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SHOALHAVEN HOSPITAL REDEVELOPMENT

Construction & Demolition Waste Management Brief

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Shoalhaven Hospital Redevelopment
Construction and Demolition Waste Management Brief

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REV	DATE	DETAILS
1	22/04/2022	Draft Construction & Demolition Waste Management Brief
2	03/06/2022	Draft Construction & Demolition Waste Management Brief
3	21/07/2022	Final Construction & Demolition Waste Management Brief

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1 EXECUTIVE SUMMARY

Health Infrastructure NSW (HI) is the applicant for the proposed Shoalhaven Hospital Redevelopment at Scenic Drive, Nowra in the City of Shoalhaven Local Government Area (LGA).

The proposal is State Significant Development (SSD) for the purposes of the Environmental Planning and Assessment Act 1979 (EP&A Act) and section 14(a) of Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) as it involves development for the purposes of a hospital with a capital investment value in excess of $30 million.

The Shoalhaven Hospital Redevelopment seeks to deliver significantly enhanced acute services, as well as a new campus main entry and drop-off area.

The proposed Acute Services Building will be located south and east of the hospital's existing cluster of buildings at will address Shoalhaven Street to the hospital's east. The development is proposed to be located on the site of the existing Shoalhaven Community Pre-school (which will be separately relocated) and part of the former Nowra Park.

The proposed Shoalhaven Hospital Redevelopment under this SSD relates primarily to the development of a new hospital building and its ancillary works. The scope includes a new 7-level building of about 31,000m2 GFA, with rooftop plant and helipad, generally accommodating the following:

Level 00	Back of House (BOH), Loading Dock, Kitchen, plant, Pharmacy, Staff amenities, Mortuary, and plant.
Level 01	Front of House (FOH), Emergency Department (ED), Medical Imaging, and Cafe
Level 02	Operating Suites & Endoscopy, Central Sterile Supply Department (CSSD), and linkway to Block B
Level 03	Coronary Care Unit (CCU), Close Observation Unit (COU), Intensive Care Unit (ICU), cultural centre, and plant
Level 04	In-Patient Unit (IPU), Mental Health, and plant
Level 05	In-Patient Unit (IPU)
Level 06	In-Patient Unit (IPU)
Level 07	Rooftop plant
Level 08	Helipad

This generally results in 209 new beds and treatment spaces across a range of departments, eight new operating theatres, and two new endoscopy theatres. The works include a new ambulance entry from Shoalhaven Street, new public and servicing accessway off North Street, and separate loading dock entry and mortuary parking off Shoalhaven Street.

A range of infrastructure and civil engineering works are proposed as well as demolition of existing structures within the footprint of the new building and/or on the existing hospital campus where a new linkway connection is proposed. Earthworks will be necessitated within the building's footprint and immediate environs.

Subdivision of the balance of Lot 104 (the former Nowra Park) remaining and consolidation of the existing pre-school lot into the hospital lot is also proposed.

A number of selected trees will require removal. Other significant trees will be retained and protected. Replacement planting at a minimum rate of 1:1 is proposed.

The development's SEARs were issued by the Department of Planning and Environment on 23 February 2022.

In preparing this report, the following SEARs General Requirements and Key Issues have been addressed.

The table below sets out the reference or location of these matters within this report.

Table 1 SEARs Requirements

18. Waste Management	
General Requirement or Key Issue	**Reference / Location within this report**
• Identify, quantify and classify the likely waste streams to be generated during construction and operation.	Section 3.1 (page 5) Section 3.3.1 (page 6) Section 3.3.2 (page 7)
• Provide the measures to be implemented to manage, reuse, recycle and safely dispose of this waste.	Section 3.1 (page 5) Section 3.4 (page 8)
• Identify appropriate servicing arrangements for the site.	Section 3.5 (page 8)

2 INTRODUCTION

Client:	*Health Infrastructure*
Development Type:	*Hospital Redevelopment*
Proposed Works:	*Demolition and construction*

The following Construction & Demolition Waste Management Brief (C&D Brief) has been prepared for the proposed construction and demolition works at Shoalhaven Hospital, Scenic Drive, Nowra. The information contained within this Brief is provided as a high-level summary of typical construction and demolition (C&D) waste operations and provides estimates of C&D waste volumes generated from site works. This information shall be incorporated into the site's Construction Management Plan (CMP) as appropriate. Should C&D operations significantly differ in practice, the principal construction contractor will be responsible for documenting any significant departures from this brief.

