Foresight Environmental

Leppington Public School Upgrade

Leppington, NSW 2179

REF
Construction & Demolition Waste Management Report

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DISCLAIMER

This report is based on information provided by the **Department of Education,** coupled with Foresight Environmental's knowledge of waste generated within the commercial sector. To that extent this report relies on the accuracy of the information provided to the consultant. It has been compiled by Foresight Environmental on behalf of **Department of Education.**

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1. Introduction

This Construction and Demolition Waste Management Plan (C&DWMP) has been prepared to support a Review of Environmental Factors (REF) for the Department of Education (DoE) for the upgrade of Leppington Public School (LPS) (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) as "development permitted without consent" on land carried out by or on behalf of a public authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

The proposed activity is for upgrades to the existing LPS at 144 Rickard Road, Leppington, NSW, 2179 (the site).

The purpose of this report is to detail how the waste and recycling generated during the C & D phases of the activity will be managed, and that a plan is in place to achieve 90% recovery of demolition and construction waste. This will be done by qualifying and quantifying the waste estimates from budget estimates and architectural plans, and identifying what waste can be minimised, re-used or is to be left over.

1.1 Site and Locality Description

LPS is located at 144 Rickard Road, Leppington on the eastern side of Rickard Road, north of Ingleburn Road and south of Byron Road. The site has an area of 3.013 ha and comprises 4 allotments, legally described as:

- Lot 1 DP 127446
- Lot 1 DP 439310
- Lot 38E DP 8979
- Lot 39C DP 8979

The site currently comprises an existing co-education primary (K-6) public school with:

- 14 permanent buildings
- 11 demountable structures (including 2 male/female toilet blocks)
- interconnected paths
- covered walkways
- play areas

- at-grade parking.

The site also contains locally listed heritage buildings along its southern boundary.

The buildings are 1 storey in height and there is a sports oval in the eastern portion of the site. The existing buildings are clustered in the north-western part of the site.

Figure 1: Aerial image of the site, outlined in blue (Source: NearMap, taken 24 Sept 2024)

1.2 Proposed Activity Description

The proposed activity involves upgrades to the existing LPS, including the following:

- Demolition of existing structures and trees
- Erection of a new 3-storey teaching space along the northern boundary that includes 20 permanent teaching spaces and 3 support teaching spaces
- Erection of a new hall and COLA comprising of a hall, canteen and OSHC hub towards the eastern boundary of site
- Extension of the existing library (Building E) and adjoining playground
- Upgraded sports and play facilities
- Relocation of the Yarning Circle
- Erection of a substation and upgrades to site services
- Footpaths, fencing and associated works

- Landscaping.

The intent of the activity is to allow for upgrades to LPS that will provide a 'CORE 35' school standard in line with the Educational Facilities Standards and Guidelines (EFSG). The activity will increase the capacity of the school from 430 to 621 students.

Figure 2: The scope of works for the proposed activity.

