

Griffith Base Hospital Redevelopment

Construction Waste Management Plan

For the State Significant Development Application: SSD-9838218

1 February 2021

Rev_1



1 February 2021



waste less, achieve more

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Version	Drafted	Reviewed	Released
Rev_0	J. Campbell	A. Bremner	28 January 2021
Rev_1	J. Campbell	A. Bremner	01 February 2021

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1 Introduction

This Construction Waste Management Plan (CWMP) details the management of waste generated during the demolition and construction phases of the Griffith Base Hospital redevelopment (GBH). It has been prepared by Encycle Consulting to address those parts of the Secretary's Environment Assessment Requirements (SEARs) for construction & demolition waste generation and management associated with the GBH redevelopment project. The relevant part of the SEARs is Section 4.12(8) of the *Environmental Planning and Assessment Act 1979*, Schedule 2 of the Environmental Planning and Assessment Regulation 2000 is:

19. Waste

- *Identify, quantify and classify the likely waste streams to be generated during construction and operation*
- *Describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste*
- *Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones, mechanical plant) for the site.*

The scope of the SSDA includes the following:

- Demolition of buildings 1, 2, 6, 15, 16, 17, 19, 20, 22, 25, 28, 29, 31, 35
- Demolition of temporary car park
- Construction of new Clinical Services Building
- Construction of new main car park and new western car park
- Landscaping work

This CWMP:

- Provides a description of the likely waste streams to be generated during demolition/site clearing and construction of the new development;
- Describes the measures to be implemented to manage, reuse, recycle and safely dispose of this waste; and
- Identifies appropriate servicing arrangement for the site.

Note that the operational waste elements of the Griffith Base Hospital redevelopment is covered in a separate Operational Waste Management Plan

Management strategies reflect current best-practice requirements and relevant Sections of the *Protection of the Environment Operations Act 1997* and the NSW Environment Protection Authority *Waste Classification Guidelines, Part 1: Classifying Waste*. The NSW EPA's *Construction and demolition waste - A Management toolkit 2020* has been considered in the development of this CWMP and the CWMP is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021.

This CWMP addresses the appropriate segregation, containment and disposal of waste as required, with minimising the impact to the environment being the primary focus. To assist management in achieving effective waste and recycling management, this CWMP has two key objectives:

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- i. **To minimise the environmental impacts of the demolition and construction waste on the environment** – this will be achieved by working towards diversion of waste from landfill where possible; correct containerisation and transport of materials; correct segregation of materials into appropriate management streams; awareness among principal contractors' staff and their sub-contractors;
- ii. **To ensure that all demolition and construction waste is correctly managed and disposed of/recycled at appropriately licensed facilities** – this will be achieved by ensuring all contractors and sub-contractors are compliant with relevant legislation and licensing requirements

2 Description of the redeveloped Griffith Base Hospital

The GBH redevelopment project involves the demolition of existing hospital buildings within the hospital campus, to be replaced by a new, integrated hospital. The buildings that will be demolished are set out in Figure 1.



Figure 1: Buildings at the existing hospital to be demolished

The redeveloped hospital will provide the following services:

Inpatient:

- Surgical/Medical
- Obstetrics
- Special Care Nursery
- Nursery Cots (Bassinets)
- Paediatrics
- Paediatrics – day only
- Critical Care Unit – (ICU/HDU/CCU)
- Aged Care and Rehabilitation Unit

Emergency and Ambulatory Services:

- Emergency resuscitation bays
- Emergency observation/treatment bays
- Emergency Short Stay Unit (EMU or SSU)

Chair based services:

- Renal Dialysis
- Chemo/Oncology
- Dental
- HiTH non-admitted
- Outpatient consult & treatment rooms - Onsite
- Outpatient consult & treatment rooms - Onsite
- Outpatient consult & treatment rooms - Offsite
- Ambulatory Care Therapy Rooms/Gymnasium -Outpatient
- Ambulatory Care Therapy Rooms/Gymnasium -Outpatient
- Ambulatory Care Therapy Rooms/Gymnasium -Outpatient
- Ambulatory care procedure/treatment rooms
- Day Medical Only

Other Service delivery units (not including imaging and support services):

- Operating Theatres
- Procedure Room
- Recovery – Stage 1
- Recovery – Stage 2
- Recovery – Stage 3
- Birthing Room
- Maternity Assessment Room