2.1 GUIDELINES & OBJECTIVES

This C&D Brief has been prepared based on Shoalhaven City Council's Waste Minimisation and Management Guidelines and current best practice waste management methodology and technologies commonly available in Australia. The following objectives are outlined in Council's Guidelines and are acknowledged and supported by this brief:

- Minimising waste to landfill,
- Increasing resource recovery opportunities,
- Ensuring waste systems are easy to use,
- Ensuring that waste collection vehicles are able to remove waste safely without obstruction,
- Ensuring safe practices for storage and handling of waste,
- Ensuring that waste areas minimise potential for pollution from runoff and litter,
- Ensuring health and amenity for those that use or are exposed to waste facilities, and
- Ensuring waste management infrastructure is considered in the creation of subdivisions.

2.2 PROJECT DESCRIPTION

The proposed construction and demolition works are outlined in the following table.

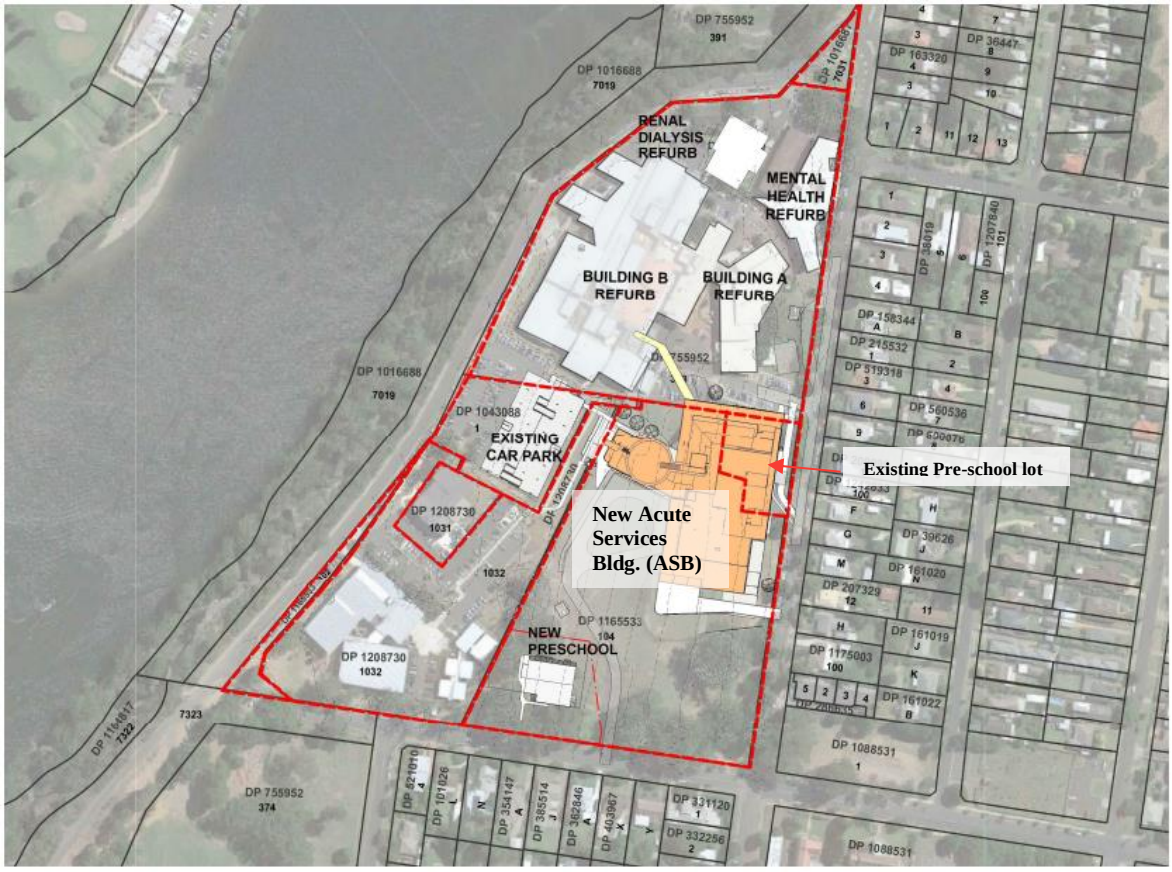
Table 2 Proposed Construction and Demolition Works

