

Health Infrastructure

Bega Valley Health Service Redevelopment – Stage 1

Waste Management Strategy

Final | 31 August 2012

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Arup
Arup Pty Ltd ABN 18 000 966 165








Arup
Level 10 201 Kent Street
PO Box 76 Millers Point
Sydney 2000
Australia
www.arup.com



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		Signature					
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1 Introduction

This Waste Management Strategy focuses on management of waste, resources use and recycling during Stage 1 of the proposed Bega Valley Health Service Redevelopment at 1614 Tathra Road, Bega. The Stage 1 works for the redevelopment comprise of:

- bulk earthworks,
- piling and foundations,
- services locations and reticulation,
- internal and external road works,
- car parking, and
- other civil infrastructure.

This Strategy forms part of the Environmental Impact Statement (EIS) which details the environmental impact assessment of the key issues for the project. This Strategy should be read in conjunction with the EIS.

The project requires approval under the NSW *Environmental Planning and Assessment Act 1979*. Director-General Environmental Assessment Requirements (EARs) have been issued by the Department of Planning and Infrastructure (DPI) identifying the key issues to be addressed in the Environmental Impact Statement. Item 7 of the EARs for the Stage 1 construction enabling works requires the preparation of a waste management strategy.

This Waste Management Strategy includes:

- Section 2: Background information on the proposed Bega Valley Health Service Redevelopment;
- Section 3: Relevant waste management legislation that applies during the construction enabling works;
- Section 4: Objectives and goals for waste management including the waste hierarchy;
- Section 5: Waste classification and the likely waste streams to be generated during the construction enabling works;
- Section 6: Proposed management measures to comply with planning, legislative and project obligations.

Further stages of construction and operational obligations are not covered in this strategy.

2 Background

The site of the proposed Bega Valley Health Service Redevelopment is located approximately two kilometres from the Bega commercial district. The proposed redevelopment includes construction of a new hospital including structures up to three storeys in height, basements, car parking and access roads (refer to Figure 1). Stage 1 of the redevelopment includes the construction enabling works for the site.

The proposed site is currently grassed farmland and used for grazing cattle with a few scattered trees, some outcropping rocks and boulders present on the site.



Figure 1 Site layout of Bega Hospital (Source: South East Regional Hospital, Bega - Masterplan Report)

3 Legislative Requirements

3.1 NSW State Legislation

Protection of the Environment Operations Act, 1997

The *Protection of the Environment Operations Act 1997* 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.

Waste Avoidance and Resource Recovery Act 2001

Due to concerns about waste management practices and increasing volumes of waste, the NSW government introduced the *Waste Avoidance and Resource Recovery Act 2001*.

The object of the Waste Avoidance and Resource Recovery Act is to encourage 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).

The following hierarchy for managing waste, from most desirable to least desirable, meets the objects of the Act:

- Avoid unnecessary resource consumption;
- Recover resources (including reuse, reprocessing, recycling and energy recovery); and
- Dispose (as a last resort).

NSW Waste Reduction and Purchasing Policy (WRAPP)

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 scheduled areas:

- Paper products;
- Office equipment and components;
- Vegetation material; and
- Construction and demolition materials

WRAPP is not directly applicable to the project, but has been used as a suitable guiding document for waste initiatives.

4 Objectives and Goals

4.1 Waste Hierarchy

The seven-tier waste management hierarchy shown in Figure 2 is a visual representation of the preferred approach to waste management. The first tier, waste avoidance, is the most sustainable form of action. The second and third tiers involve the reuse and recycling, including composting of wastes, using products again instead of throwing them out and creating new materials from old without the energy expense or environmental damage from mining for raw materials. Tier four includes waste that cannot be prevented, reused or recycled can be combusted with energy recovery. Tier five and six includes treatment and containment both involving energy use and are relatively poor outcomes for waste. The final tier, disposal, refers to landfilling or incineration without energy recovery which is the least preferred option.