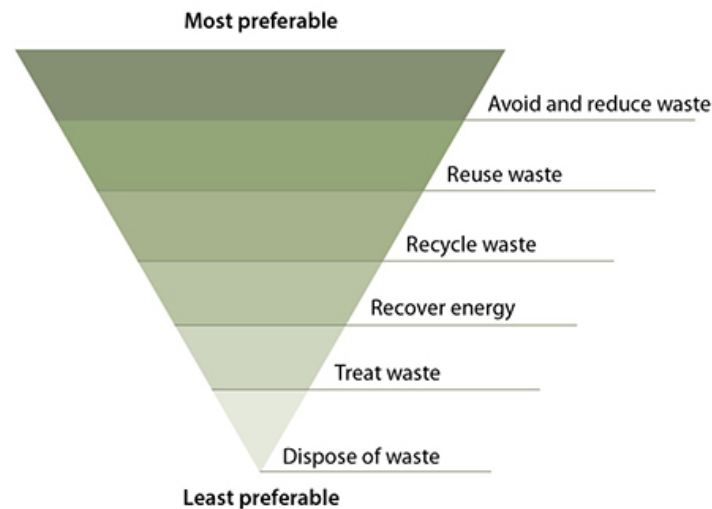
Medical Imaging:

- Digital Orthopantomogram (includes for dental) – 1
- Ultrasound – 3
- Fluoroscopy – 1
- SPECT – 1
- MRI – as “Warm Shell”

3 Waste management principles and practices

3.1 Key principle: the waste hierarchy

The following waste management hierarchy¹ has been used as a guiding principle in the development of this CWMP:



The idea of the waste hierarchy is that waste can be avoided by designing processes so that they do not rely on the generation of waste (e.g. avoiding 'disposable' items). Avoiding waste is the most preferable option as it has minimal impact upon the environment through the production, transport and disposal of a product.

Where waste is not avoided, the next most preferable option is to reuse products over again rather than opting for 'single use'.

If a disposable item is used, the next option in order of preference is to ensure that the materials can be recovered and recycled into new products.

The least preferable options are to (where possible) recover energy from the materials through incineration (which destroys the materials) or lastly to dispose of the materials to landfill. This option is least preferable as the materials and the 'embodied' energy used in their manufacture and transport is lost and potentially, result in the pollution of groundwater and release of methane (a powerful greenhouse gas).

3.2 Management and storage of waste

During both the demolition and construction phases, waste will be generated on site in distinct material phases as each part of the process progresses (e.g. rock and soil from excavation in the demolition and early site works phases and then later will come materials like timber from packaging and installation of internal fittings and equipment).

¹ <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy>

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Semi-trailers, bins, skips and other site receptacles will be planned and located around the site according to the phase of the demolition and construction and the materials types and quantities being generated.

The appropriate types of receptacles will be leased to the site contractor by the waste service provider as needed. Bins will be coloured and fitted with signage so that site staff are easily able to use the correct bins.

3.3 Communication/education

Education/training materials will be developed to communicate the correct processes for disposal of waste and recyclable materials on site. The educational material will be used and will include specific details such as signage and who to contact to resolve issues that may arise.

All staff working on site will be required to understand the relevant aspects of correct waste management on site and the site targets for waste minimisation and recycling.

3.4 Record keeping and data management

The demolition contractor and construction site manager will work with the waste service providers and receiving facilities to obtain data and information to monitor and evaluate the volumes of material sent for recycling/disposal and to calculate recycling rates. Dockets can be audited from the waste service provider as needed to verify that correct disposal/recycling has occurred.

4 Demolition Waste Management Plan

4.1 Estimated waste generation and management

Table 1 shows the high-level estimated volume of waste anticipated to be generated from the demolition phase of GBH.

These waste volume figures are based on estimates made by the Quantity Surveyor (MBM).

The site is at a rural location with no nearby major conurbations. With the exception of metal recycling, no other recycling facilities are available (nearest C&D recycling facilities is over 300 km away). Some metal recovery is available at the local landfill. Options for treatment (e.g. crushing/mulching) and reuse on site will be investigated and implemented where possible. Remaining material that is not able to be reused on site will be sent to the local landfill.

