NSW Health Infrastructure

Blacktown - Hospital Redevelopment Stage 2

Waste Management Plan

15 June 2016

Partner:

When you think with a global mind problems get smaller

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Blacktown - Hospital Redevelopment Stage 2

Prepared for
NSW Health Infrastructure

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1. Introduction

In March 2012, the NSW Premier and Minister for Western Sydney and the Minister for Health announced that the NSW Government would commit $300 million to the expansion of Blacktown and Mt Druitt Hospitals.

The expansion program at the Blacktown Hospital campus is being undertaken across three stages. Stage 1 involved the construction of the new Clinical Services Building which opened on 11 April 2016. A separate Sub-acute Mental Health facility, a new multi-storey car park and refurbishment of the existing main hospital building have also been completed as part of Stage 1.

Stage 2 of the Blacktown Hospital redevelopment is being delivered in several packages, and the development approval is being conducted as Staged State Significant Development in accordance with Section 83B of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

An environmental impact statement (EIS), prepared by JBA Urban Planning Consultants dated October 2015, was submitted to the Department of Planning and Environment (the Department) in support of an application for State Significant Development (SSD) for the staged development of a new Acute Services Building (ASB) at Blacktown Hospital under Section 83B of the Environmental Planning and Assessment Act 1979 (EP&A Act). The proposal sought concept approval for the envelope of the new ASB, and detailed consent for enabling works including excavation and shoring of the building footprint. The concept approval and construction enabling works SSD Application was approved by the Department on 5 April 2016.

The Early Works Package 2 is being completed in preparation Stage 2 and comprises construction works consisting of shoring and bulk excavation from ground level.

The Blacktown Hospital redevelopment is now moving into the Stage 2 scope of works for provision of the ASB. A second SSD EIS is therefore required to be lodged in June / July 2016 for construction of the ASB and associated works as described in Section 2.2. The Secretary's Environmental Assessment Requirements (SEARs) to be addressed in the EIS with regards to waste management, include the following:

- Identify, quantify and classify the likely waste streams to be generated during construction and operation and 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 ASB waste management plan (this plan) describes how wastes associated with construction and operation of the building will be managed, and has been prepared in response to the SEARs for the EIS being prepared to support the SSD application.

1.1. Objectives

The objectives of this plan are to:

- Identify, quantify and classify the likely waste streams to be generated and the potential impacts of these waste streams during construction and operation of the ASB.
- Describe the measures to be implemented to manage, reuse, recycle and safely dispose of the waste streams from construction and operation of the ASB.
- Identify appropriate servicing arrangements for construction and operation waste created on site.

The objectives are consistent with the SEARs requirements for waste management relevant to construction and operation works.

1.2. Scope

This plan provides an assessment of the potential waste impacts of the construction and operation of the ASB to inform the EIS for the Stage 2 Blacktown Hospital redevelopment.

This plan will also be used to inform the development of a more detailed waste management plan which will be prepared by the contractor prior to construction commencing and also to update the Western Sydney Local Health District (WSLHD) Waste Management Policy Manual for operation of the ASB.

2. Project description

This section discusses elements of the project in order to identify the waste streams from the project.

2.1. Project background

The Blacktown Hospital campus was first developed in the 1960s and then redeveloped and expanded in the 1990s. The $312 million Blacktown and Mount Druitt Hospitals (BMDH) Expansion Project Stage 1, approved by the Minister for Planning in 2012, is now complete, with the commissioning of a new clinical services building at Blacktown Hospital in April 2016.Stage 1 at Blacktown Hospital included:

- Extensive internal refurbishment in the existing hospital building, infrastructure upgrades, and road and public domain improvements.
- A new seven storey clinical services building and entry forecourts.
- New sub-acute mental health unit (Melaleuca Unit).
- Alterations to the existing main hospital building.
- Construction of an internal hospital street.
- Site landscaping.
- Permanent access from Blacktown Road.
- Additional parking.

Other works have also been approved under Part 5 of the EP&A Act, including the addition of a 20-bed mental health facility and various civil works.

Stage 2 of the hospital redevelopment is being undertaken in several packages, including:

- **Early Works Package 1 and Regional Renal Dialysis Centre (RRDC).** These works included service diversions, internal road reconfiguration, and demolition works (demolition of the RRDC and Oncology building). This development was assessed in a separate planning application and a separate waste management plan was prepared for this package.
- **Early Works Package 2.** These works included bulk excavation and shoring works required for the Main Stage 2 ASB construction. The early works package was assessed as State Significant Development (SSD) and a separate waste management plan was prepared for this package as part of the Environmental Impact Statement (EIS) to support the SSD planning application.
- **Main Building Package.** The subject of this plan. These works will include the construction of the Main Stage 2 ASB, localised refurbishment of the existing main building, and internal connection to the existing Main Building and Stage 1 redevelopment.