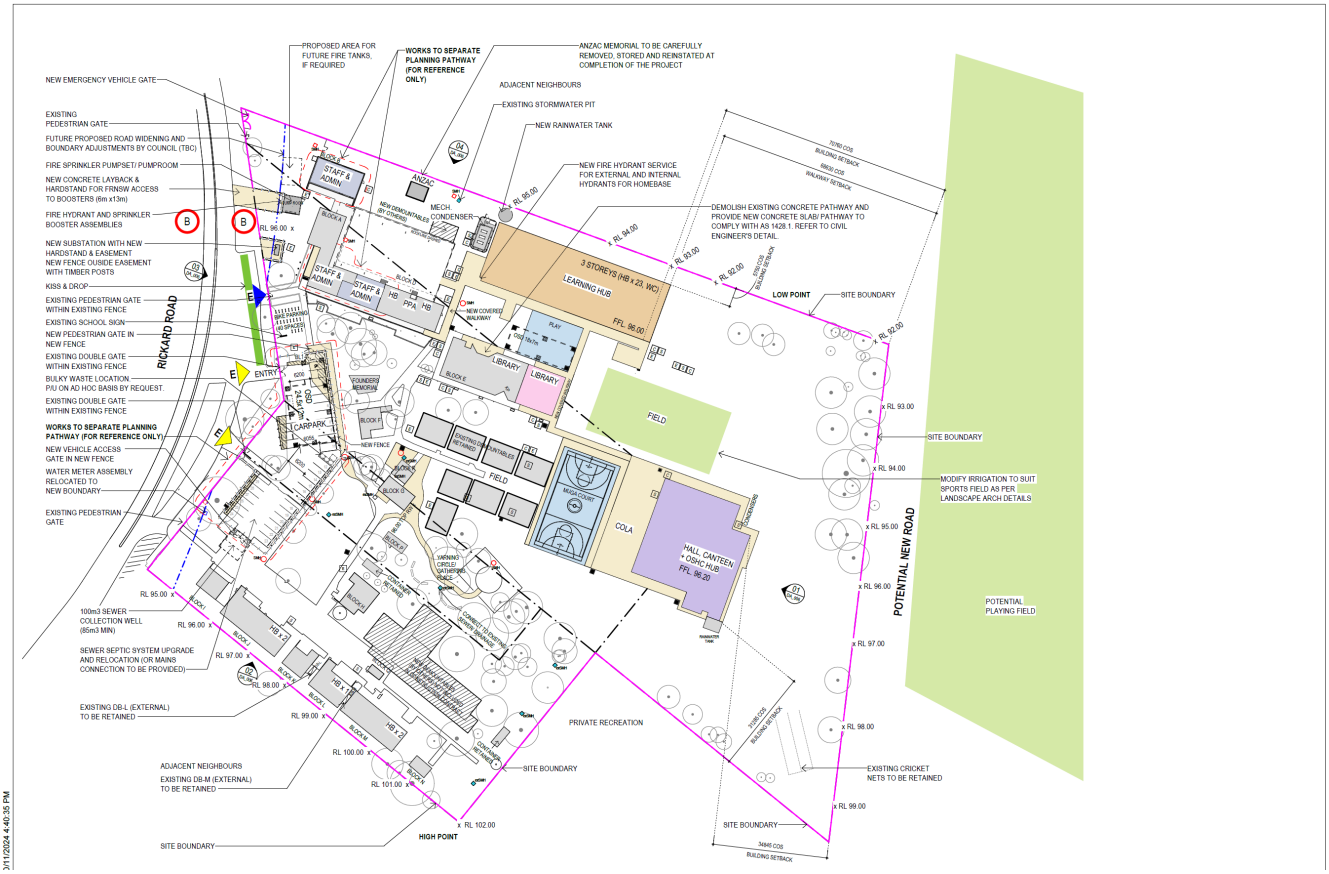
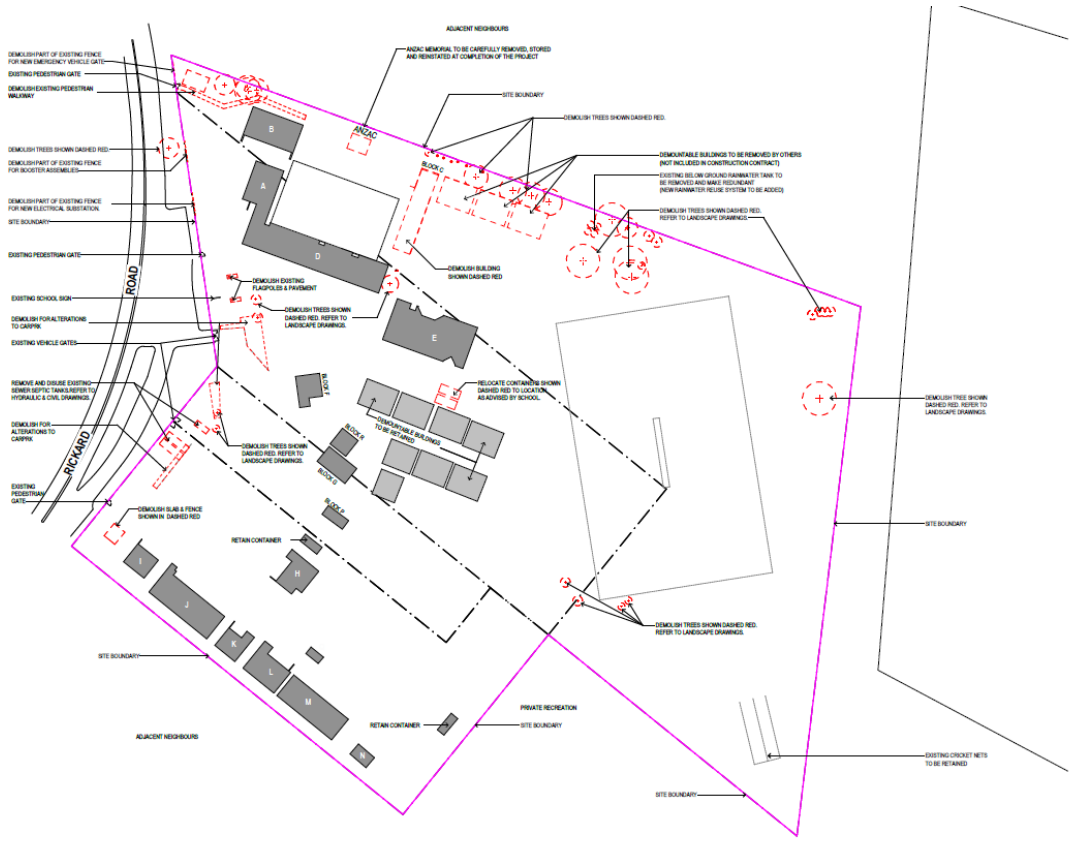