Construction Works Summary	▪ Minor earthworks (cut & fill)
	▪ Site preparation
	▪ Erection of new acute services building with loading dock
	  o 7 storeys above ground level (no basement)
	  o Appx. GFA of 31,000 m^2
	▪ External hardstands, paved areas, and landscaping

Demolition Works Summary	▪ Demolition of existing pre-school and associated structures
	  o Single story brick and weatherboard building
	  o Appx. GFA of 500 m^2
	▪ Demolition of driveway and carpark
	▪ Vegetation clearing
	▪ Minor, medium, and major refurbishment works of some existing hospital buildings

A site plan is provided below for context. Further design drawings are provided in Appendix A.

Figure 1 Shoalhaven Hospital Schematic design and lot boundaries

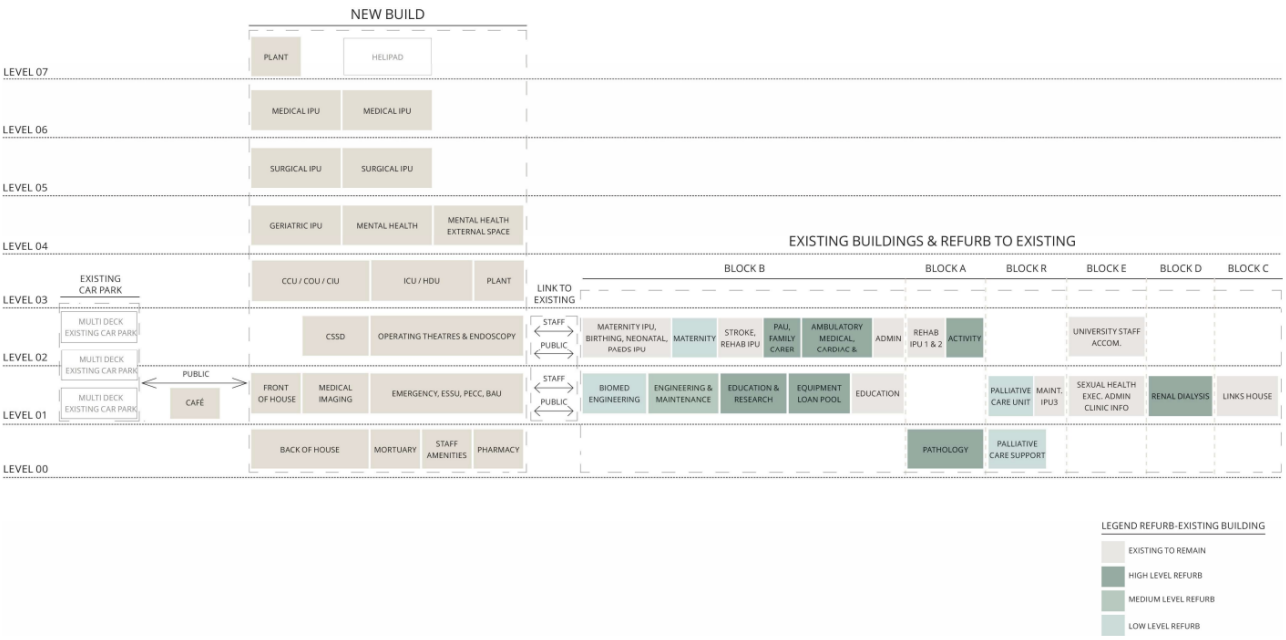


Conrad Gargett Schematic Design 06/05/2022

Figure 2 Demolition site – Shoalhaven Community Preschool & Nowra Recreation Park

JBS&G Hazardous Building Materials Survey – Site Layout

Figure 3 Overview of Hospital Construction and Refurbishment Works



3 C&D WASTE MANAGEMENT

3.1 C&D WASTE STREAMS

Construction and demolition (C&D) debris is a separate waste stream from municipal solid waste (MSW), and includes such materials as steel, timber, plasterboard, brick, and concrete.

All wastes generated throughout construction and demolition activities are to be effectively stored, handled, treated, reused, recycled and/or disposed of lawfully and in a manner that minimises environmental harm. As a guiding principle, waste should be managed in accordance with the waste hierarchy, in order to maximise waste diversion from landfill.

In the context of the subject works, the approach of the waste hierarchy can be generally considered as:

- Re-use (Onsite): Direct and immediate re-use of materials onsite as part of subsequent construction activities.
- Re-use (Offsite): Re-use of materials offsite under separate construction activities unrelated to the subject development.
- Recycle: Volumes sent to an off-site facility to be recycled into new products and/or on-sold for further use.
- Dispose: Volumes sent to landfill / clean fill for end disposal. Materials not harnessed for any further use.

The following table outlines typical C&D waste materials and opportunities for recovery.

Table 3 Typical C&D Waste Materials