Actions for the Stage 1 construction enabling works for Bega Valley Health Service Redevelopment waste management will be prioritised according to this hierarchy:

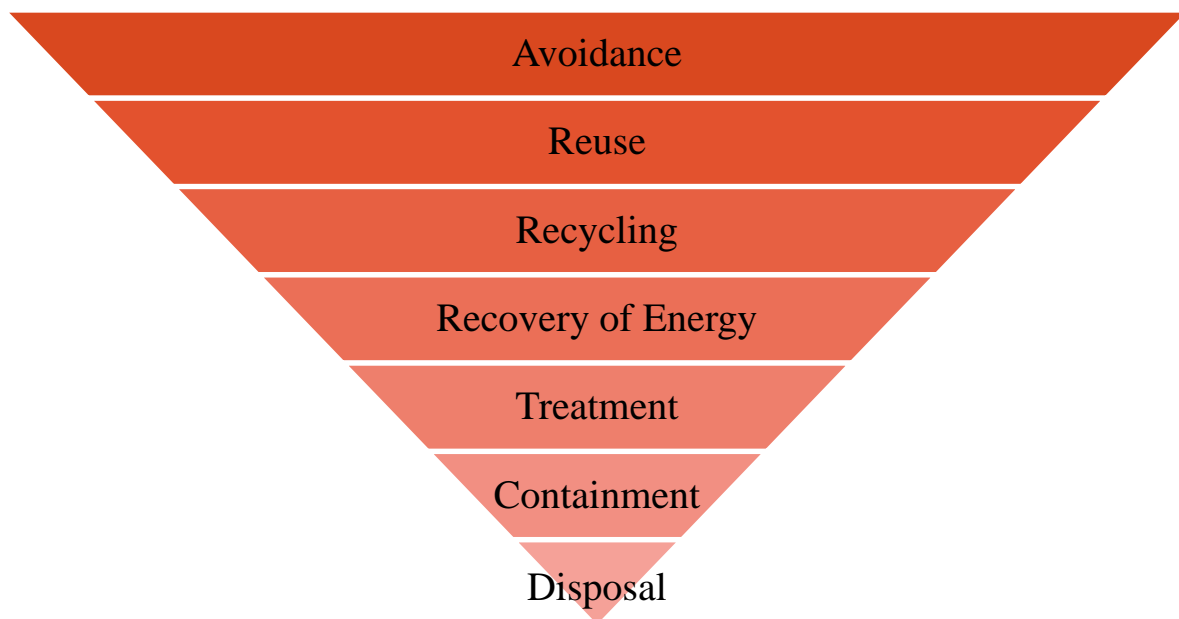


Figure 2 Waste Hierarchy

4.2 Objectives

- To manage waste in accordance with the waste hierarchy
- Comply with relevant statutory requirements
- Comply with all environmental management measures in Section 6 of this Strategy
- Provide plans of actions for key waste streams
- Document and describe the systems for waste management.

4.3 Goals

- All appropriate opportunities are taken to minimise waste
- All waste that cannot be reused is disposed of in an appropriate manner.

5 Potential Waste Streams

5.1 Waste Classification

The Waste Classification Guidelines¹ have identified six classes of waste:

- Special waste (includes asbestos waste, waste tyres etc);
- Liquid waste (defined by angle of repose, temperature at which it becomes free-flowing, and it not being able to be picked up by a spade/shovel);
- Hazardous waste (dangerous goods, batteries lead paint etc);
- Restricted solid waste: solid waste that exceeds the relevant chemical criteria;
- General solid waste (putrescible): organics, food waste etc; and
- General solid waste (non-putrescible): glass, plastic, bricks, concrete, metal, virgin excavated natural material (VENM), building materials etc.

To classify waste, the guidelines describe the following steps:

- Step 1: establish if the waste should be classified as special waste
- Step 2: if not special waste, establish whether the waste should be classified as liquid waste
- Step 3: if not special waste or liquid waste, establish whether the waste is a type that has been ‘pre-classified’ by the Environment Protection Authority (EPA)
- Step 4: if not special waste, liquid waste or pre-classified waste, establish if it has certain hazardous characteristics
- Step 5: if the waste does not possess hazardous characteristics, the waste needs to be chemically assessed to determine what class of waste it is. If the waste is not chemically assessed, it must be managed as if it were hazardous waste
- Step 6: if waste is chemically assessed as general solid waste, a further test is available to determine whether the waste is putrescible or non-putrescible.

Classification of waste under Step 5 is based on chemical assessment in accordance with the criteria of the Waste Classification Guidelines. Two measurable properties of chemical contaminants are used: Specific Contaminant Concentration (SCC) and Toxicity Characteristic Leaching Procedure (TCLP). There is the potential to undertake just SCC testing to confirm that the waste is within the general solid waste classification; however if it exceeds the threshold value TCLP testing may be used.

Soil excavated during the works that is not fill material and does not contain concentrations of chemicals exceeding the general solid waste criteria may be classified as VENM (subject to potential acid sulphate soil testing). Excavated Natural Materials (ENM) are soils that comply with the requirements of the general exemption issued by the EPA, whereby its chemical concentration does not exceed the maximum and average values (refer to Guidelines) and it can only be applied to land as engineering fill or used in earthworks.

