BOWRAL & DISTRICT HOSPITAL REDEVELOPMENT PROJECT
PRELIMINARY WASTE MANAGEMENT PLAN

ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE STATE SIGNIFICANT DEVELOPMENT (SSD) APPLICATION

31 MAY 2018 | 04

NSW GOVERNMENT Health
South Western Sydney Local Health District

NSW GOVERNMENT Health
Infrastructure

DOCUMENT ADMINISTRATION

Revision History

Version	Date	Issued To	Remarks
01 Draft	2 March 2018	City Plan Services	Draft for Review
02 Draft	16 May 2018	City Plan Services	Draft for Review
03 Final	24 May 2018	City Plan Services	Final
04 Final	31 May 2018	City Plan Services	Final – incorporating HI comments

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1.0 Introduction

1.1 Bowral & District Hospital Main Works

The proposed development is subject to an environmental Impact statement (EIS) for the State Significant development (SSD) application, and includes:

- A new Inpatient Building;
- A new ED;
- Linkways and connections back to existing buildings and supporting services in the retained buildings;
- A reconfigured public and ambulance entry into ED;
- On-grade car parking and drop off facilities, and overall improved access and wayfinding throughout the campus; and
- Upgrades to IT and engineering services infrastructure.

1.2 Site Description

The Bowral & District Hospital site covers an area of approximately 3.249 hectares. The site is bound by Bowral Street to the north, Mona Street to the east, Ascot Street to the south and Sheffield Street to the west.

To the north and east of the hospital campus is generally low density residential development, Glebe Park and Loseby Park (south) used for community sporting activities. To the west is low density residential development and Southern Highlands Private Hospital on campus.

Figure 1 Aerial – The Bowral & District Hospital

1.3 Purpose of this Report

The purpose of this report is to provide:

- Details of waste generated during demolition and the main works package; and
- A preliminary description of measures to be implemented to handle waste.

This report does not deal with waste generated during construction. Details of the amounts, handling methods and destinations of waste generated during construction will be provided by the construction contractor appointed to the project.

2.0 Waste Generated During Demolition

2.1 Waste Estimation

Table 1 below identifies the estimated volume of waste produced as part of the excavation works associated with the main works for the redevelopment of Bowral & District Hospital (BDH). The calculation included in the table below assumes the maximum amount of waste material and zero reuse of fill. However it is noted that fill is likely to be reused on the site. There are no demolition works as part of the scope.

Description	Excavation Material (m^3)
Removal of excavated material off site (assume no reuse)	1,526

Table 1 – Estimated volume of waste produced from excavated material

3.0 Waste Generated During Operation

3.1 Waste Estimation

Bowral and District Hospital (B&DH) has developed a Waste Management Plan which aims to achieve safe and cost effective management of waste complying with NSW Health Policy, PD2005_132 - Waste Management Guidelines for Health Care Facilities, that includes sustainable options to ensure compliance with NSW Government Resource Efficiency Policy (GREP). All staff and volunteers are required to comply with the Waste Management Plan including waste reduction practices.

Waste is removed offsite via three (3) loading bays (one collection point) that house waste collection bins for the different types of waste generated by the hospital's operations. Figure 2 below shows the waste collection and access points for offsite removal:

Figure 2 Waste Collection and Access Point at Bowral & District Hospital

Hotel Services are responsible for waste management throughout Bowral Hospital and its grounds including the secure storage of clinical waste before removal from the site by designated waste removal companies such as Remondis (general waste and recycling, Monday-Saturday), Redlam and Sterihealth (clinical waste, Tuesdays). The hospital's maintenance department also takes larger waste to the local Council tip, as required. These arrangements will continue in order to service the redevelopment.

The B&DH redevelopment will also generate waste from its mechanical plant located on the roof (level 3) of the main building. The majority of the mechanical plant will be serviced on a 6 monthly basis. Disposable items will consist of air handling unit (AHU) filters (15 off), Panel filters (160 off) and Bag filters (160 off). These will be disposed every 6 months, and will be treated as general waste and disposed of in the general waste/recycling section of the hospital's collection point.

