Northern Beaches Hospital

Stage 1: Concept Design, Site Clearance & Preparatory Works

Appendix N

Waste Management Strategy

Northern Beaches Health Service Redevelopment
A new wave in healthcare

Northern Beaches Hospital

Waste Management Strategy

Site Clearance & Preparatory Works

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1 Introduction

1.1 Background

The Director General's Requirements (DGRs) issued for the proposal require the following with respect to the site clearing and preparatory works:

- Preparation of a Waste Management Strategy that identifies quantifies and classifies the likely waste streams to be generated during site clearance and preparatory works 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.

This document is intended to provide sufficient information to address the above matters, and to provide appropriate guidance on relevant matters and required performance outcomes with regard to waste management for the Stage 1 works.

This document does not deal with waste generated during Stage 2 construction works nor the operation of the hospital. This would be addressed in the Waste Management Strategy that would be prepared to support the Stage 2 environmental impact statement (refer DGRs for second stage of works).

1.2 Legislation and policy context

Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) covers the requirements for waste generators in terms of storage and correct disposal of waste and their responsibility for the correct management of waste, including final disposal.

Under the POEO Act and its regulations, guidelines have been established for the classification of waste and comprise four parts:

- Part 1: Classifying waste
- Part 2: Immobilisation of waste
- Part 3: Waste containing radioactive material
- Part 4: Acid sulfate soils.

These have been considered in the development of this strategy.

Waste Avoidance and Resource Recovery Act 2001

The objectives of the *Waste Avoidance and Resource Recovery Act 2001* include encouraging the most efficient use of resources, to reduce environmental harm, and to provide for the continual reduction in waste generation in line with the principles of ecologically sustainable development (ESD).

NSW Waste Reduction and Purchasing Policy

The NSW *Waste Reduction and Purchasing Policy* (WRAPP) requires all state government agencies and state owned corporations to develop and implement a WRAPP plan to reduce waste in four specified areas:

- Paper products
- Office equipment and components
- Vegetation material
- Construction and demolition material.

The WRAPP is part of the *NSW Government Sustainability Policy*, which sets new targets for resource use, disposal and procurement across energy, water, fleet and waste.

The last two categories are applicable to the site clearance and preparatory works. The strategy outlined in this document is intended to be consistent with the WRAPP.

1.3 Waste management hierarchy

In NSW, the waste management hierarchy established under the *Waste Avoidance and Resource Recovery Act 2001* requires resource management options to be considered against the following three priorities:

1. **Avoidance** including action to reduce the amount of waste generated by households, industry and all levels of government
2. **Resource recovery** including reuse, recycling, reprocessing and energy recovery, consistent with the most efficient use of the recovered resources
3. **Disposal** including management of all disposal options in the most environmentally responsible manner.

Avoidance is the highest priority. This encourages the community, industry and government to reduce the amount of virgin materials extracted and used and waste generated, and to be more efficient in the use of resources.

Resource recovery maximises the options for reuse, recycling, reprocessing and energy recovery at the highest net value of the recovered material. This encourages the efficient use of recovered resources while supporting the principles of improved environmental outcomes and ecologically sustainable development.

Disposal, is the least desirable option and must be carefully handled to minimise negative environmental outcomes.

The above waste hierarchy can also be represented diagrammatically as an inverted pyramid, going from most sustainable to least sustainable, as illustrated on the following page.

The waste management strategy outlined in this document has been developed to be consistent with this hierarchy.

