal and European cultural heritage and the impacts of climate change.**

	Landscapes should be integrated into the overall design to improve amenity and to help mitigate negative impacts on the streetscape and neighbouring sites. **2 Sustainable, efficient and resilient** **Good school design combines positive environmental, social and economic outcomes and should align with the principles of caring for Country.** **Schools should be designed to be durable and resilient in an evolving climate.** **Schools and their grounds should be designed to minimise the consumption of energy, water and other natural resources and reduce waste.** **3 Accessible and inclusive** **School buildings and grounds should be welcoming, easy to navigate and accessible and inclusive for people with differing needs and abilities.** **Schools should be designed to respond to the needs of children of different ages and developmental stages, foster a sense of belonging and seek to reflect the cultural diversity of the student body and community.** **Schools should be designed to enable sharing of facilities with the community and to cater for activities outside of school hours.** **4 Healthy and safe** **Good school design should support wellbeing by creating healthy internal and external environments.** **The design should ensure safety and security within the school boundaries, while maintaining a welcoming address and accessible environment.** **In designing schools, consideration should be given to connections, transport networks and safe routes for travel to and from school.** **5 Functional and comfortable** **Schools should have comfortable and engaging spaces that are accessible for a wide range of formal and informal educational and community activities.** **In designing schools, consideration should be given to the amenity of adjacent development, access to sunlight, natural ventilation, proximity to vegetation and landscape, outlook and visual and acoustic privacy.** **Schools should include appropriate indoor and outdoor learning and play spaces, access to services and adequate storage.** **6 Flexible and adaptable** **In designing schools, consideration should be given to future needs and take a long-term approach that is informed by site-wide strategic and spatial planning.** **Good design for schools should deliver high environmental performance and ease of adaptation, and maximise multi-use facilities.** **Schools should be adaptable to evolving teaching methods, future growth and changes in climate, and should minimise the environmental impact of the school across its life cycle.** **7 Visual appeal** **School buildings and their landscape settings should be aesthetically pleasing by achieving good proportions and a balanced composition of built and natural elements.** **Schools should be designed to respond to and have a positive impact on streetscape amenity and the quality and character of the neighbourhood.** **The identity and street presence of schools should respond to the existing or desired future character of their locations.** **The design of schools should reflect the school's civic role and community significance.**

2.6 DOCUMENTATION REVIEW

The following plans/ reports identified in Table 2 have been reviewed to inform the assessment contained within this report:

Table 2: Plans and reports reviewed

Plans and reports reviewed			
Discipline	**Document name**	**Revision**	**date**
Waste	**C&D WMP**	**F**	**18/12/2024**

2.7 Legislation and Guidance

Information provided in this WMP comes from a wide range of construction and demolition waste management guidance at the local, state, and federal levels. The primary sources of guidance include:

- Penrith Development Control Plan 2014
- Australian Government, Department of Sustainability, Environment, Water, Population and Communities. *Construction and Demolition Waste Guide – Recycling and Re-use Across the Supply Chain*. (2014, November).
- NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014-2021
- NSW Waste Classification Guidelines 2014
- Australia's National Waste Policy 2018

2.8 Waste Diversion Targets

To quantify and measure this sustainable approach to waste management, the NSW WARR Strategy 2014-2021 outlines specific targets in order to clarify the state's long-term goals and priorities. These targets were supported by industry, community, state, and local governments during the Strategy's consultation phase, and include:

- Increasing construction and demolition recycling rates to 80%
- Increasing waste diverted from landfill to 75%
- Reducing litter by 40%
- Reduce illegal dumping incidents by 30%

2.9 Report Objectives

Throughout this report, EFC aims to encourage where practical, having regard to the design, the nature of the material to be demolished and the site constraints, the following waste management practices for the duration of the demolition and construction stages of the high school:

- Re-use of excavated material on-site and disposal of any excess to an approved site;
- Green waste mulched and re-used on-site as appropriate, or recycled off-site;
- Bricks, tiles and concrete re-used on-site as appropriate, or recycled off-site;
- Plasterboard waste returned to supplier for recycling;
- Framing timber re-used on site or recycled off-site;
- Windows, doors and joinery recycled off-site;
- All asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with WorkCover Authority and EPA requirements;
- Plumbing, fittings and metal elements recycled off site;
- Ordering accurate quantities of materials and prefabrication of materials where possible;
- Re-use of formwork;
- Careful source separation of off-cuts to facilitate re-use, resale or recycling.