Table 1: Estimated volume (m³) and destination of materials from the demolition phase

Material type	Estimated volume (m ³)	Treatment (reuse, recycling, disposal)
Excavation material (bulk earthworks / excavation in rock)	20,000	Re-use: Proportion can be combined with externally-sourced material for reuse on site as fill Disposal: Remainder to inert landfill
Hazardous waste	2,300	Hazardous disposal at licensed landfill
Hard materials (concrete, bricks, asphalt, roof tiles)	7,500	Reuse: Can be crushed on site for fill where possible Disposal: remaining material to landfill
Metals	16	Recycled: sent to local metal recovery
Plastics/vinyl	644	Disposal: sent to landfill (not recycled locally)
Timber (treated/untreated)	260	Assessed and segregated into treated/non-treated. Untreated timber – Mulched on site for use on landscaped areas Treated timber: Disposal to landfill
Plasterboard	180	Disposal: sent to landfill (not recycled locally)
Glass	170	Disposal: sent to landfill (not recycled locally)
Carpet	170	Disposal: sent to landfill (not recycled locally)
Other (e.g. sanitary ware, joinery, fixtures, services plant equipment etc.)	400	Disposal: sent to landfill (not recycled locally)
Total (m³)	31,240	

4.2 Asbestos and other hazardous waste

Some materials may not yet have been identified (e.g. asbestos, acid sulphate soils) and may be discovered during the demolition or excavation process. If hazardous or special wastes are discovered, these will be classified and treated as state government requirements: *Protection of the Environment Operations Act 1997* and *Protection of the Environment Operations (Waste) Regulation 2014*.

If asbestos is found to be present in any of the buildings to be demolished, the demolition contractor will arrange to dispose of the material at an appropriate waste management facility and comply with all relevant requirements for the handling, transport and disposal of asbestos.

5 Construction Waste Management Plan

5.1 Estimated waste generation and management

The GBH project does not yet have a construction contractor engaged to determine estimates of construction waste. In the interim, estimates of waste generation have been calculated, based on a standard rate for a healthcare facility construction of 19.1 m³ per 100 m² of building². The breakdown by material is based upon standard percentages from Sustainability Victoria³.

Table 2 shows the high-level estimated volume of waste anticipated to be generated from the construction phase of GBH.

The site is at a rural location with no nearby major conurbations. With the exception of metal recycling, no other recycling facilities are available (nearest C&D recycling facilities is over 300 km away). Some metal recovery is available at the local landfill. Options for treatment (e.g. crushing/mulching) and reuse on site will be investigated and implemented where possible. Remaining material that is not able to be reused on site will be sent to the local landfill.

Table 2: Estimated volume (m³) and destination of materials from the construction phase

Material type	Estimated volume (m ³)	Treatment (reuse, recycling, disposal)
Hard materials (concrete, rubble, etc.)	1,690	Reuse: Can be crushed on site for fill where possible Disposal: remaining material to landfill
Timber (treated/untreated)	1,270	Assessed and segregated into treated/untreated. Untreated timber – Mulched on site for use on landscaped areas Treated timber: Disposal to landfill
Plastics	790	Disposal: sent to landfill (not recycled locally)
Cement sheet	480	Disposal: sent to landfill (not recycled locally)
Plasterboard (gypsum)	320	Disposal: sent to landfill (not recycled locally)
Metals	320	Recycled: sent to local metal recovery
Paper/Cardboard	210	Disposal: sent to landfill (not recycled locally)
Vegetation	160	On-site recycling: where possible vegetation will be mulched/composted and used in landscaping Disposal: if on-site recovery is not possible, material will be sent to landfill
Soil	50	On-site recycling: where possible soil will be reused in landscaping

² UK Building Research Establishment: Waste Benchmarks for New Build Projects by Project Type (31 May 2012)

³ Sustainability Victoria Waste Wise Toolkit (2013)

Material type	Estimated volume (m ³)	Treatment (reuse, recycling, disposal)
		Disposal: if on-site recovery is not possible, material will be sent to landfill
Other (general waste)	20	Disposal: sent to landfill (not recycled locally)
Hazardous waste	negligible	Unlikely to be generated, but specific treatment measures will be applied as appropriate
Total (m ³)	5,310	

5.2 Asbestos and other hazardous waste

The construction phase is not anticipated to use materials that would generate hazardous waste. However, if hazardous or special wastes are identified, these will be classified and treated as per state government requirements: *Protection of the Environment Operations Act 1997* and *Protection of the Environment Operations (Waste) Regulation 2014*.