2.2. Stage 2 main building package works

The Stage 2 expansion at the Blacktown Hospital comprises:

- Construction of a new nine storey ASB (floor area of approximately 36,000 m²), including the following critical services and facilities:
  - Emergency department.
  - Intensive care unit.
  - Operating suite.
  - Sterile supply.
  - Birthing suite.
  - Newborn care.

  - Maternity and women's health inpatient units.
  - Paediatric inpatient unit.
- New entry atrium to connect the existing hospital building and Stage 1 CSB to the new Stage 2 ASB. The atrium will include a new patient drop-off and forecourt area as the main entry point.
- Provision of new patient drop-off and ambulance bay at the entry to the emergency department.
- Bridge link and tunnel connections to existing building, Stage 1 CSB and multi story car park.
- Provision of engineering services connected to the infrastructure completed under Stage 1 Early Works Package (Road and Service Diversions).

The following engineering services will be provided within the ASB:

- Hydraulic services such as stormwater, subsoil and roof drainage, sewer connections, water pumps, pipework, fire hydrant and domestic cold water storage tanks and gas meters.
- Fire services such as sprinkler systems, isolation valves, pipework, fire alarm monitoring network and alarm signalling equipment.
- Mechanical and medical gas services such as air handling, smoke management, pneumatic tube system, medical gas, medical breathing and oxygen services.
- Electrical services such as main switchboards, building switchboards, distribution boards, generators, lighting, power, nurse call systems and new uninterrupted power supply.
- New Endeavour Energy 3x 1500kVA transformer substation located south of the Stage 2 ASB.

The Stage 2 expansion will also involve refurbishment to existing hospital areas (approximately 4,700m²), including:

- Conversion of the existing emergency department into ambulatory care.
- Refurbishment of the existing medical imaging.
- Refurbishment of the existing inpatient dialysis unit.
- Conversion of 50 per cent of the existing operating suite into an endoscopy procedure suite.
- Refurbishment of pathology into an administration unit.

2.3. Project location

The Blacktown Hospital campus is located at 18 Blacktown Road, Blacktown within the Blacktown City Council Local Government Area (LGA).

The campus has an area of approximately 13 ha with access via Blacktown Road and Marcel Crescent/Panorama Parade. There is a height variation across the site of between 22 to 28 m with high points located in the south of the site and a low point located near Marcel Crescent.

The location of the proposed ASB within the Blacktown Hospital site is shown in Figure 1.