Waste Stream	Reuse and Recycling Options	
	Reuse	Recycle
Bricks	Cleaned and/or rendered for reuse on-site or off-site. May also be crushed for use as fill.	Transported to a C&D waste recycler for crushing / recycling into recovered products.
Concrete / Ceramics / Fines	May be crushed on-site for application as fill / gravel or used off-site for other projects.	Transported to a C&D waste recycler for crushing / recycling into recovered products.
Excavation Material	Reused on site as fill or transported to a C&D waste recycler for recovery as fill under separate use.	N/A
Glass	N/A	Transported to a glass waste recycler for crushing / recycling into recovered products (e.g., aggregate for concrete).
Green Waste	Can be mulched onsite & applied to any existing green areas (e.g., for landscaping).	Transported to a recovery facility for processing into a mulch or compost material.
Metals	N/A	Transported to a metals waste recycler for melting and moulding into secondary products (e.g., piping).
Plasterboard	May be crushed on-site for application as fill / gravel or used off-site for other projects.	Transported to a C&D waste recycler for crushing / recycling into recovered products.
Roof Tiles	Can be cleaned and reused in its original form on site or off site for other projects. Otherwise, may be crushed for reuse in landscaping.	May be transported to a recovery facility for crushing / recycling into recovered products.
Timber (untreated)	Hardwood beams may be reused as floorboards, fencing, furniture, etc. Other timber materials may be mulched and used on site for landscaping.	May be transported to a recovery facility for chipping and processing into a mulch or compost material.

3.2 C&D WASTE DIVERSION TARGETS

As per standard industry practice, a minimum 80% diversion rate from landfill for waste generated from construction and demolition activities should be targeted across the subject site. This is further outlined and supported in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021 (superseded), and NSW Waste and Sustainable Materials Strategy 2041.

The following sections provides high-level estimates for the volumes of construction and demolition waste anticipated to be produced by this project. Note that more accurate estimates may be provided by the quantity surveyor or head contractor.