The key principles adopted within B&DH's Waste Management Plan include:

- Waste will be handled safely using appropriate PPE throughout its journey through Bowral
- Hospital from creation at ward/individual level to removal off site by waste companies;
- Waste will be appropriately minimised, segregated and recycled;
- All staff is to receive education on Bowral waste practices at orientation and other appropriate/required situations;
- Spill management will be conducted in accordance with the Waste Management Plan; and
- Waste cost statistics are to be compiled, waste audits to be conducted and both to be reviewed periodically to ensure optimum waste management is occurring.

The following waste minimisation and reduction strategies are identified within B&DH's Waste Management Plan:

- Waste minimisation commences with product choice – choosing products with the smallest amount of packaging available, or packaging removed by company;
- Purchasing products and equipment made from recycled materials;
- Stock that can expire to be kept to a minimum and rotated to ensure oldest stock is used first;
- Packaging to be removed and segregated from clinical waste before contamination occurs, further segregation of paper products can occur at this point;
- Reduction of size of clinical waste bins in areas outside theatre, labour ward and ED to promote good segregation practices;
- Staff education regarding correct segregation at orientation and periodically as needed;
- Waste reduction champions in different areas to promote recycling and segregation practices;
- Reuse of paper for notes, reducing paper use by less printing of electronic documents;
- Staff using their own cups instead of providing polystyrene cups;
- Reuse of binders and other equipment, furniture by offering unused material to other departments;
- Repairing equipment/furniture instead of replacing items (consider contamination);
- New waste minimisation and recycling opportunities to be explored and implemented where possible; and
- Sustainability and energy efficiency to be considered during new development and refurbishing.

In addition, B&DH is required to comply with the South Western Sydney Local Health District (SWS LHD) Waste Management Plan. SWS LHD is committed to reducing waste. Their mission statement states that it is "committed to continuous quality improvement and innovation in delivering efficient and sustainable health care."

The scope of works that form the Bowral and District Hospital Redevelopment Project and the works captured within the SSD development application will result in minimal increase in clinical activity and number of beds on the B&DH campus. The total number of beds on the campus following the completion of the redevelopment will be 94 beds which is a 3% increase from the 91 beds currently on the campus.

Table 2 shows the volumes of general waste, recyclable waste and clinical waste currently generated by B&DH currently. The table also identifies estimates of additional waste of each type to be generated by the Redevelopment, based on the number of new beds / treatment spaces.

The estimates for additional waste were generated by calculating the per bed/ treatment space waste currently produced by B&DH and multiplying the percentage increase in bed numbers provided in the Redevelopment.

	Total Waste Per Week (kg)		
Waste Type	**Current**	**Increased Bed/Treatment Space 8%**	**Estimated Total**
General Waste	5,762	461	6,223
Recyclable Waste	1,944	156	2,100
Clinical/Cytotoxic Waste	253	20	273
Total	**7,959**	**637**	**8,596**

Table 2 – Estimated Projected Waste Quantities

4.0 Waste and Materials Reuse Management Plan

4.1 Waste Management Principles

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.