2.10 Limitations

This report has been prepared by EFC for the sole purpose of providing a Construction and Demolition Waste Management Plan (C&D WMP) to support the REF. The report is provided with the following limitations:

- This report is for the sole use of Department of Education (including their officers, employees and advisers) and should not be used or relied upon by any other party without prior written consent from EFC;
- Drawings, estimates and information contained in this report have been prepared by analysing information, plans and documents supplied by the client, or nominated third parties. Any assumptions based on the information contained in the report are outside the control of EFC;
- The calculations presented in the report are estimates only. The amount of waste generated will be dependent on the approach taken by site management, including the levels of training and education offered to site staff and the actions and attitudes of staff themselves.
- The site manager will make adjustments as required based on actual waste volumes (e.g. if waste volumes are greater than estimated, then waste storage capacity and collection frequencies will increase accordingly) and increase the amount of waste storage and collection frequency accordingly;
- The report has been prepared with all due care and attention; however, no assurance or representation is made that the WMP reflects the actual outcome. EFC will not be liable to for any plans or outcomes that are not suitable for purpose, whether as a result of incorrect or unsuitable information or otherwise;
- EFC offer no warranty or representation of accuracy or reliability of the WMP unless specifically stated;
- Examples of equipment provided in this report should be reviewed by the appropriate equipment supplier who will assess the correct equipment for supply. Reference to any other business or product besides EFC and EFC equipment is for information purposes only, and is not officially endorsed or recommended by EFC.

3 GENERAL WASTE MANAGEMENT PROVISIONS

3.1 Stakeholder Roles and Responsibilities

All stakeholders have a responsibility for their own environmental performance and compliance with all legislation.

The Construction Contractor will be responsible for implementing this WMP, although site staff have a responsibility to ensure their own compliance at all times. Where possible, an Environmental Management Representative (EMR) should also be appointed for the project to help ensure compliance. The following table demonstrates the primary roles and responsibilities of the respective stakeholders:

Table 3: Stakeholder Roles and Responsibilities

Roles	Responsibilities
Site Management	• Organise waste collections as required; • Organise replacement or maintenance requirements for bins; • Investigate and ensure prompt clean-up of illegally dumped waste materials; • Notify the Principal Certifying Authority (Council) of the appointment of waste removal, transport or disposal contractors for waste tracking purposes; • Ensure waste related equipment is well maintained; • Ensure accurate calculations so only the required amount of materials are ordered; • Ensure segregation of materials to maximise reuse and recycling; • Check waste sorting and storage areas routinely for cleanliness, hygiene, contamination and OH&S issues; • Ensure all monitoring and audit results are well documented and are carried out as specified in the WMP; • Ensure effective signage, communication and education is provided to site staff/contractors; • Provide staff/contractors with equipment manuals, training, health and safety procedures, risk assessments, and PPE to control hazards associated with all waste management activities; • Assess any manual handling risks and prepare a manual handling control plan for waste and bin transfers;
Site Staff/Contractors	• Ensure adequate separation and disposal of waste streams in compliance with the WMP; • Abide by all relevant OH&S legislation, regulations, and guidelines; • Attend training and inductions as required; • Clean and transport bins as required; • Carry out daily visual inspections of waste storage areas; • Organise, maintain and clean the waste storage areas;
Environmental Management Representative (EMR)	• Approach and establish the local commercial reuse of materials where reuse on-site is not practical; • Establish separate skips and recycling bins for effective waste segregation and recycling purposes; • Ensure staff and contractors are aware of site requirements; • Provision of training of the requirements of the WMP and specific waste management strategies adopted for the activity; • Contaminated waste management and approval of off-site waste transport, disposal locations and check licensing requirements; • Arrange assessment of suspicious potentially contaminated materials, hazardous materials and liquid waste; • Monitor, inspect and report requirements.
Waste Collection Contractors	• Provide a reliable and appropriate waste collection service; • Provide feedback to site management regarding contamination of waste streams; • Work with site management to customise waste systems where possible.

3.2 Monitoring and Reporting

It is recommended that the following measures be taken to improve demolition and construction waste management in future and to provide more reliable waste generation figures:

- Compare projected waste quantities with actual waste quantities produced.
- Conduct waste audits of current projects (where feasible).
- Note waste generated and disposal methods.
- Look at past waste disposal receipts.
- Record this information to help in waste estimations for future waste management plans.