3.3 C&D WASTE VOLUME ESTIMATES

Estimated volumes of construction and demolition waste materials have been calculated based on information provided in the following reference documents:

- Shoalhaven City Council - Waste Minimisation and Management Guidelines (2019)
- Camden Council Waste Management Guidelines (2019)
- WALGA Construction Waste Management Plan Guidelines (2014).
- The Hills Development Control Plan (2012)

It is acknowledged that the estimated C&D waste volumes in the following tables have been reviewed by our client and may be updated when more accurate estimates are received by the relevant personnel (e.g., head contractor or quantity surveyor).

3.3.1 CONSTRUCTION PHASE

Construction works will usually generate waste through the erection and finishing of the development (i.e., construction waste). A CMP (to be prepared by others) should include a detailed C&D waste strategy in line with the head contractor's program and trades scheduling.

Most waste products generated throughout construction works can be readily recycled or reused, and include steel framing, damaged glazing, cladding and roof sheeting, plasterboard linings, timber features and framing, metals, concrete and rubble. Metal and plastic piping and conduits, cabling and floor finishes such as carpet and tiling should also be recovered.

Accurate materials estimation and ordering, offsite prefabrication of framing modules and fitout components, and monitoring and review of specifications and onsite construction and fitout operations will minimise the potential volume of construction waste to be generated in the first instance.

Wherever possible, construction waste will be stored and sorted on-site, including on-site collection zones for each waste stream. Any waste skips be stored in public places will be done so in accordance with Council policy.

Subcontractors and other site personnel should be educated regarding requirements for recovery of waste. This will assist in maximising recovery of resources from C&D waste on-site and minimise the cost and environmental impacts of waste being disposed to landfill.

A high-level estimate of waste volumes generated throughout proposed demolition works is provided in the table below.

Table 4 Estimated Construction Waste Materials

Waste Stream	Estimated Tonnage	% Typically Recovered	Estimated Diversion from Landfill (t)	Nearby Resource Recovery Facility
Brick	408	100%	408	Wingecarribee Resource Recovery Centre
Concrete	1128	100%	1128	Wingecarribee Resource Recovery Centre
Timber (untreated)	38.8	33%	12.8	Wingecarribee Resource Recovery Centre
Metals	55	100%	55	Sell & Parker Metal Recycling
Tiles	344	100%	344	Wingecarribee Resource Recovery Centre
Other Waste	60	0%	0	NA - landfilled
Total	**2033.8**	Total	**1947.8**	
		% Diverted from Landfill	**95.8%**	

*The percentage of construction materials typically recovered from site is previously advised by BINGO and based on their average quantities of materials received and recovered at their facilities.

3.3.2 DEMOLITION PHASE

Demolition works will usually generate waste through the demolition or deconstruction of existing structures on the subject site. This may also include clearing of vegetation (generating green waste) as the site is prepared for construction works.

Many waste products generated throughout demolition works can be recycled or reused, and may include bricks, steel framing, timber features, roof sheeting or tiles, concrete, and/or plasterboard. Where possible, deconstruction or disassembly of existing structures should be enacted in order to retain the integrity of the materials for future reuse.

To improve resource recovery of demolition/deconstruction materials, on-site sorting and storage of the various waste streams must be provided in dedicated receptacles (e.g., skip bins) or stockpile areas. Waste skips shall be stored on site unless granted permission by the relevant authority to utilise public space.

Consideration of reusing a portion of these materials in the construction phase should also be reviewed by the head contractor, such as crushing concrete for clean fill. This will aid in the recovery of resources, as well as reduce costs associated with disposal, transportation, and the purchase of new materials.

The demolition contractor will be responsible for ensuring all planned demolition/deconstruction activities are undertaken in accordance with relevant waste policies and local Council requirements. They will also be responsible for educating subcontractors and other site personnel regarding procedures for recovery of waste.

A high-level estimate of waste volumes generated throughout proposed demolition works is provided in the table below.