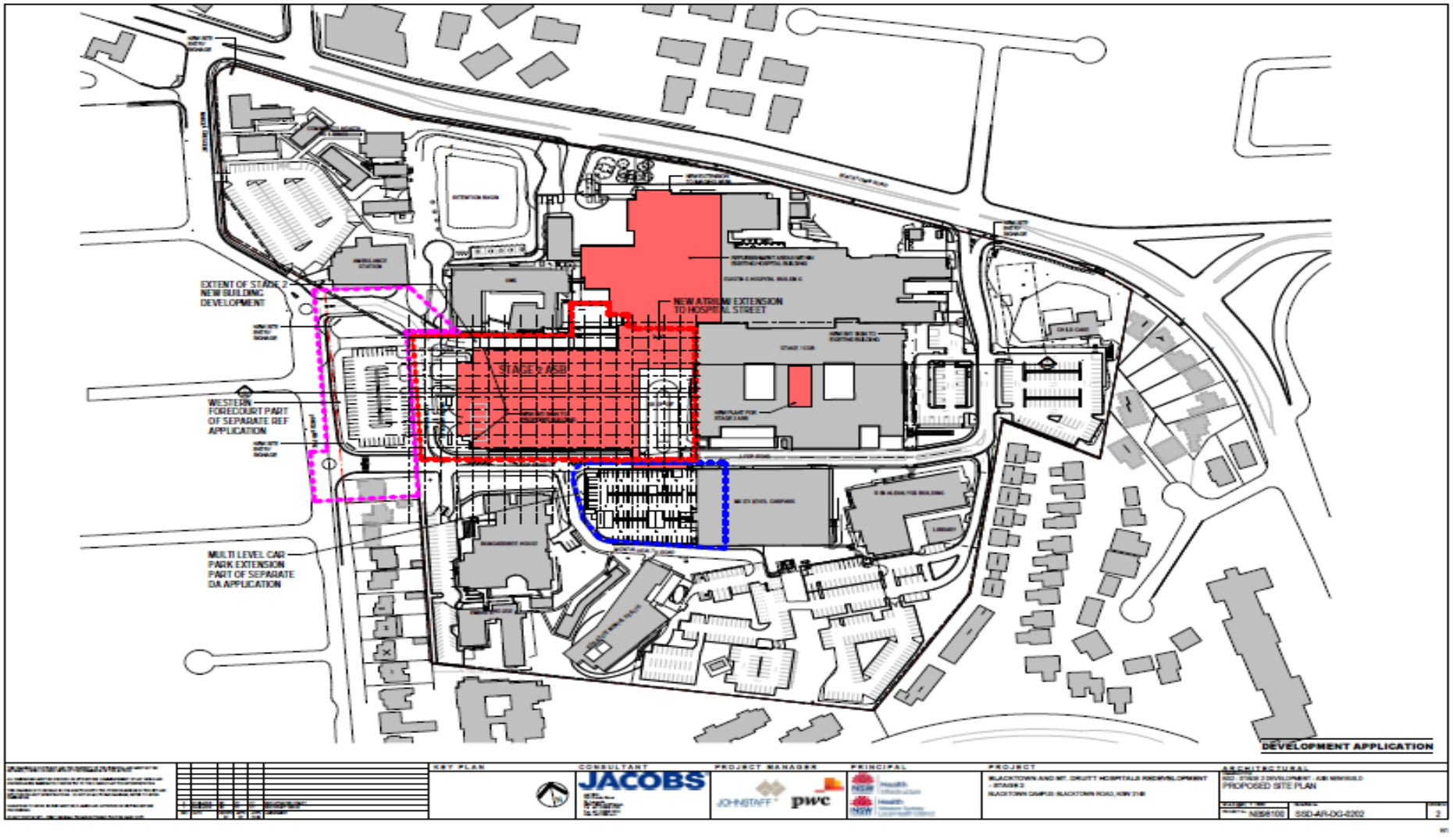

Figure 1 Main building construction footprint and location within Blacktown Hospital site.

2.4. Summary of contamination assessment findings

A preliminary environmental site assessment was undertaken by Environmental Investigation Services in July 2014 (EIS, 2014) in the eastern half of the Blacktown Hospital site (the Stage 2 redevelopment area).

Soil samples were collected at 13 locations, covering an area of approximately 1.2 ha including the car park directly east of the Regional Dialysis Centre (RDC) and Oncology buildings, locations around the RDC and Oncology buildings and the proposed site compound area.

Selected samples were tested for heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphorus pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.

The investigation found the site surface consisted of a combination of concrete of between 90 mm and 160 mm thickness and asphalt of between 20 to 70 mm. Grass was present in some landscaped areas surrounding the RRDC and Oncology buildings. The site surface was underlain by fill material, comprising of a combination of gravel, sandy gravels and clayey gravels. The fill material was present beneath the surface of the site at depths ranging from 0.3 to 2.5 m. This material was underlain by natural silty clays extending from depths of approximately 1.5 to 4.5 m. Shale bedrock was encountered beneath the natural soils to a maximum auger depth of 10.5 m. No groundwater was intercepted in boreholes during drilling. Standing water level (SWL) was observed in many of the boreholes on completion of rock coring. Potable water was introduced during coring and the SWLs are not considered to be a true representation of actual groundwater levels.

Waste classification of the samples collected during the investigation found that fill material at the site is likely to be classified as general solid waste (non-putrescible) in accordance with the NSW EPA Waste Classification Guidelines. Fill material would be suitable for disposal at an appropriately licensed facility or could be reused on-site provided it meets geotechnical requirements.

According to the investigation undertaken by Environmental Investigation Services, bedrock and natural soils met the classification of virgin excavated natural material (VENM) and could be disposed of as VENM to an appropriately licenced facility, or reused onsite. The information provided in the report by Environmental Investigation Services could also be used to assess whether the material is suitable for beneficial reuse at another site as fill material.

VENM is defined in the *Protection of Environment Operations Act 1997* (POEO Act) as:

- Excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities.
- Does not contain any sulfidic ores or soils or any other waste.

The report by Environmental Investigation Services identified the potential for contaminating activities on the site. These are a 5,000 L underground storage tank (UST) on Level 1 of the bulk diesel storage area of the main building and the potential presence of an on-site incineration facility.

The above contamination issues have been addressed as part of the Early Works Package 2 for the Stage 2 Redevelopment of Blacktown Hospital in a Materials Tracking Protocol (MTP) (JBS&G, 2015). The MTP ensures the quantity and quality of materials movement, from temporary storage to offsite disposal/beneficial reuse is documented.

3. Legislative context

Legislation relevant to the management of waste in New South Wales is discussed in the sections below.

3.1. Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) is the key environmental protection legislation for NSW. The Act defines 'waste' for regulatory purposes and establishes licencing and management requirements for waste.