Figure 3: Demolition Site Plan



2. Waste Generation Estimate

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

- To maximize the reuse and recycling of demolition materials
- To reduce the volume of materials going to landfill
- To maximise waste material avoidance and reuse on site
- To ensure that where practicable, an efficient recycling procedure is applied to waste materials
- To ensure efficient storage and collection of waste.

The quantity of waste materials to be generated onsite are estimates based on the information provided to Foresight Environmental and therefore the systems that will be put in place need to incorporate flexibility to allow for variation in the total quantities generated.

Please note the approximate percentage of recovered waste listed in the tables below is only indicative and has been derived from various resource recovery centres in the Sydney district, and as such it is high level and subject to change in the form of construction cost plans and quantity surveys.

2.1 Demolition

The testing and classification of any excavated material is covered within the Detailed Site Investigation and the Geotechnical reports prepared for the REF and is not covered in this report.

2.1.1. Demolition Estimate Methodology

To generate demolition waste generation estimates, the following method was used:

1. Quantify materials from 30% detailed design cost plans and *Issue for REF* architectural drawings
2. Use these quantities to estimate demolition wastage generation based on material percentages derived from industry standards[1].

The table below details the results - the estimated composition by volume of demolition waste to be generated. See Appendix 1 for a list of construction and demolition definitions.

Table 1 – Estimated composition of demolition waste by volume

MATERIAL	m^3	TONNES	APPROX % RECOVERED
Plasterboard	0.02	0.01	94
Timber*	0.3	0.34	33 – 100*
Green Waste	0.25	0.25	100
	20 (no. of trees)	-	100
General Residual	1.0	1.0	20
Metal	10	74	100
Concrete	18	45	100
Brick	31	40	100
TOTAL	**61**	**161**	**-**

**Untreated timber has approximately 100% recovery rate, whereas treated timber is closer to 33%.*

[1] waste-management-guidelines-chapter-1-demolition-sep22.pdf (nsw.gov.au)

2.2 Construction

Active site management during the construction phase will ensure all waste/recyclable materials are disposed of appropriately and that all waste receptacles are of sufficient capacity to manage onsite activities Table 2 below details the estimated composition by volume of construction waste to be generated.