5.2 Potential waste streams

This section details the major waste streams to be expected from the Stage 1 works. Potential waste streams from the construction enabling works include general solid waste (non-putrescible) such as spoil, general solid waste (putrescible) such as green waste, hazardous waste and liquid waste. Each waste stream should be disposed of in accordance with the Waste Classification Guidelines.

¹ Waste Classification Guidelines,(2009), Department of Environment, Climate Change and Water.

5.2.1 Spoil

According to the preliminary bulk earthworks cut/fill plan by C&M Consulting Engineers² the road earthworks should produce a net volume of 1,649m³ cut to spoil however the building and car park earthworks requires 28,539m³ of fill for landform creation. Most of the soil and rock materials likely to be encountered during the road earthworks excavations should be suitable for general filling. If it is feasible, the cut to spoil from road earthworks should be reused for the building and car park landform creation avoiding the need for transportation of waste. However, a large amount of fill is still required for the car park and building earthworks. A waste management plan should include mitigation measures regarding receiving fill for the car park and building earthworks to ensure that it complies with the *Protection of the Environment Operations Act 1997*.

5.2.2 Hazardous Waste

The proposed site is currently grassed farmland and therefore without a contaminated land assessment is considered low risk, however if contaminated soil or any other hazardous materials (e.g. asbestos) are found on site during construction enabling works then the waste should be managed appropriately. If suspected contaminated materials are encountered during construction, work should stop at the site until the material has been assessed and removed, or stabilised, in accordance with the Waste Classification Guidelines (DECCW, 2009), the *Protection of the Environment Operations Act 1997* and the *Contaminated Land Management Act 1997*.

Any hazardous liquid wastes should be stored in a covered, labelled and secure compound with an impermeable floor and appropriate bund walls and segregated to prevent accidental mixing in accordance with DECCW “*Bunding and Spill Management*” Guideline.

To avoid liquid hazardous waste spills including oil, refuelling should be carried out in accordance with a potential Refuelling & Maintenance of Vehicles, Plant & Equipment Procedure.

5.2.3 Acid Sulphate Soil

Geotechnical investigations by Douglas Partners³ have reviewed the NSW Acid Sulphate Soil Risk map which indicated that the site is outside the area of any known occurrence of acid sulphate soils. Screening tests were undertaken and confirm the likely absence of potential acid sulphate soils within the proposed development area therefore the production of an acid sulphate soil management plan (ASSMP) should not be required.

5.2.4 Green Waste

Prior to excavation the existing vegetation including approximately five mature trees would be removed from the site. These trees would be mulched on site with this mulch transported offsite for reuse.

5.2.5 Liquid Waste

Following rainfall, groundwater levels may rise and seepage into the open excavation may occur. Groundwater inflows occurring during bulk excavation would be controlled with appropriate erosion and sediment controls such as installing sediment basins and temporary drains which would be detailed by a site wide Soil and Water Management Plan or similar. Where stormwater or groundwater is captured onsite this water would require treatment to an appropriate standard prior to disposal, or transportation offsite.

² C&M Consulting Engineers Drawing- Bulk Earthworks Cut/Fill Plan-Preliminary 00801_DA231 Revision 2

³ Douglas Partners, Report on Geotechnical Investigation, Proposed South East Regional Hospital 1614 Tathra Road, Bega, August 2012.

6 Management Measures

This section of the strategy presents the management measures that should be considered in the development of the Waste Management Plan to comply with the planning and project obligations and meet construction environmental goals in relation to waste, resource use minimisation and recycling.

	Short Description	Management Measure	Timing
6.1	Waste Management Plan	A construction contractor must prepare a Waste Management Plan in accordance with this strategy. The contractor should review the waste streams/ estimates identified in Section 5.3.	Pre-Construction
6.2	Training	<p>The waste management plan should identify site induction and training requirements. Training should cover:</p> <ul style="list-style-type: none"> • The principles of avoid-reduce-reuse-recycle-dispose in site inductions, • Incident and emergency procedures, • Other key management measures relevant to the project • Relevant environmental legislation, policies and guidelines • The waste classification process • A Waste Management Register (see measure 6.14). 	Pre-construction and Construction
6.3	Energy use and greenhouse gas emission	<p>The waste management plan should identify controls and initiatives to reduce energy use and greenhouse gas emissions, for example:</p> <ul style="list-style-type: none"> • Consider fuel efficiency of plant and equipment selection for the project; • Maintain equipment to efficient levels; • Consider energy efficient lighting and other energy use in office facilities • Re-use of on-site materials such as vegetation, water, rock, etc • Recycle water/runoff collected in sediment dams for dust suppression; • Carefully plan logistics to minimise movement of material; • Appropriately train staff in energy and resource conservation to build an energy-conscious culture; • Ensure fuel storage and refuelling facilities are well maintained to minimise spills during refuelling; • Monitor waste generation and waste recycling; • Interview suppliers of major materials such as diesel and cement about their energy conservation principles. <p>The waste management plan should detail the energy efficient work practices to be adopted, including</p>	Pre-construction and Construction