The POEO Act covers environment protection offences and penalties relating to waste. Under the POEO Act, hazardous materials and waste cannot be permitted to leak to land or water, or be dumped on land or in water in a manner that harms or has the potential to harm the environment.

3.2. Protection of the Environment Operations (Waste) Regulation 2014

The Protection of the Environment Operations (Waste) Regulation 2014 (2014 Waste Regulation) sets out the provisions for waste management including tracking of certain types of waste, transportation of waste including asbestos waste, recycling of consumer packaging and classification of waste containing immobilised contaminants, as well as reporting and record keeping requirements for waste facilities.

Under the regulations, the Environment Protection Authority (EPA) has the power to grant exemption from some of these requirements where it can be demonstrated that the waste can be safely used for another purpose. A number of resource recovery orders and exemptions under the regulations are currently in force in NSW. Of relevance to this project are current the exemptions in place for excavated natural material (ENM), excavated public road material, raw mulch, reclaimed asphalt pavement and recovered aggregate.

3.3. Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) establishes the waste hierarchy and requires that resource management options are considered against the following priorities:

1. **Avoidance** – actions to reduce the amount of waste generated and undertaking activities.
2. **Resource Recovery** – including reuse, reprocessing, recycling and energy recovery, consistent with the most efficient use of the recovered resources.
3. **Disposal** – an "end-of-pipe" option that must be undertaken carefully to minimise any negative environmental outcomes.

The NSW Government's priority areas and actions for waste avoidance and resource recovery are outlined in the NSW Waste Avoidance and Resource Recovery Strategy 2014 to 2021. The six identified "key target areas" in the strategy are:

1. Avoid and reduce waste generation.
2. Increase recycling.
3. Divert more waste from landfill.
4. Manage problem wastes better.
5. Reduce litter.
6. Reduce illegal dumping.

The strategy also includes the following recycling targets (as relevant to the proposed works at the site):

- Increased recycling of municipal solid waste from 52% (2010 to 2011) to 70%.
- Increased recycling of commercial and industrial waste from 57% (2010 to 2011) to 70%.
- Increased recycling of construction and demolition waste from 75% (2010 to 2011) to 80%.

In summary, the waste management hierarchy (Figure 2) is a nationally and internationally accepted guide for prioritising waste management practices with the objective of achieving optimal environmental outcomes. The hierarchy sets out the preferred order of waste management practices, from most to least preferred and is a key element for guiding waste management practices in Australia. At the same time, the need for flexibility in the approach is recognised, taking into account local and regional economic, social and environmental conditions.

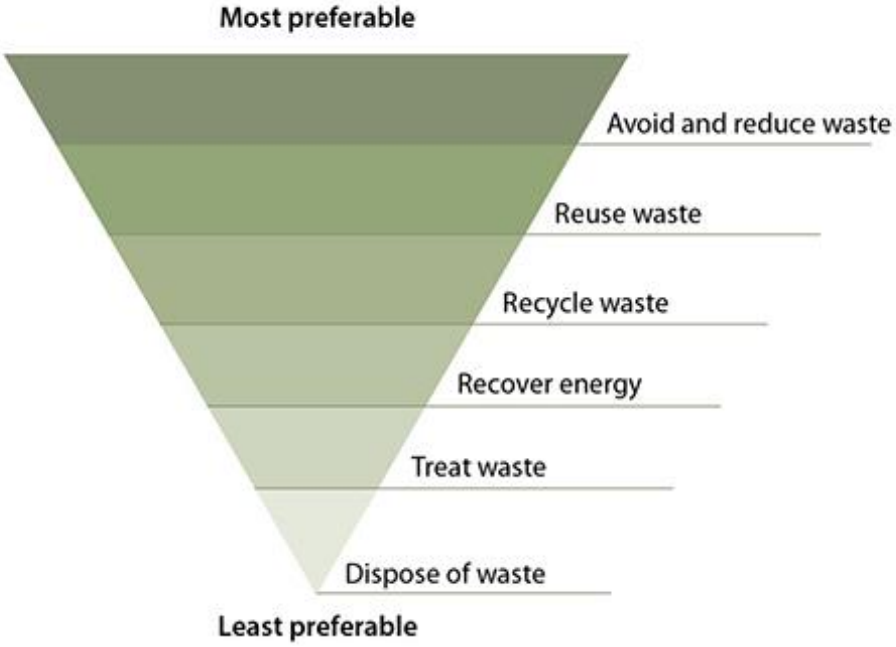

Figure 2 Waste hierarchy (NSW EPA, 2015)

3.4. Contaminated Land Management Act 1997

The *Contaminated Land Management Act 1997* (CLM Act) sets out a process for identifying, remediating and managing contaminated land. This legislation also defines the role of the NSW EPA in the assessment of contamination and the supervision of the investigation and management of contaminated land and sets out accountabilities if the contamination is significant.