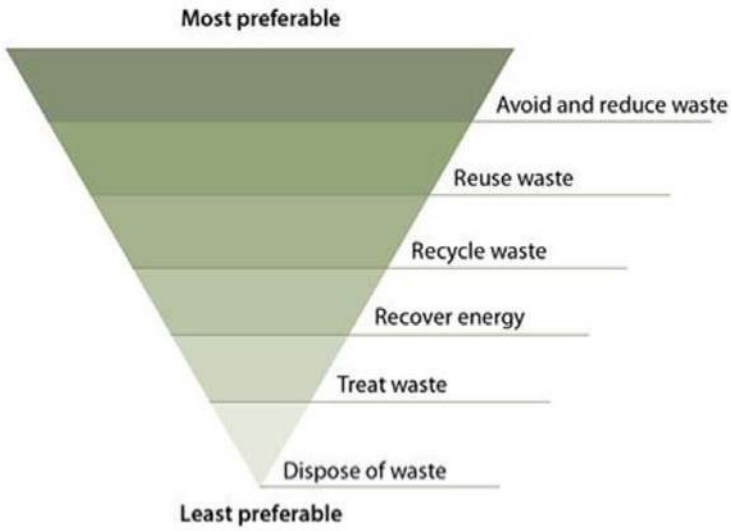

Figure 3 Waste Hierarchy (NSW. EPA 2015)

In accordance with the WARR Act, Waste Management Principles will be incorporated into a detailed construction waste management plan provided by the head contractor.

These include:

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 that is produced. Waste avoidance will be facilitated through:

- Careful project planning to minimise the amount of material brought to site. Waste will be avoided by specifying the exact project requirements.
- Good housekeeping practices including material acquisition and inventory control to avoid waste resulting from out-of-date, off specification or excess to project needs
- Appropriate Storage and Management of materials onsite to limit the potential for damage from weather or plant which will eliminate the need for purchase of replacement products and waste generation.

2) Waste Reuse/Recycling

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

- Evaluating waste production processes and identifying potentially recyclable materials
- Identifying and recycling products that can be reintroduced into the construction and operation processes.
- Investigating and auditing external markets for recycling by other operations located in the neighbourhood or region of the site.
- Waste segregation on site – dedicated bins or areas for collection by a licenced waste contractor.
    - General Waste – Glass, Paper & Cardboard and Aluminium
    - Concrete from excavation to be sent to a recycling facilities
    - Natural material will be classified as VENM for offsite reuse.

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 be considered throughout the project as there are changing locations of construction areas during the various project phases.

The following measures will be required to apply where onsite waste handling and storage is required:

- Provision of clear signage to mark the location and storage of different types of waste
- Stockpile Management
    - Within designated areas away from drainage lines
    - Limited to 2m height
    - Covered stockpiles
    - Storage on Hard Stand or Plastic sheeting
    - Stockpile concrete, bricks and scrap metal separately
- Clearly marked waste containers with information such as name of waste, composition (solid/liquid), restricted properties of the waste (corrosive, ignitable) and date of the first waste deposited into the container.
- All servicing arrangements will need to consider the safety of site users.

4) Waste Tracking and Disposal

Waste generated by the project that cannot be either recycle or reused onsite will be disposed of by a licenced 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 the waste quantities and types disposed. Documentation will track wastes, including the handling steps and servicing arrangements followed to manage the wastes from the point of generation through to collection, storage, treatment and final disposal.

On and Offsite waste tracking will record for each waste generated:

- Waste generator facility and address
- Type and identity of transport vehicles associated with the collection and final disposal of waste
- Date for recycling, treatment and 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.

4.2 Potential Waste Impacts and Management

Potential impacts associated with poor or inadequate management of wastes generated during the construction and operation of Bowral & District Hospital are outlined in the table 4 below:

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.

Table 4: Summary of aspects of waste management and potential impacts

4.3 Waste Management Methods

A detailed construction waste management plan will be developed by the Contractor as part of the Construction Environmental Management Plan. The plan will provide further details of the management required for the waste types generated under the works associated with the Bowral & District Hospital Redevelopment. As the design progresses, accurate estimates of quantities of building materials prior to construction will ensure that a minimum of waste is generated. Records of waste and recycling collected and disposed of will be collated throughout the construction phase by the Contractor. Un-used materials in a good condition will often be collected by suppliers, facilitating the reduction of the amount of material sent to recyclers or landfill.

The Contractor will be required to achieve compliance with the EPA guidelines.