Records of waste volumes recycled, reused or contractor removed are to be maintained. Additionally, dockets/receipts verifying recycling/disposal in accordance with the WMP must be kept and presented to Council or the EPA if and when required.

Daily visual inspections of waste storage areas will be undertaken by site personnel and inspection checklists/logs recorded for reporting to the Site Manager on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits are to be carried out by the Building Contractor to gauge the effectiveness and efficiency of waste segregation procedures and recycling/reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training should be undertaken and signage re-examined.

All environmental incidents are to be dealt with promptly to minimise potential impacts. An incident register must be maintained on-site at all times and should include the contact details of the 24-hour EPA Pollution line. Likely incidents to occur during the construction and demolition stage of the high school may involve fuel or chemical spills, seepage or mishandling of hazardous waste, or unlicensed discharge of pollutants to environment.

3.3 Opportunities for Reuse and Recycling

There are many opportunities to reduce the volume of waste generated during demolition and construction. Adaptive reuse of building materials should be encouraged, with significant consideration given to methods of reusing or recycling materials onsite as well as sourcing used or recycled materials from elsewhere to be used on site.

The site should facilitate where practical reuse and recycling by 'deconstruction', whereby various materials are carefully dismantled and sorted. Any unwanted reusable materials can be taken to a second-hand building centre, reducing waste disposal costs.

Materials that are individually wrapped should also be avoided where possible, with preference given for materials that can be delivered in returnable packaging such as timber pallets.

The table below gives examples of potential reuse and recycling options for the materials likely to be used/generated in construction and demolition at this high school:

Table 4: Potential Reuse/Recycling Options for Construction Materials

Material	Reuse/Recycling Potential
Asphalt	Hot in-place recycling or reprocessed into Reclaimed Asphalt Pavement (RAP).
Bricks	Cleaned and/or rendered for reuse, crushed for fill, sold or provided to a recycled materials yard
Cardboard Packaging	Recycled at a paper/cardboard recycling facility
Carpet	Cleaned and reused for the same purpose, reused in landscaping or garages/sheds, recycled at an appropriate processing facility
Concrete, Masonry, Spoil	Reused on-site as fill, levelling or crushed for road base
Doors, Windows, Fittings	Reused in new or existing buildings or sent to second-hand supplier
Glass	Recycled at a glass recycling facility, aggregate for concrete production, crushed for termite barrier, reused as glazing
Green Waste (Organics)	Mulched, composted for reuse, trees chipped for use in landscaping or removed carefully and reused onsite or sold
Hardwood Beams	Reused as floorboards, fencing, furniture or sent to second-hand timber supplier
Insulation Material	Reprocessed to remove impurities and reused for the same purpose or as off-cuts, compressed for ceiling tile manufacture
Metal, Steel/Copper Pipe	Recycled at a metal recycling facility, melted into secondary materials for structural steel, roofing, piping etc. copper sold for re-use
Other Timber	Reused in formwork, ground into mulch for garden or sent to second-hand timber supplier
Plasterboard	Crushed for reuse in manufacture of new plasterboard, returned to supplier or used in landscaping
Plastics	Reused as secondary materials for playgrounds, park benches etc.
Roof Tiles	Cleaned and reused, crushed for reuse for landscaping and driveways or sold or provided to a recycled materials yard
Soil	Stockpiled onsite for reuse as fill
Synthetic & Recycled Rubber	Reused for the same purpose or reprocessed for use in manufacture/construction of safety barriers, speed humps
Topsoil	Stockpiled onsite for reuse in landscaped areas

3.4 Management of Hazardous Waste Materials

For the purpose of this report, hazardous waste materials include any waste that poses a hazard or potential harm to human health or the environment, particularly asbestos waste and asbestos containing material (ACM). The general advice provided in this report is superseded by any specific hazardous materials or remediation control plans prepared for the project.

During the construction phase of the activity, there must be a commitment to engage qualified and certified contractors to remove all contaminated/hazardous materials (e.g. asbestos) and dispose of all contaminated/hazardous waste at an appropriately licenced facility, where applicable.