The CLM Act seeks to apply the principle of "polluter-pays" by imposing the obligation and cost of remediating contaminated land on the polluter rather than the community.

3.5. Other guidelines and policies

The following guidelines and policies are also relevant to waste management at the site:

- **NSW EPA, 2014 - Waste Classification Guidelines**. The guidelines aim to aid compliance with waste legislation including providing a step-by-step process for waste classification. Waste must be classified by the generators of the waste into one of six different waste classes.
- **NSW WorkCover, 2011 – How to Safely Remove Asbestos Code of Practice**. This code of practice outlines the basic principles which should be followed in the safe removal of asbestos-based materials from all workplaces including structures, plant and equipment.
- **NSW Health – Waste Reduction and Purchasing Policy 2011-2014.** The purpose of this policy is to assist the NSW Health to reach targets for reducing greenhouse gas emissions by reducing waste, and to promote environmentally sustainable purchasing practices.
- **Australian Code for the Transport of Dangerous Goods by Road and Rail** (Australian Dangerous Goods), Edition 7.3 2014. Dangerous good are classified under this Code.

4. Waste management principles

The waste management hierarchy defines the principles of waste management which will be utilised for the construction (Main Building Package) and operation of the ASB and are discussed in more detail below. These principles will be incorporated into a detailed construction waste management plan to be prepared prior to construction and to update the operational waste management plan.

4.1. Waste avoidance and reduction

The preferred option in the waste hierarchy is to avoid the generation of waste, or reduce the amount or volume of waste that is produced. Waste avoidance and reduction will be facilitated during the construction and operation of the ASB through:

- Careful project planning to minimise the amount of material brought to site. Waste will be avoided by specifying exact project requirements to be reflected in the purchasing policy. This policy will also consider packaging, and where possible, suppliers will take back packaging and unused materials.
- Good housekeeping practices, including material acquisition and inventory control to avoid waste resulting from materials that are out-of date, off specification, contaminated or excess to project needs.
- Appropriate storage and management of materials on-site to limit the potential for damage from weather or plant and equipment, which in turn will eliminate the need for purchase of replacement products and waste generation.

4.2. Waste reuse/recycling

Reuse and recycling of waste will be encouraged where the generation of waste cannot be avoided. Recycling of wastes will be achieved through implementation of the following measures:

- Evaluating waste production processes and identifying potentially recyclable materials.
- Identifying and recycling of products that can be reintroduced into the construction and operation processes, or related activities at the site.
- Investigating and auditing external markets for recycling by other operations located in the neighbourhood or region of the site (e.g., application to land).

Recycling/reuse will involve separation and segregation of waste to facilitate the waste management program as follows:

- Waste segregation on-site. Where practicable, waste (including fill and natural material) will be separated on site into dedicated bins or areas for either reuse on site or collection by a licensed waste contractor and transport to approved off-site facilities.
- Waste separation off-site. Where space is a limiting factor, wastes will be placed into one bin to be collected by a waste contractor and sorted off site.

The examples below illustrate how materials will be reused or recycled (where possible):

- Natural material will be classified as VENM to allow potential beneficial reuse off-site.
- Asphalt and road base materials from excavation works will be reused either on-site or off-site.
- Concrete from excavation works will be sent to a recycling facility.
- General waste will be separated and segregated from the following recyclable waste:
  - Glass.
  - Paper and cardboard.
  - Aluminium cans.

4.3. Waste handling and storage

Storage and segregation of waste and waste servicing arrangements will be carefully planned as the public will still be accessing the hospital during the works. Planning for waste storage areas will need to consider the changing location of construction areas during the various project phases.

The following measures apply where on-site waste handling and storage is required prior to reuse or recycling and disposal:

- Provision of clear signage to mark the location and storage of different types of waste.
- Consider the following measures in relation to stockpile management:
  - Locate stockpiles within designated areas within the site compound, only and away from drainage lines.
  - Locate on hardstand surfaces or, where this is not possible, on plastic sheeting.
  - Position stockpiles up-slope of sediment control barriers.
  - Limit stockpile height to 2 m.
  - Cover the stockpiles or stabilise the surface with a suitable material to prevent erosion and sediment loss.
  - Stockpile different geological units separately to allow for easier classification and removal off-site.
- Stockpiling/storage of concrete, bricks, scrap metal and miscellaneous materials separately.
- Storing wastes in containers that are in good condition and compatible with the waste.
- Keeping waste containers closed unless waste is being added to or removed from the container.
- Storing liquid wastes in appropriate containers in bunded areas until transported off site. Bunded areas will have the capacity to hold 110% of the volume of the liquid waste for bulk storage or 120% of the volume of the largest container for smaller packaged storage.
- Protecting containers holding waste from the weather (e.g., rain and wind) to help maintain the integrity of the container and reduce the potential for a spill. Such protection could include storage buildings, roofed areas, tarps, and plastic drum covers to keep water off the tops of the drums.
- Labeling containers storing wastes that provides information to facilitate the safe and proper management of the waste, including:
  - Name of the waste stream.
  - Composition and physical state (e.g., solid, liquid, sludge) of the waste.
  - Restricted properties of the waste (e.g., "corrosive", “ignitable”).
  - Name of the activity, process, and/or location that generated the waste.
  - Date the first waste entered the container.
- All servicing arrangements (including mobile plant and equipment) for the transport of waste from the site will consider the safety of site users.