Table 5 Estimated Demolition Waste Materials

Waste Stream	Estimated Tonnage	% Typically Recovered*	Estimated Diversion from Landfill (t)	Nearby Resource Recovery Facility
Green Waste	1500	80%	1200	Wingecarribee Resource Recovery Centre
Concrete	102	100%	102	Wingecarribee Resource Recovery Centre
Timber (untreated)	18	33%	5.9	Wingecarribee Resource Recovery Centre
Plasterboard	7.8	50%	3.9	Wingecarribee Resource Recovery Centre
Metals	27.5	100%	27.5	Sell & Parker Metal Recycling
Other Waste	9.2	0%	0	NA - landfilled
Total	**1664.5.4**	Total	**1339.3**	
		% Diverted from Landfill	**80.5%**	

*The percentage of demolition materials typically recovered from site is previously advised by BINGO and based on their average quantities of materials received and recovered at their facilities.

3.4 WASTE STORAGE

Waste must be segregated on site into different skips / receptacles based on material type, in order to maximise recovery and increase diversion from landfill. Bins or storage areas should be clearly signed and conveniently located to enable accessibility on site for transportation.

Skip bins or other designed waste receptacles should be adequately sized to receive anticipated construction waste or demolition debris. Quantity of bins/receptacles must also be sufficient to effectively store the materials. It will be the responsibility of the head contractor or designated site personnel to arrange a private contractor to service the bins on a regular basis.

3.5 WASTE COLLECTION

Waste collection will be undertaken by private collection contractors on an as-needed basis. Vehicle sizes and on-site access will be in accordance with the Construction Traffic Management Plan.

The principal contractor will be responsible for positioning waste stockpiles / bins / skips throughout the site such that collections can be readily undertaken. WSP anticipate that collection vehicles will generally be undertaken by Heavy Rigid Vehicles (12.5m length, 4.5m operating height) or smaller.

3.6 CONSIDERATION FOR ADDITIONAL WASTE STREAMS

3.6.1 PACKAGING STREAMS

Packaging waste streams will be generated through material procurement and consumption. These streams will be collected under a separate system to the construction streams by suitably licensed private contractors.

3.6.2 DOMESTIC STREAMS

Domestic waste streams will be generated through activities of trades staff on site. These streams will be collected under a separate system to the demolition streams, either through a Council service (subject to negotiations with Council) or suitably licensed private contractors.

3.6.3 HAZARDOUS STREAMS

Chemical and hazardous waste will be managed, stored, and collected in accordance with appropriate standards. Storage areas will only be accessible by authorised personnel.

The management of any hazardous / chemical waste is not addressed in this report. Refer to the JBS&G Hazardous Buildings Materials Survey report for details relating to hazardous materials management.

4 SUPPLIER CONTACT INFORMATION

A complimentary listing of contractors and equipment suppliers is provided below for your reference. You are not obligated to procure goods/services from these companies. This is not, nor is it intended to be, a complete list of available suppliers. WSP does not warrant (or make representations for) the goods/services provided by these suppliers.

Table 6 Supplier Contact List

Service Type	Contractor / Supplier Name	Phone	Website
Private Waste Collectors (C&D Waste)	Bingo Bins	1300 424 646	www.bingoindustries.com.au
	Transwaste Skips	(02) 9746 8333	www.transwaste.com.au
	Brown Brothers Skip Bins	(02) 9999 6466	www.brownbrosbins.com.au
	Cobra Waste Solutions	1300 484 448	www.cobrawaste.com.au
Off-Site Recycling Facilities	Wingecarribee Resource Recovery Centre	02 4868 0888	www.wsc.nsw.gov.au
	Sell & Parker Metal Recycling	0417227677	www.sellparker.com
	Bingo Recycling Center, Kembla Grange	1300 424 646	www.bingoindustries.com.au
	SCE Recycling, Warrawong	02 4274 9077	www.bingoindustries.com.au

APPENDIX A

SITE PLANS