In the event that any contaminated or hazardous materials are unexpectedly uncovered during demolition or excavation works, the Site Manager is to stop work immediately in that location and contact the relevant hazardous waste contractor prior to further works being undertaken in the area.

The following general mitigation measures will apply:

- Contaminated material stockpiled on site will be minimised as far as possible and should be stored on HDPE liner, in a bunded location which is protected from inclement weather;
- Sediment fences should be installed around the base of stockpiles and the stockpiles should be covered. Where excavated material requires validations, samples should be taken for NATA laboratory testing as per the requirements of the contamination assessment prior to restoration works, backfilling exercises and disposal;
- Any trucks carrying contaminated materials should be securely and completely covered immediately after loading the materials (to prevent windblown emissions and spillage) and must be licensed by the NSW Environmental Protection Authority (EPA);
- Decontamination of all equipment prior to demobilisation from the site is important so that contaminated materials are not spread off-site.

3.5 Management of Excavation Waste

For the purpose of this report, excavation waste consists of any unwanted material generated from excavation activities such as a reduced level dig, site preparation and levelling and the excavation of foundations, basements, tunnels and service trenches. This will typically consist of soil and rock. The general advice provided in this report is superseded by any specific hazardous materials or remediation control plans prepared for the project.

All excavated material generated on this site may be re-used in the landscaping or used on other sites as fill material, provided no contamination is present. If sandstone is found to be present, this may be sold or incorporated into the building design.

The following measures and safeguards will apply to the activity for excavated material:

- Wherever practical, excavation material will be reused as part of the development;
- Excavation material that is not natural (virgin) material will be transported to an approved landfill site or off-site recycling depot;
- A waste classification assessment of the fill material should be undertaken prior to it being acceptable for waste disposal purposes;
- Transportation routes for excavation material removed from site will be identified and used.

4 SITE SPECIFIC WASTE MANAGEMENT PROVISIONS

4.1 Demolition Waste Volumes and Management

The demolition stage for the proposed New High School at Jordan Springs provides the greatest opportunity for waste minimisation and resource recovery. With careful on-site sorting and storage and by staging work programs it is possible to reuse many materials, either on or off-site.

The proposed high school will be a new build. Demolition includes roads and associated services within site boundary. Where possible, materials will be reused, such as crushing concrete for use as clean fill. However, the majority of the components of the building will either be reused for the same purpose or disposed of offsite.

A demolition contractor will be engaged during this phase of the project. The contractor will be responsible for ensuring all demolition activities are planned and undertaken in accordance with relevant waste minimisation policies and REF mitigation measures.

The table below illustrates the anticipated volumes of materials generated at this development during the demolition stage. Volumes have been advised by our client.

Table 5: Demolition Waste Conversion for Scenario1

Material	Volume (m3)	*Tonnes (t)	**Appx. Percentage Recovered
Excavation Material	3132	3132	99.8%
Green waste	4256	638.4	80%
Totals	**7388**	**3770.4**	

Table 6: Demolition Waste Management for Scenario 2

Material	Volume (m3)	*Tonnes (t)	**Appx. Percentage Recovered
Excavation Material	10000	10000	99.8%
Totals	**10000**	**10000**	

**The conversion of materials from volume to tonnes is based on the information provided in a consultation paper published by WA Department of Water and Environmental Regulation <https://www.der.wa.gov.au/images/documents/our-work/consultation/current-consultation/Consultation%20Sheet%20-Approved%20method%20for%20recyclers.pdf>*

***The percentage of recycled demolition waste is estimated by BINGO, and is based on the average quantities of materials received and recovered at their facilities.*

Table 7: Demolition Waste Management for Scenario1

			How Waste will be Managed			
Type of Material	**Less than 10m³**	**Estimated Tonnage**	**Reuse On-Site**	**Recycle**	**Landfill**	**Estimated Tonnage of Material Diverted from Landfill**
Excavation Material	☐	3132.0	☒	☒	☒	3124.2
Green Waste	☐	638.4	☒	☒	☒	510.7
	Total	**3770.4**		**Total**		**3634.9**
Total Diversion of Waste from Landfill (Minimum 80%)						**96.4%**

Table 8: Demolition Waste Management for Scenario 2

			How Waste will be Managed			
Type of Material	**Less than 10m³**	**Estimated Tonnage**	**Reuse On-Site**	**Recycle**	**Landfill**	**Estimated Tonnage of Material Diverted from Landfill**
Excavation Material	☐	10000	☒	☒	☒	9975
	Total	**10000**		**Total**		**9975**
Total Diversion of Waste from Landfill (Minimum 80%)						**99.8%**

4.2 CONSTRUCTION WASTE VOLUMES AND MANAGEMENT

Waste generated during the construction stage of the high school will be managed by the principal contractor and sub-contractors, with materials being reused and recycled wherever possible. Where neither reuse nor recycling are possible, waste will be disposed of as general waste at a licensed landfill site.