4.4. Waste tracking and disposal

Wastes generated by the project that cannot be either recycled or reused on-site will be disposed of by a licensed waste contractor to an appropriately licenced landfill or recycling facility. All vehicles conveying waste soils will have covered loads when leaving site.

Prior to disposal, waste will be classified in accordance with the requirements of the NSW EPA Waste Classification Guidelines.

A waste inventory will be maintained.

A tracking system will be used to track waste quantities and types disposed. Documentation will track wastes, including the handling steps and servicing arrangements followed to manage the wastes from the point (area) of generation through to collection, storage, treatment, and final disposal.

On- and off-site waste tracking shall record, for each waste generated and managed, the following:

- Waste generator facility name and address.
- Type and identity of transport vehicles associated with the collection and final disposal of waste.
- Date for recycling, treatment, or disposal.
- Type of waste.
- Quantity of waste.
- Method of recycle, treatment, or disposal.
- Description of waste, including restricted characteristics (i.e., what makes it a restricted or non-restricted waste).

Waste tracking forms will be used for all wastes moved off-site. The tracking form will record appropriate information about each waste stream and enable control of the waste disposition by confirming receipt by the designated recipient.

5. Potential impacts and management

5.1. Waste-related impacts

Potential impacts associated with poor or inadequate management of wastes generated during the construction and operation of the ASB are described in Table 5.1.

Table 5.1 Aspects of waste management and potential impacts

Aspect of waste management	Potential impacts
Generation of waste (usage of resources)	• Extraction of resources. • Energy and water consumption associated with processing.
On-site storage of waste in an urban setting	• Increased dust. • Visual impact. • Increased littering. • Sediment laden runoff. • Odours. • Increased pest animals. • Restricted space/site access. • Health and safety of site users and workers.
On-site storage and segregation of waste	• Reduction in reuse of materials. • Cross-contamination of waste. • Contamination of recycling centres.
On-site storage of liquid and/or contaminated waste	• Contamination of surface soils, groundwater, and surface waters. • Odours.
Hazardous materials such as clinical waste	• Risk to human health.
Waste transportation	• Noise and dust impacts to surrounding sensitive receptors. • Odours. • Mud tracking on roads during construction.
Non-classified or incorrectly classified waste disposal/transport	• Regulatory non-compliance and associated penalties. • Contamination of landfill/recycling centres.
Unlicensed waste transporters removing waste off-site	• Regulatory non-compliance and associated penalties. • Illegal dumping of waste.

5.2. Waste management methods

The estimated volumes of waste to be generated during construction and operation of the ASB are described below. Management and disposal methods are also detailed for each waste type.

5.2.1. Construction

The waste streams likely to be generated during construction of the ASB are detailed in Table 5.2. The waste volumes for the duration of construction have been estimated and will be updated upon engagement of a contractor. The proposed methods for handling, storage and reuse/disposal of each waste type are also presented.

Table 5.2 Waste streams, estimated volumes and management during construction

Activity	Waste stream	Volume	Management and destination
Construction of new building	Structural steel	<20 m^3	• Segregation on site. • Transport or collection to a recycling facility.
	Steel reinforcement	<20 m^3	• Segregation on site. • Transport or collection to a recycling facility.
	Concrete	260 m^3	• Segregation on-site. • Transport to a recycler or use on-site/off-site in road making activities, building, landscaping and construction works in accordance with the requirements of the Recovered Aggregate Resource Recovery Exemption 2014. • Where reuse is not practical concrete has been pre-classified by the EPA as General Solid Waste (non-putrescible) and can be disposed to an appropriately licensed facility by a licensed contractor.
	Plasterboard	4,000m^2	• Landfill
	Paints	5,000m^2	• Drop-off location for chemicals and paints at Hi Quality Group 1503 Elizabeth Drive Kemps Creek.
	Metals	200m^2	• Segregation on-site. • Transport or collection to a recycling facility.
	Asphalt (for roads and car parks)	<2 m^3	• Landfill
	Mechanical - ductwork	<2 m^3	• Segregation on-site. • Transport or collection to a recycling facility.
	Electrical - metal cable trays, electrical cables, fibre optic cables	<2 m^3	• Segregation on site. • Transport or collection to a recycling facility.
	Hydraulics -	<2 m^3	• Segregation on site.