2.2.1. Construction Estimate Methodology

To generate construction waste generation estimates, the following method was used:

1. Material quantities have been derived from 30% detailed design cost plans and *Issue for REF* architectural drawings.
2. Use these quantities to estimate construction wastage generation based on material percentages derived from industry standards[2].

The table below details the results - the estimated composition by volume of construction waste to be generated. See Appendix 1 for a list of construction and demolition definitions.

Table 2 – Estimated composition of construction waste by volume

MATERIAL	m^3	TONNES	APPROX % RECOVERED
Asphalt	1.2	0.02	-
Green Waste	26	26	100
Metals	46	348	100
Timber	66	72	100
Plasterboard	77	58	98
General Residual	81	81	20
Recycling Residual	197	197	100
Bricks and Tiles	279	362	100
Concrete	290	724	100
TOTAL	**1,064**	**1,879**	-

**Untreated timber has approximately 100% recovery rate, whereas treated timber is closer to 33%.*

[2] Waste Management Plan Application Template.doc (live.com)

3. Waste Management Strategy

Consideration of waste management during all phases of the activity will provide the best opportunity to minimise the volume of waste generated throughout the project's lifetime. Whilst recycling and reuse of materials are important aspects of waste management, waste minimisation techniques incorporated into construction and demolition can prevent materials from being brought onto the site that will eventually become waste. The following waste hierarchy will be used as a guiding principle:

Figure 4: The waste management hierarchy

The construction and demolition teams will implement this C&DWMP, incorporating the following best practice management techniques as a minimum:

3.1 Avoid and Reduce

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

- Assessing and taking into consideration the resultant waste from different design and construction options
- Purchasing materials that will result in less waste, which have minimal packaging, are pre-cut or fabricated. Where possible, arrange for packaging to be removed by the delivery company
- Not over ordering products and materials
- Ordering materials cut to size to reduce waste material onsite

3.2 Reuse

- Ensure that wherever possible, materials are reused either on site or offsite
- Identify all waste products that can be reused
- Any demolition and excavation materials should be salvaged and retained onsite for re-use where possible
- Put systems in place to separate and store reusable items
- Identify the potential applications for reuse both onsite and offsite and facilitate reuse.

3.3 Recycling

- Identify all recyclable waste products to be produced on site
- Provide clear signage to ensure appropriate disposal of all waste types
- Process the material for recycling either onsite or offsite.

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

3.4 Disposal

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

- Ensure the chosen waste disposal contractor complies with OEH requirements
- Implement regular collection of bins
- Maintain records of both recycled and general waste volumes being transferred offsite or reused onsite.
- The only materials to be sent to landfill are those that cannot be recycled due to contamination, legal requirements or lack of facilities to enable recycling.

4. Waste Management Systems

4.1 Onsite and Offsite Systems

Onsite separation of the various waste streams is encouraged to lower recycling costs so to avoid additional fees for sorting at appropriate facilities – this is particularly relevant for higher value recycling stream i.e., metal. However, to maximise operational and spatial efficiency, it is highly likely that the majority of materials will be disposed together and will be collected for separating and processing at an offsite recycling facility.

The following tables combine the estimated volumes for each component of the activity as the recycling practices are to be replicated during each respective phase.

4.1.1. Demolition

Table 3 - Waste Management Systems

MATERIAL	ESTIMATED VOLUME (m^3)	ONSITE (RE-USE OR RECYCLE)	OFFSITE ONSITE (RE-USE OR RECYCLE)
Timber	**0.3**		Timber products and off cuts should be separated and free from contamination to be collected by contractor to be processed/reused
Green Waste	**0.25**	Mulched and reused onsite where possible (landscaping)	Separated where possible and taken to appropriate organic processing facility i.e. Australian Native Landscapes
	20 trees		
Bricks	**31**	Crushed and reused onsite as aggregate/road base where possible	Removed from site as required for recycling/reuse at C&D facility for processing.
Concrete	**18**		
Plasterboard	**0.02**		Collected by contractor to be sorted and re-processed at an appropriate C&D recycling facility into recycled products where possible
Metals	**10**		
General Residual	**1.0**		