Recyclable material generated during construction will largely consist of off-cuts and discarded bricks, timber, steel, concrete, tiles, plasterboard, and piping, as well as packaging materials.

It is important to note that source separation of waste on-site may offer cost savings when compared to the disposal of mixed waste at landfill sites. Further cost savings may be achieved through the use of reusable and recycled-content materials and by reusing materials salvaged from the demolition stage of the high school.

The table below illustrates the anticipated volumes of materials generated at this development during the construction stage. Volumes have been advised by our client.

Table 9: Construction Waste Conversion for Scenario 1

Material	Volume (m3)	*Tonnes (t)	**Approx. Percentage Recovered
Bricks	2.23	2.7	100%
Tiles	0.48	0.5	100%
Concrete	286.3	429.5	100%
Timber	4.43	0.8	33%
Plasterboard	9.74	1.9	50%
Metals	25.07	12.5	100%
Totals	**328.26**	**447.9**	

Table 10: Construction Waste Conversion for Scenario 2

Material	Volume (m3)	*Tonnes (t)	**Approx. Percentage Recovered
Asphalt	174.3	209.1	90%
Totals	**174.3**	**209.1**	

**The conversion of materials from volume to tonnes is based on the information provided in a consultation paper published by WA Department of Water and Environmental Regulation <https://www.der.wa.gov.au/images/documents/our-work/consultation/current-consultation/Consultation%20Sheet%20-Approved%20method%20for%20recyclers.pdf>*

***The percentage of recycled waste is estimated by BINGO, and is based on the average quantities of materials received and recovered at their facilities.*

The table below illustrates how the construction materials will be managed, and estimates percentage of materials diverted from landfill.

Table 11: Construction Waste Management for Scenario 1

			How Waste will be Managed			
Type of Material	**Less than 10m³**	**Estimated Tonnage**	**Reuse On-Site**	**Recycle**	**Landfill**	**Estimated Tonnage of Material Diverted from Landfill**
Bricks	☒	2.7	☒	☒	☐	2.7
Tiles	☒	0.5	☐	☒	☐	0.5
Concrete	☐	429.5	☒	☒	☐	429.5
Timber	☒	0.8	☐	☒	☒	0.3
Plasterboard	☒	1.9	☐	☒	☒	1.0
Metals	☐	12.5	☐	☒	☐	12.5
Total		**447.9**	**Total**			**446.4**
Total Diversion of Waste from Landfill (Minimum 80%)						**99.7%**

Table 12: Construction Waste Management for Scenario 2

			How Waste will be Managed			
Type of Material	**Less than 10m³**	**Estimated Tonnage**	**Reuse On-Site**	**Recycle**	**Landfill**	**Estimated Tonnage of Material Diverted from Landfill**
Asphalt	☐	209.1	☐	☒	☒	188.2
Total		**209.1**	**Total**			**188.2**
Total Diversion of Waste from Landfill (Minimum 80%)						**90%**

4.3 Recycling Directory

Construction and demolition materials removed from site will need to be managed in accordance with the provisions of current legislation and may include segregation by material type classification in accordance with NSW EPA (2014) *Waste Classification Guidelines, Part 1: Classifying Waste* and disposal at facilities appropriately licensed to receive the particular materials.