Activity	Waste stream	Volume	Management and destination
	UPVC Pipe, Copper pipe, HDPE pipe		• Transport or collection to a recycling facility.
Site office and worksites	General office waste (e.g., paper, printer cartridges)	<2 m^3	• Segregation of recyclable wastes and storage on-site. • Collection and transport to a recycler.
	Domestic wastes (e.g., food scraps, glass bottles, cans, packaging)	<2 m^3	• Segregation of recyclable wastes and storage on-site. • Collection and transport to a recycling facility. • Transport and disposal of non-recyclable wastes to an appropriately licensed facility (classified as general solid waste).
	Septic and sanitary systems waste	Unknown	• Sewage treatment plant
Plant maintenance and chemicals management	Drums and containers	<2 m^3	• Segregation of recyclable wastes and storage on-site. • Collection and transport to a recycling facility.
	Chemical wastes	<2 m^3	• Drop off location for chemicals and paints at Hi Quality Group 1503 Elizabeth Drive Kemps Creek.
	Waste oil, grease, lubricants, oily rags and filters	<2 m^3	• Segregation of recyclable wastes and storage on-site. • Collection and transport to a recycling facility.

A detailed construction waste management plan will be developed by the Contractor as part of the Construction Environmental Management Plan for the ASB. The plan will provide further details of the management requirements for the waste types in Table 6.1 noting that the list is not exhaustive and the types and quantities of waste may be revised as the project proceeds.

The NSW Waste and Resource Recovery Strategy 2014 – 21 (NSW EPA 2014) has set a target for increasing recycling of construction and demolition waste to 80% by 2021. The Contractor should aim for 80% of waste generated in construction to be either reused or recycled. Records of waste reused or recycled should be kept to enable measurement of this target during construction.

5.2.2. Operation

The waste streams likely to be generated during operation of the ASB are detailed in Table 5.3. Blacktown Hospital will further classify and quantify potential waste streams prior to the opening of the ASB, to ensure proper management and disposal methods are in place matched to each waste type.

The proposed ASB is expected to double the quantities of waste produced at the hospital site and waste practices will be developed to address this increase. No waste streams will be generated that are not already produced by Blacktown Hospital. An estimate of the waste volumes that are likely to be produced by the ASB, based on data obtained for January to April 2016 at Blacktown Hospital, is provided in Table 5.3.

Table 5.3 Waste streams, estimated volumes and management during operation

Waste stream	Volume (kg / month)	Management and destination
Clinical waste	5,500	• Segregate and dispose at point of generation in yellow lockable mobile garbage (wheelie) bins appropriately placed in all clinical areas. • Decontaminate and bury as Special Waste.
Cytotoxic waste (including PPE)		• Dispose of in approved purple bags with the waste symbol, sealed and taped at the neck of the bag. • Place bags in purple wheelie bins and stored out of public view. General Services staff to remove the bin as required.
Pharmaceutical waste		• Place in purple wheelie bin used for cytotoxic waste and store in clinical waste storage area. Keep bins locked and stored in a secure area until collection. • Disposal by incineration.
Sharps waste		• Dispose of in approved yellow sharp container that meets AS/NZS 4261:1994 or AS/NZS 4031:1992 depending on whether reusable or disposal system. Only fill to the marked line. • Seal full disposal sharp containers in accordance with manufacturer's guidelines and place in the appropriate designated storage area. • Transport to a lockable area for collection.
Anatomical waste		• Dispose of in a yellow bag, placed in the burgundy wheelie bin. • Transport bin to a secure waste storage area. • Disposal process is by incineration.
Recyclable products	5,000	• Segregate and dispose of in appropriate coloured wheelie bins. • Transport to materials recovery facilities.
Organic products	50,000	• Place food waste that is not pulped and is biodegradable in the blue mobile garbage (wheelie) bin. • Dispose of other kitchen waste in the general waste bins.
Liquid waste (non clinical or hazardous)	Data not provided.	• Grease traps procedures should be in place to ensure maintenance in accordance with Sydney Water's standards.
Hazardous substances and dangerous goods (includes diesel storage tank in multi storey car park)	Data not provided.	• Store as per manufacturer's instructions and in accordance with legislative requirements including *Australian Standard AS 1940B1993: The Storage and Handling of Flammable and Combustible Liquids* (for diesel). • Use a licensed transporter to transport waste classified as Group A, Group B and Group C when amounts exceed 200kg or 200L. Hazardous waste Group A must be tracked. • Dangerous goods must be transported by licensed transporters.
General waste	5,000	• Placed in semi-opaque white bags or colour coded mobile garbage (wheelie) bins or other non-mobile bins provided in work area. • Transport full waste bags to the nearest mobile garbage (wheelie) bin and store in bins or compact at waste holding area. • Collect bins/compactors on a scheduled basis or as required (by a Sydney West Area Health Service appointed waste contractor) and transport to a licensed waste transfer station for landfill.