Following removal of all hazardous materials such as asbestos, lead-based paints, phenols and polychlorinated biphenyls (PCB), where possible, any waste material generated from the Works will be recycled apart from selected soft demolition materials.

A summary of likely waste streams to be generated through construction are identified in table 5 below, a proposed method for handling, storage and reuse/disposal of each type of waste are also presented.

Activity	Waste stream	Management
Main Works Package	Structural steel	• Segregation on site (Compound A or B) • Transport or collection to a recycling facility.
	Steel reinforcement	• Segregation on site. (Compound A or B) • Transport or collection to a recycling facility.
	Concrete	• Segregation on-site. (Compound A or B) • 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	• Landfill
	Metals	• Segregation on-site. (Compound A or B) • Transport or collection to a recycling facility.
	Asphalt (for roads and car parks)	• Landfill
	Mechanical - ductwork	• Segregation on-site. (Compound A or B) • Transport or collection to a recycling facility.
	Electrical - metal cable trays, electrical cables, fibre optic cables	• Segregation on site. (Compound A or B) • Transport or collection to a recycling facility.
	Hydraulics – UPVC Piper, Copper pipe, HDPE pipe	• Segregation on site. (Compound A or B) • Transport or collection to a recycling facility

Site Office and Worksites	General Office Waste – paper, printer cartridges	• Segregation of recyclable wastes and storage on-site • Collection and transport to a recycler
	Domestic Wastes – food scraps, glass bottles, cans, packaging.	• Segregation of recyclable wastes and storage onsite
	Septic and Sanitary systems waste	• Sewerage treatment plant
Plant Maintenance and Chemicals Management	Drums and Containers	• Segregation of recyclable wastes and storage onsite (Compound A or B) • Collection and transport to a recycling facility
	Waste Oil, great, lubricants, oily rags and filters	• Segregation of recyclable wastes and storage onsite (Compound A or B) • Collection and transport to a recycling facility

Table 5: Waste Streams and Management during construction

The storage of waste created by the site through demolition, excavation and general construction works will be specified within the site establishment zones.

4.4 Hazardous Materials Management

Dangerous goods (such as petrol, diesel, oxy-acetylene, oils, glues etc) will be stored in a lockable compound with sufficient ventilation in accordance with relevant codes of practice and standards. Material safety data sheets on all of these flammable and potentially harmful liquids will be provided by the Contractor undertaking the Works.

A separate report has been commissioned to cover the requirements under SEPP 33 – Hazardous and Offensive Development. This assessment has concluded that the quantities of Dangerous Goods to be stored at the proposed facility and the associated vehicle movements do not exceed the thresholds required to classify the facility as 'hazardous'. Therefore, no further assessment is required.

4.4.1 Hazardous Materials Audit

A licensed demolition contractor and/ or the Contractor are to inspect the site to determine the presence of any hazardous materials in accordance with the requirements of AS2601.

4.4.2 Hazardous Materials Management Plan

- A Hazardous Materials Management Plan will be prepared in accordance with the requirements of AS2601 prior to the commencement of any demolition works;
- The removal, handling and disposal of asbestos materials are to be undertaken only by an appropriately licensed contractor and in accordance with the requirements of the NSW WorkCover Authority and the NSW Office of Environment and Heritage (NSW OEH);
- All asbestos and other hazardous materials are to be appropriately contained and disposed of at a facility holding the appropriate licence issued by the NSW OEH; and
- A sign displaying the words 'DANGER ASBESTOS REMOVAL IN PROGRESS' is to be displayed on sites where buildings to be demolished contain asbestos materials.

Any hazardous materials discovered during execution of the Works is to be dealt with by the Contractor in accordance with the requirements set out in the HGC21 Preliminaries document (Section 5.6 – Hazardous Substances).

5.0 Responsibilities and Training

5.1 Roles and Responsibilities

The Head 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 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.

5.2 Training and Induction

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, and 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, and 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.