Please find the below recommendations for recycling drop off locations for all materials likely to be generated at this development. Only the nearest locations are provided. See www.businessrecycling.com.au for additional locations:

Table 13: Recycling Directory

	Business Name	Suburb	Distance (km)
Excavation Material	Bingo Recycling Centre	Eastern Creek	15
	SUEZ Kemps Creek Resource Recovery	Kemps Creek	20
	Kimbriki Resource Recovery Centre	Terrey Hills	50
Green Waste	Penrith Waste Management Centre	Penrith	10
	Blacktown Waste Services	Blacktown	20
	Hawkesbury City Waste Management	South Windsor	25
Bricks /Asphalt	Bingo Recycling Centre	Eastern Creek	15
	SUEZ Kemps Creek Resource Recovery	Kemps Creek	20
	Kimbriki Resource Recovery Centre	Terrey Hills	50
Tiles	Bingo Recycling Centre	Eastern Creek	15
	SUEZ Kemps Creek Resource Recovery	Kemps Creek	20
	Kimbriki Resource Recovery Centre	Terrey Hills	50
Concrete	Bingo Recycling Centre	Eastern Creek	15
	SUEZ Kemps Creek Resource Recovery	Kemps Creek	20
	Kimbriki Resource Recovery Centre	Terrey Hills	50
Timber	Penrith Waste Management Centre	Penrith	10
	Blacktown Waste Services	Blacktown	20
	Hawkesbury City Waste Management	South Windsor	25
Plasterboard	Bingo Recycling Centre	Eastern Creek	15
	SUEZ Kemps Creek Resource Recovery	Kemps Creek	20
	Kimbriki Resource Recovery Centre	Terrey Hills	50
Metals	Penrith Waste Management Centre	Penrith	10
	Blacktown Waste Services	Blacktown	20
	Hawkesbury City Waste Management	South Windsor	25

4.4 Site-Specific Operational Measures

Training/Site Inductions

All staff employed during the demolition and construction stages of the development must undertake site-specific induction training regarding the procedures for waste management. Employees of the head contractor will undertake a specific induction outlining their duties and how they are to enforce the waste management procedures.

Induction training will include the following at a minimum:

- Legal obligations;
- Emergency response procedures on site;
- Waste storage locations and separation of waste;
- Litter management in transit and on site;
- The implications of poor waste management practices;
- Correct use of general-purpose spill kits;
- Responsibility and reporting (including identification of personnel responsible for waste management and individual responsibilities).

Materials Selection and Ordering

- Selection of all materials will be undertaken by architectural designers;
- Prefabrication of materials off-site where possible;
- Materials requirements are to be accurately calculated to minimise waste from over-ordering;
- Materials ordering process is to aim at minimisation of materials packaging;
- Material Safety Data Sheets (MSDS) are to accompany all materials delivered to site, where required, to ensure that safe handling and storage procedures are implemented.

Waste Avoidance Opportunities

- Limiting unnecessary excavation;
- Selection of construction materials taking into consideration to their long lifespan and potential for reuse;
- Ordering materials to size and ordering pre-cut and prefabricated materials;
- Reuse of formwork;
- Planned work staging;
- Use of naturally ventilating buildings to reduce ductwork;
- Reducing packaging waste on-site by returning packaging to suppliers where possible, purchasing in bulk and requesting cardboard or metal drums rather than plastics;
- Requesting metal straps rather than shrink wrap and using returnable packaging such as pallets and reels;
- Reduction of PVC use;
- Use of low VOC (volatile organic compounds) paints, floor coverings and adhesives;
- Use of fittings and furnishings that have been recycled or incorporate recycled materials;
- Use of building materials, fittings and furnishings with consideration to their longevity, adaptation, disassembly, reuse and recycling potential.

Site Procedures

- Excavated materials will be used onsite where practical;
- Green waste will be mulched and reused in landscaping either onsite or offsite;
- Concrete, tiles and bricks will be reused or recycled offsite;
- Steel will be recycled offsite; all other metals will be recycled where economically viable;
- Framing timber will be reused on-site or recycled off-site;
- Windows, doors and joinery will be recycled off-site where possible;
- Plumbing, fittings and joinery will be recycled off-site where possible;
- Plasterboard will be re-used in landscaping on-site or returned to the supplier for recycling where possible;
- All used crates will be stored for reuse unless damaged;
- All glass that can be economically recycling will be;
- All solid waste timber, brick, concrete, rock, plasterboard and other materials that cannot be reused or recycled will be taken to an appropriate facility for treatment to recover further resources or for disposal to landfill in an approved manner;
- All asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with WorkCover Authority and EPA requirements;
- Provision for the collection of batteries, fluorescent tubes, smoke detectors and other recyclable resources will be provided on site;
- Beverage container recycling will be provided on-site for employee use;
- All waste and recycling will be disposed of via council approved systems.