4.1.2. Construction

Table 4 - Waste Management Systems

MATERIAL	ESTIMATED VOLUME (m^3)	ONSITE (RE-USE OR RECYCLE)	OFFSITE ONSITE (RE-USE OR RECYCLE)
Green Waste	**26**	Mulched and reused onsite where possible (landscaping)	Separated where possible and taken to appropriate organic processing facility i.e. Australian Native Landscapes
Metals	**46**		Stockpiled and collected as required by specialty metal recycler or taken to appropriate C&D facility for separation and recycling
Timber	**66**		Timber products and off cuts should be separated and free from contamination to be collected by contractor to be processed/reused
Plasterboard	**77**		Stockpiled onsite and collected by plasterboard supplier/recycler or taken to appropriate recycling facility
General Residual	**81**		Collected by contractor to be sorted and re-processed at an appropriate C&D recycling facility into recycled products where possible
Recycling Residual	**197**		
Asphalt	**1.2**	Crushed and reused onsite as aggregate/road base where possible	Removed from site as required for recycling/reuse at C&D facility for processing.
Bricks & Tiles	**279**		
Concrete	**59**		

It should be noted that there are multiple offsite recycling/disposal facilities available for the appropriate processing of the materials detailed above and the facility choice will depend largely on the waste contractor/supplier engaged. See Section 8.

If the above reduce, reuse, recycle protocols are adhered to then the activity will be on track to achieve 90% recovery of demolition and construction waste.

5. Cumulative Impact Assessment

As this is a redevelopment of an existing school, we do not foresee any cumulative impacts arising, whereby associated demolition and construction risks will be mitigated as per Table 5 below.

6. Mitigation Measures

The table below details potential construction and demolition impacts to the environment, community and individuals from the introduction of complex school developments. Specific mitigation measures that could be implemented and the reason for them are listed in the table below.

Table 5 – Mitigation measures

MITIGATION NAME	ASPECT/SECTION	MITIGATION MEASURE	REASON FOR MITIGATION MEASURE	REPORT DELIVERABLE
Waste and servicing arrangements - Waste removal	Environmental impact on the community during construction and post-construction	Any vehicle removing waste will be properly covered before leaving the site	To prevent spills or the escape of any dust, waste or spoil from the vehicle	Section 7.2
		It is a requirement of the WMP all mud, splatter and/or dust to be removed from the vehicle before leaving the site		Section 7.2
Waste and servicing arrangements – waste minimisation and waste reuse and recycling		Construction waste would be minimised by accurately calculating materials brought to the site and limiting materials packaging	To avoid excess materials requiring stockpiling and then disposal into landfill	Section 3.1
		The Head Contractor will take practical measures to prevent waste generation where possible, and maximise separations of recyclable where	To avoid cross contamination of materials and maximise reuse and recycling opportunities	Section 7.4
		The Site Manager will be responsible for the safe and effective management of the construction and demolition sites, from securing waste storage areas, engaging appropriate contractors and correct bin signage and monitoring	To ensure on-site safety and a site that prioritises best practice waste management	Section 7.4