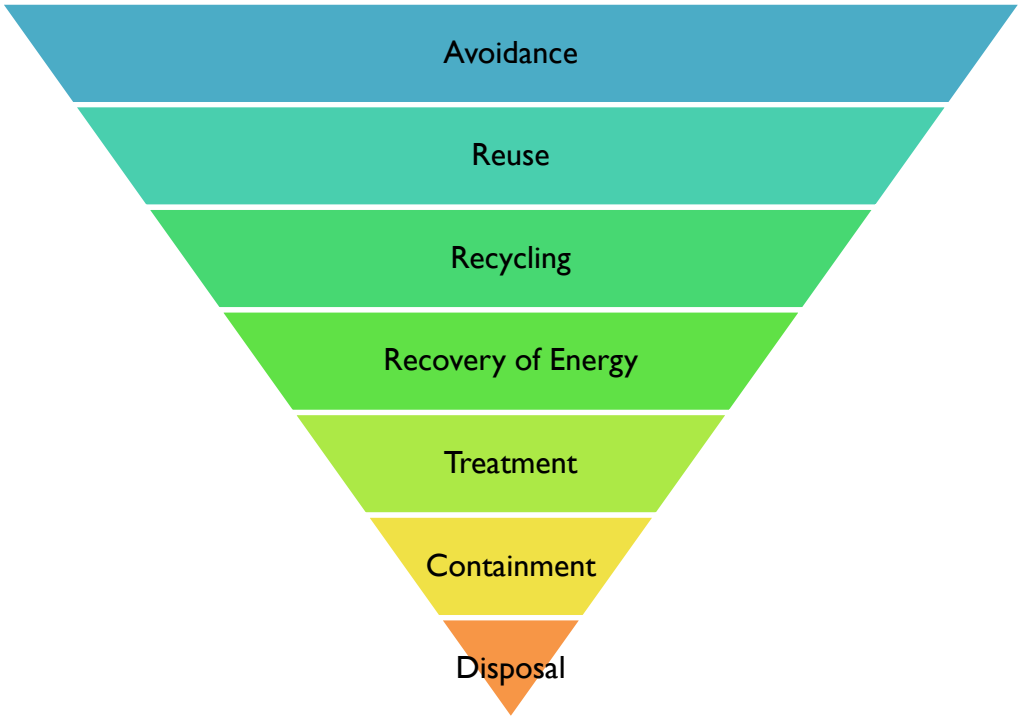

Figure 1 Waste management hierarchy

1.4 Objectives and goals

The objectives of the strategy are as follows:

- To manage waste associated with the site clearance and preparatory works in accordance with the waste hierarchy
- To comply with relevant statutory requirements
- To inform preparation of the waste management plan for the site clearance and preparatory works with respect to required performance outcomes (preparation of the plan to be undertaken by the site works contractor).

The goals of the strategy are as follows:

- All practicable forms of beneficial reuse are appropriately considered, particularly with regard to green waste
- The amount of waste materials disposed of to landfill is minimised.

2 Site clearance and preparatory works waste streams

2.1 Description of works

The site clearance and preparatory works would broadly comprise:

- Establishment of site office, including temporary connection to services (water, sewer, power)
- Closure of Bantry Bay Road to the public and establishment of construction traffic management controls
- Removal of existing temporary fencing and installation of construction fencing
- Clearance of site vegetation including tree stumps, but with retention of the area broadly consistent with the former Blinking Light Reserve at the eastern end of the site
- Thinning of understorey in retained area of vegetation
- Chipping of cleared vegetation to use on site for ground stabilisation/erosion control in the period prior to commencement of Stage 2
- Potential offsite disposal of surplus cleared vegetation to green waste recycling facility or other beneficial reuse (refer Section 3.1)
- Removal of foundations, concrete pads, etc associated with former buildings and subsequent disposal of this material
- Site management in the period between completion of the site clearance and preparatory works, and commencement of Stage 2.

There are some residual demolition materials and footings on the site associated with former residences and the community health centre. These materials would be removed as part of Stage 2, and as such are not considered in this strategy.

2.2 Waste streams from site clearance and preparatory works

The likely waste streams and respective anticipated volumes associated with the site clearance and preparatory works are identified in the following table.