4.5 Location and Design of Waste Management Facilities

General Requirements

All waste management facilities onsite should:

- Be conveniently located to enable easy access for on-site movement and collection;
- Be incorporated with other loading/unloading facilities;
- Have sufficient space for the quantity of waste generated and careful source separation of recyclable materials;
- Have sufficient space to contain any on-site treatment facilities, such as compaction equipment;
- Have adequate weather protection and, where required, be enclosed or undercover;
- Be secure and lockable;
- Be well-ventilated and drained to the sewer;
- Be clearly sign-marked to ensure appropriate use.

Waste and Recycling Receptacles

A sufficient quantity of skip bins should be provided for the separate storage of each type of C&D material generated on site. This will assist in maximising source separation and resource recovery, while reducing the costs and quantity of materials disposed of at landfill.

The size of the receptacles should be appropriate to the nature of waste generated and the available storage area. In general, the following options would be acceptable:

Bin Size	Access	Dimensions
2.5m	Top loading	
3m	Drop door walk-in	
4m	Drop door walk-in	
5m	Drop door walk-in	
6m	Double doors walk-in	

Source: Aussie Bins

If the developer chooses to adopt a traditional waste management strategy, whereby waste is deposited into comingled skip bins to be sorted offsite, a single skip bin would be considered sufficient for purpose. However, if the site is to pursue source separation, dedicated skips for the following materials are recommended:

- Timber;
- Plasterboard;
- Concrete;
- Bricks;
- Scrap metal;
- General waste.

Separate receptacles for the safe disposal of hazardous waste types (i.e. light bulbs, batteries, etc) will also be provided where applicable. Where possible, additional bins will be provided in common areas for the collection of commingled recyclables such as beverage containers (glass, plastic, aluminium), paper products, recyclables food containers, etc. Specialised bins for cigarette butts should also be provided.

Safety and Signage

The following safety measures should be considered for the waste storage area:

- Location should not interfere with sight lines of drivers entering or leaving the site;
- Skip bins should be clearly visible and located in well-lit areas;
- Safe paths of travel should be designated using reflective tape, barriers and cones;
- Skip bins must be secured and must not be over-filled to reduce risk of injury through bins moving and falling objects.

Standard signage will be installed in all waste areas, with all skip bins colour coded and labelled appropriately on all sides to allow clear identification of the type of waste to be deposited into each bin.

Refer to the EPA's website for standard construction waste and recycling signs:

www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm

Space and Siting Requirements

The waste storage area will be located adjacent to the entrance to the site to enable access and allow sufficient space for the required skip bins and servicing requirements. The storage area will also be flexible in order to cater for change of use throughout demolition and construction works.

Where space is restricted, dedicated stockpile areas will be allocated onsite, with regular transfers to the dedicated skip bins for sorting and collections.

The position of the designated waste holding area onsite may change according to building works and the progression of the development. Access, visual amenity and WHS will always be integral to the selection of waste storage area locations. Any stockpile locations will take into account slope and drainage factors to avoid contamination of stormwater drains during rain events.

Servicing and Transport

The frequency of waste removal from site will be determined by the volume of materials deposited into the dedicated skip bins. Skip bins will be monitored on a daily basis by the Site Manager to ensure they do not overflow. If skip bins are reaching capacity, removal and replacement should be organised for within 24 hours.

All skip bins leaving the site will be covered with a suitable tarpaulin to reduce spillage of waste while in transit.

All waste collection for construction works will be conducted between approved hours as per Council requirements (typically between 7am and 6pm Monday to Friday, and between 8am and 1pm on Saturdays). All waste generated on site will be transported to an approved and appropriately licensed resource recovery facility and/or landfill site.

5 MITIGATION MEASURES

The table below presents a summary of measures to mitigate waste-related impacts during the construction and operational phase of this activity.