Whether the activity will have adverse environmental impacts	Risk to the safety of the environment	Minimise and eliminate any potential pollution Sediment, erosion, dust, run-off by silt sock	To eliminate pollution from run-off, leakage, and littering	
Waste, including hazardous waste	Pollution of the environment	Prior to commencing any works on DoE Facility buildings, the hazardous materials (asbestos) register must be completed. The existing register is a non-destructive survey to be used as a guide. If there is any doubt, then an intrusive survey and additional sample collections and analysis is to be organised via the use of the DoE hygienist panel. If hazardous waste or special waste is encountered it must be removed/encapsulated under controlled conditions prior to the commencement of any demolition/construction work in accordance with the relevant legislation, codes of practice, and Australian Standards	To protect the environment and personnel	Section 7.3
Environmental problems of waste during and after construction (left over construction materials, and personnel waste)	Environmental problems associated with the disposal of waste	General construction and demolition wastes, and personnel waste from site offices, would be collected for off-site recycling wherever practicable	To encourage the efficient disposal of resources so as to minimise the potential adverse environmental impacts	Section 3.4 & 8
Cumulative Impacts	Cumulative impacts from waste	100 per cent reuse of useable spoil is to be reused in accordance with the waste management hierarchy	To reduce the adverse effect of cumulative waste on site and on the environment	Section 3
		A minimum 90 per cent recycling target is to be achieved for construction and demolition waste		Section 4
Proximity to waste transfer depots or landfill sites	Other relevant environmental factors	Nearest transfer depots and/or landfill sites identified	To minimise distance waste needs to travel to reduce potential for accidents, spills, etc.	Section 8

7. Onsite Management Protocols

7.1 Waste Storage and Collection

Designated waste storage areas will be established for the collection of all waste and recyclables. During the construction and demolition process, the waste storage areas will be situated away from existing students and staff and shall have appropriate signage to clearly identify the area to construction workers and to prevent unauthorised access to the area.

Stockpile size or bin numbers should be minimised by regular removal of waste from site and construction staging plans must allow for the waste storage area to move within the site as the activity progresses if necessary.

The waste storage areas do not have to be enclosed, but as an added precaution due to the activity being undertaken in a school, fencing can be erected as an extra mitigation measure. Bins should be covered where possible to prevent transmission of dust and fine particles, odour, wind impacts, vermin and vandalism or theft. Bins will be stored on a hardstand area with appropriate sediment control measures implemented to mitigate run-off into stormwater. Any spillages in the waste storage area should be treated immediately using a spill kit. Contaminated or hazardous wastes should be stored in a secure area with appropriate signage.

7.2 Site waste control and management

To ensure adequate site environmental standards are maintained, it is recommended that the following controls be implemented and enforced by the proponent:

1. All waste generated during the project is assessed, classified, and managed in accordance with the "Waste Classification Guidelines Part 1: Classifying Waste" (DECCW, December 2009)
2. The body of any vehicle or trailer, used to transport waste or excavation spoil from the premises, is covered before leaving the premises to prevent any spill or escape of any dust, waste or spoil from the vehicle or trailer
3. Mud, splatter, dust and other material likely to fall from or be cast off the wheels, underside or body of any vehicle, trailer or motorized plant leaving the site, is removed before the vehicle, trailer or motorized plant leaves the premises.

4. Appropriate control measures to eliminate/minimise the airborne emission of dust and fibres, such as:
    a. Dust screening barrier around site and relevant areas within site
    b. Cover stockpiles
    c. Water suppression
    d. Silt sock, coir logs, etc.

7.3 Hazardous Waste

During any demolition and material recovery activities, all contractors should be aware of potentially hazardous materials. Hazardous materials should be disposed of in accordance with EPA guidelines to protect the environment and personnel. In order to avoid risk to the environment and any breach of legislation all contractors involved in construction and demolition at the site will be responsible for observing the following practices:

- Early identification and reporting of hazardous waste
- Reporting of any suspicious activities of involved stakeholders (waste generator, transporter, or receiver) to including handling waste unlawfully or illegally dumping waste through the Environment Line on 131 555.
- Ensure waste is transported to a place that can lawfully accept it under Section 143 of the Protection of the Environment Operations Act 1997.
- Take all reasonable precautions and exercise due diligence at all times to prevent/minimise commission of any offence.
- Keep accurate written records such as:
    - who transported the waste (company name, ABN, vehicle registration and driver details, date and time of transport, description of waste)
    - copies of waste dockets/receipts from the waste facility (date and time of delivery, name and address of the facility, its ABN, contact person).