Measures to manage, reuse, recycle, transport and safely dispose of waste generated at the ASB will be implemented in accordance with this WMP, the WSLHD's Waste Management Policy Manual and NSW Health's Waste Management Guidelines for Health Care Facilities Policy Directive 132 updated January 2005. A detailed waste management plan will be prepared prior to the ASB coming into operation incorporating all of these requirements.

As part of the EIS, a Preliminary Hazard Assessment (PHA) has also been prepared which provides details of the proposed storage, use and management of hazardous materials at the ASB and measures to be implemented to manage hazards and risks associated with storage.

6. Roles and responsibilities

The Main Package construction contractor will be responsible for implementing this plan during construction.

The Main Package contractor will be responsible for developing a detailed waste management plan prior to commencement of the construction works. That plan must be consistent with the approach, principles and management methods outlined in this plan.

The Main Package Contractor will also be responsible for:

- Inducting all contractors and visitors about the relevant aspects of this plan.
- Ensuring all waste management contractors have the necessary qualifications and licenses to remove waste from the site.
- Carrying out periodic audits to check compliance with the waste management plan.

Blacktown Hospital will be responsible for implementing the operational waste management measures contained in this plan following completion and handover of the new ASB including:

- Ensuring that an up-to-date operational waste management plan is in place, is reviewed regularly and is compliant with relevant legislation, Sydney West Area Health Service's Waste Management Policy Manual and NSW Health's Waste Management Guidelines for Health Care Facilities Policy Directive 132.
- Establishing safe waste management practices are in place in accordance with the plan in all departments.
- Providing appropriate inductions, site orientations, training and/or information for employees, volunteers, contractors and visitors (as appropriate) regarding waste management procedures at the hospital.
- Setting waste management objectives annually and conducting regular audits as required.
- Ensuring all waste management contractors have the necessary qualifications and licenses to remove waste from the ASB.

7. Training and inductions

During construction, all site personnel and subcontractors will be inducted into the requirements of this plan to in accordance to their level of responsibility. As such, the induction is expected to include the following components:

- The waste hierarchy and associated waste management principles (avoid, reuse, recycle).
- NSW EPA Waste Classification Guidelines.
- Procedures for handling and storage of wastes.
- Location of waste disposal and storage facilities.
- Actions to be undertaken in the event of a hazardous material spill.

Once the hospital is operating, all staff, volunteers and hospital contractors will, as part of their induction, be briefed on the following aspects of waste management:

- The waste hierarchy and associated waste management principles (avoid, reuse, recycle).
- Location of waste disposal and storage facilities.
- Actions to be undertaken in the event of a hazardous material spill.

Staff and contractors with specific responsibilities for waste management including for the handling and disposal of hazardous waste will be given additional training as required.

8. Evaluation and reporting

Regular audits of waste management practices should be conducted and should include review of the following:

- Staff knowledge of waste management requirements.
- Number, size, labelling and condition of waste receptacles.
- Segregation of wastes.
- Handling and storage arrangements for waste.
- Waste recording and tracking procedures (including types and volumes for reuse/recycling or disposal).
- Qualifications and licenses of waste contractors used to remove waste from the ASB.

The findings of these audits should be used to identify any required changes to waste management practices and methods.

This plan should be reviewed on a regular basis, particularly when there are any changes to work activities that affect waste generation, following any waste-related incidents, and/or where opportunities for improvement are identified.

9. References

Environmental Investigation Services, 2014. Preliminary Environmental Site Assessment for Proposed Stage 2 Redevelopment of Blacktown Hospital. 18 July 2014.

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NSW EPA, 2014. Waste Classification Guidelines: Part 1 Classifying waste.

NSW EPA, 2015. The Waste Hierarchy. http://www.epa.nsw.gov.au/wastestrategy/waste-hierarchy.htm

NSW Health Waste Reduction and Purchasing Policy Purchasing and Supply Manual for NSW Health System.

South West Area Health Service Waste Management Policy Manual. June 2010.

Waste Management Guidelines for Health Care Facilities - August 1998 NSW Health Policy Directive: http://www0.health.nsw.gov.au/policies/PD/2005/PD2005_132.html

Community Sharps Disposal by Area Health Services NSW Health Policy Directive: http://www0.health.nsw.gov.au/policies/pd/2008/PD2008_004.html