Table 14: Mitigation Measures

Mitigation Number/ Name	When is Mitigation Measure to be complied with	Mitigation Measure	Reason for Mitigation Measure
Waste reduction	Construction and Operation	Encourage practices that reduce waste generation at the source, such as using fewer materials or opting for less packaging.	Reducing waste at the source minimizes the volume of waste generated.
Recycling and Reuse	Construction and Operation	Implement recycling programs to recover valuable materials from waste.	Recycling conserves natural resources, reduces energy consumption, and lowers greenhouse gas emissions, helping to create a circular economy.
Hazardous Waste Management	Construction and Operation	• Contaminated material stockpiled on site will be minimised as far as possible and should be stored on HDPE liner, in a bunded location which is protected from inclement weather; • Sediment fences should be installed around the base of stockpiles and the stockpiles should be covered. Where excavated material requires validations, samples should be taken for NATA laboratory testing as per the requirements of the contamination assessment prior to restoration works, backfilling exercises and disposal; • Any trucks carrying contaminated materials should be securely and completely covered immediately after loading the materials (to prevent windblown emissions and spillage) and must be licensed by the NSW Environmental Protection Authority (EPA); • Decontamination of all equipment prior to demobilisation from the site	Reduce the impacts of any contaminated or hazardous materials uncovered during the demolition/excavation works

		is important so that contaminated materials are not spread off-site.	
Excavation Waste Management	Construction and Operation	Wherever practical, excavation material will be reused as part of the development; • Excavation material that is not natural (virgin) material will be transported to an approved landfill site or off-site recycling depot; • A waste classification assessment of the fill material should be undertaken prior to it being acceptable for waste disposal purposes; • Transportation routes for excavation material removed from site will be identified and used.	Promoting best practice in the management of excavation waste
Training	Construction and Operation	Conduct site specific induction training regarding the procedures of waste management during demolition and construction phase of the activity	Making sure that staff hired during the demolition and construction have knowledge of waste management procedures onsite
Safety and Signage	Construction and Operation	Location should not interfere with sight lines of drivers entering or leaving the site; • Skip bins should be clearly visible and located in well-lit areas; • Safe paths of travel should be designated using reflective tape, barriers and cones; • Skip bins must be secured and must not be over-filled to reduce risk of injury through bins moving and falling objects.	Implementation of safety measures considered for the waste storage area
Space and siting requirements	Construction and Operation	The waste storage area will be located adjacent to the entrance to the site to enable access and allow sufficient space for required skip bins and servicing requirements. The storage area will be flexible to cater for change of use throughout the demolition and construction works.	The position of designated waste holding area onsite may change according to building works and progression of the development. Important that waste holding area take in consideration of access, visual amenity and WHS.

Servicing and Transport	Construction and Operation	All skip bins leaving the site will be covered with a suitable tarpaulin to reduce spillage of waste while in transit.	Reduce the impact of waste spillage during transit.
Education	Construction and Operation	Conduct campaigns to inform the community about proper waste disposal and the benefits of reducing waste.	Increasing public awareness leads to better waste sorting, reduces contamination in recycling streams.
Safe disposal Methods	Construction and Operation	Ensure proper management and disposal of all waste streams.	Effective waste management minimizes environmental contamination.
Monitoring and Reporting	Construction and Operation	Implement data collection and reporting systems for waste management activities. These are as follows: Compare projected waste quantities with actual waste quantities produced. • Conduct waste audits of current projects (where feasible). • Note waste generated and disposal methods. • Look at past waste disposal receipts. • Record this information to help in waste estimations for future waste management plans.	Monitoring provides insights into waste generation patterns, helping identify areas for improvement and ensuring compliance with regulations.
Policy and Regulation Compliance	Construction and Operation	Regularly review and update waste management plans to comply with environmental regulations.	Compliance with regulations ensures that waste management practices are environmentally responsible.

In conclusion, this Construction and Demolition Waste Management Plan, prepared by R. Jayaratnam, supports the REF for the New High School in Jordan Springs. The report promotes best practice waste management, minimizing waste generation, and maximizing reuse. It ensures efficient design, storage, and equipment for sustainable operations.

6 EVALUATION OF ENVIRONMENTAL IMPACTS

The C&D WMP has examined and identified the appropriate management practices and mitigations to support the orderly development of the works, whilst minimising the effects of the project on surrounding properties and other adjacent stakeholders that may have been impacted by the works during the construction and demolition phase. Based on this assessment, it has been identified that the proposed activity will not have any negative impacts at all.

7 SITE SPECIFIC WASTE MANAGEMENT PROVISIONS

7.1 Existing Structures

Note: the proposed bin location is indicative only and, this may change based on site logistics.
Source: Google Maps

7.2 Proposal

Note: The proposed bin location is to be in same location for both scenarios

Source: DJRD Architects, JSHS Concept Design – Proposed Site Plan