7.3.1. Asbestos

The DoE have a detailed Asbestos Management Plan – Asbestos Management Plan for NSW Government Schools 2015 (AMP), which should be referred to, to assist in managing and minimising asbestos related health risks to personnel working on or visiting the site. The AMP contains the following information:

- scope and limitations of the AMP
- overview of the risk assessment process
- asbestos related regulatory requirements
- organisational responsibilities
- management of in-situ asbestos containing materials
- safe working practices requirements for asbestos removal
- training, and
- emergency response procedures.

7.4 Contracts and Purchasing

Each subcontractor working on the site will be required to adhere to this C&DWMP. The Head Contractor will ensure each subcontractor:

- Takes practical measures to prevent waste being generated from their work
- Implements procedures to ensure waste resulting from their work will be actively managed and where possible recycled, as part of the overall site recycling strategy
- Implements source separation of off cuts to facilitate reuse, resale or recycling.

The Site Manager will be responsible for:

- Ensuring there is a secure location for on-site storage of materials to be reused on site, and for separated materials for recycling off site.
- Ensuring all skips/bins/stockpiles are clearly labelled identifying which material is suitable for each receptacle
- Engaging appropriate waste and recycling contractors to remove waste and recycling materials from the site
- Co-coordinating between subcontractors, to maximise on site reuse of materials
- Monitoring of bins on a regular basis by site supervisors to detect any contamination or leakage

- Ensuring the site has clear signs directing staff to the appropriate location for recycling and stockpiling station/s. And that each bin/skip/stockpile is clearly sign posted
- Providing training to all site employees and subcontractors in regard to the WMP as detailed in section 7.5 below.
- Should a subcontractor cause a bin to be significantly contaminated, the Site Manager will be advised by a non-conformance report procedure. The offending subcontractor will then be required to take corrective action, at their own cost. The non-conformance process would be managed by the Head Contractors' Quality Management Systems
- Retaining demolition and construction waste dockets to confirm and verify which facility received the material for recycling or disposal.

7.5 Training and Education

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

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

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

8. Waste Facilities

The following waste recycling facilities provide disposal options within reasonable distance to the project. It is the responsibility of the site manager to ensure that the chosen facilities can accept the material being sent to it.

BORAL RECYCLING – Wetherill Park

Contact	Materials Accepted
39a Widemere Road Wetherill Park Boral Recycling Widemere (Wetherill Park) | Boral	• Vegetation • Concrete • Bricks • Scrap Metal

REMONDIS RESOURCE RECOVERY CENTRE – Seven Hills

Contact	Materials Accepted
29 Powers Road Seven Hills Construction demolition // REMONDIS Australia (remondis-australia.com.au)	• Concrete • Iron & Steel and Other Metals • Plasterboard

CARPET TILE RECYCLING - Bankstown

Contact	Materials Accepted
617 Tower Road Bankstown Carpet Tile Recycling | cheap used carpet tiles (carpetrecyclers.com.au)	• Carpet • Vinyl

9. Conclusion

The details of this C&DWMP confirm that the waste facilities and waste strategy during the construction and demolition phases adequately supports a REF for the DoE for the upgrade of LPS. This was done through review of the potential cumulative impacts of the activity and the forecasting of any potential issues and the mitigating measures to combat these should they arise. This report confirms that any environmental issues relating to waste will not be considered a significant impact.

Appendix

Appendix 1: Definitions of construction and demolition materials

MATERIAL	DEFINITION
Brick	Clay, concrete based masonry blocks, decorative
Concrete	Unused concrete, demolition debris, reinforced concrete
Excavation	Rock and (top)soil
General Residual	Soft plastic, broken glass, styrofoam, ceramics, windows, mirrors and treated glass, lightbulbs, and certain types of wood
Green Waste	Turf, mass planting, mulch
Metal	Colourbond metal roof sheeting, metal roofing, metal clad lightweight external walls
Plasterboard	Panels used for internal walls and ceilings
Recycling Residual	Hard plastic, paper & cardboard, any other material that can be recycled but is not listed
Timber	Solid wood, engineered wood (plywood, particle board, treated wood