Table 1 Waste streams from site clearance and preparatory works

Material	Estimated quantity
Green waste (cleared vegetation)	About 4 ha
Residual demolition materials	1200 m^3
Site office refuse and sanitary waste	Minimal

2.3 Waste classification

With reference to the six waste classes identified in the *Waste Classification Guidelines Part 1: Classifying Waste* (DECCW 2009), the expected waste streams are as follows:

- General solid waste, non-putrescible: cleared vegetation, litter and other dumped rubbish, excavated material
- Special waste – asbestos waste: the sites of former residences and the community health centre may contain small amounts of asbestos-containing materials such as fibrolite, etc.

3 Management of waste streams

3.1 Green waste

There are a number of options available for the management of green waste generated by the site clearance and preparatory works. These are outlined in the following table.

Table 2 Green waste management options

Option	Comment
Reuse on site	Cleared vegetation could be mulched/chipped and used on site to assist in minimising dust emissions and managing erosion and sedimentation risk in the period prior to commencement of the Stage 2 construction works. This could also be used for weed suppression in the transmission line easement and in the area of retained vegetation at the eastern end of the site.
Beneficial reuse offsite	Surplus mulched/chipped vegetation could be used offsite by third parties. This option would also include disposal to an approved green waste recycling facility.
Disposal to landfill	Least attractive management strategy.

A combination of the above management options could also be implemented.

No burning of cleared vegetation on site would be permitted.

3.2 Residual demolition materials

At the time of developing this strategy, the majority of required demolition works had been completed on the site. However there were some materials remaining including concrete footings from the original structures. These materials would be removed as part of the site clearance and preparatory works.

Existing concrete footings would require breaking up and removal such that minimal debris remained. Other residual demolition debris would be collected and removed from the site for disposal/reuse at an appropriate receival facility.

With regard to managing demolition materials potentially containing asbestos:

- A NSW licensed Asbestos Removalist as per the *Code of Practice for the Safe Removal of Asbestos*, 2nd Edition [NOHSC: 2002 (2005)] would be engaged to remove any asbestos present on site
- An Unexpected Findings Protocol would be established and implemented in case potentially contaminated, hazardous or unsuitable material were encountered during the site clearance and preparatory works.

3.3 Site office and sanitary waste

A section of the existing sewer (at the southern end of Bantry Bay Road) would be retained on site and a temporary connection made from the construction site facilities. Similar use would be made of the existing reticulated water supply water. As such, there would not be a need for portable ablution facilities.

Office and kitchen waste would be collected on site, and be separated into recyclable and non-recyclable waste. This would be removed regularly and disposed of to a suitable receiving facility.

4 Other matters

4.1 Energy use and greenhouse gas emissions

The waste management plan should identify controls and initiatives to reduce energy use and greenhouse gas emissions such as (but not limited to) the following:

- Consideration of fuel efficiency in selection of plant and equipment
- Minimising periods of idling plant
- Maintenance of plant and equipment to efficient levels
- Re-use of on-site materials such as vegetation, water, rock, etc
- Planning logistics to minimise movement of material
- Ensure fuel storage and refuelling facilities are well maintained to minimise spills during refuelling (should this occur on site).

The waste management plan should detail energy efficient work practices to be adopted, including selection of plant and equipment to minimise energy use and greenhouse gas emissions associated with construction where feasible and reasonable. This could also include the use of biofuels where feasible and reasonable.

4.2 Training

The waste management plan for the site clearance and preparatory works should cover site induction and training requirements. At a minimum, the following should be addressed:

- The principles of avoid-reduce-reuse-recycle-dispose
- Incident and emergency procedures
- Any other management measures relevant to the Stage 1 works
- Relevant environmental legislation, policies and guidelines
- The waste classification process
- A Waste Management Register.

5 References

Dept of Environment, Climate Change and Water (2009) *Waste Classification Guidelines, Part 1: Classifying Waste*

Safe Work Australia (2005) *Code of Practice for the Safe Removal of Asbestos*, 2nd ed [NOHSC:2002(2005)], Australian Government, Canberra.