	Short Description	Management Measure	Timing
		selection of materials and equipment to minimise energy use and greenhouse gas emissions associated with construction where feasible and reasonable and the use of biofuels, where feasible and reasonable.	
6.4	Off-site waste disposal	<p>The waste management plan should identify a Site Environmental Manager to approve all off-site waste disposal locations and check licensing requirements.</p> <p>The waste management plan should detail the approach to waste management ,for example:</p> <ul style="list-style-type: none"> • Avoid waste creation, reuse and recycle wherever possible and dispose as a last resort, • Waste and chemical wastes should be stored and disposed of as required by the <i>Waste Avoidance and Resource Recovery Act 2001</i>, the <i>Protection of the Environment Act 1997</i> and the DECCW Waste Classification Guidelines, • Waste disposal should be carried out in accordance with the requirements of the POEO Act so as not to cause actual or potential harm to the environment when disposing of and transporting surplus materials, including excavated materials, and • All waste should be disposed of to a place that can lawfully accept the waste or reused on site. 	Construction
6.5	Vehicle wash down	The waste management plan should detail the location of a dedicated vehicle and mobile plant wash-down bay prior to the commencement of construction.	Pre-Construction
6.6	Spoil	<p>The waste management plan should detail the use of spoil including:</p> <ul style="list-style-type: none"> • All material excavated from construction should be re-used or recycled provided the material is not contaminated and provided it is cost effective to do so, with offsite disposal a last resort. Prior to disposal, spoil should be classified in accordance with the Waste Classification Guidelines (DECCW 2009). • All topsoil should be re-used onsite where possible. Where this is not feasible, topsoil should be re-used offsite where possible. Disposal of topsoil to landfill should be avoided. 	Construction
6.7	Contaminated material	<p>The waste management plan should identify procedures in the event of discovery of contaminated material, for example:</p> <ul style="list-style-type: none"> • If suspected contaminated materials are encountered during construction, work should stop at the site until the material has been assessed and removed, or stabilised, in accordance with the <i>Waste Classification Guidelines</i> (DECCW, 2009), the <i>Protection of the Environment Operations Act 1997</i> and the <i>Contaminated Land Management Act 1997</i>. 	Construction
6.8	Plant, vehicle and equipment compliance standards	The waste management plan should identify that the plant, vehicles and equipment should be maintained in good working order to reduce exhaust and other emissions, reduce fuel consumption and reduce risks of leakage of oil and lubricants.	Construction
6.9	Waste oil	<p>The waste management plan should detail the procedure to manage waste oil, for example:</p> <ul style="list-style-type: none"> • Waste oil from service and repair of machinery should be transported to a waste oil holding tank that should be kept in a suitably bunded area at the main compound. Oil recycling 	Construction

	Short Description	Management Measure	Timing
		contractors should regularly pump out and remove collected waste oil, filters, and oil-contaminated materials.	
6.10	Waste storage	<p>The waste management plan should identify waste storage requirements including:</p> <ul style="list-style-type: none"> • All trade, domestic and general waste to be stored in accordance with DECCW requirements. • All trade, domestic and general wastes will be safely stored in bins and arranged for regular disposal to a landfill licensed to accept them. All wastes should be separated and segregated in accordance with the Waste Classification Guidelines (DECCW 2009) into: <ul style="list-style-type: none"> - hazardous and non-hazardous wastes (i.e. oils, paints, contaminated/non-contaminated soil, etc.) - waste states (liquids, solid) - waste types (flammables, corrosives, etc). 	Construction
6.11	Hazardous and liquid waste (fuels, oils, sanitary waste, sewage, paints coatings and solvents, lubricants and fuels, etc)	<p>The waste management plan should detail the procedure to manage hazardous and liquid waste, for example:</p> <ul style="list-style-type: none"> • All hazardous and liquid waste should be assessed and classified in accordance with Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i> and the <i>Waste Classification Guidelines</i> (DECCW, 2009) prior to removal by a tanker and disposal at a licensed waste facility. • Hazardous and liquid wastes should be stored in a covered, labelled and secure compound with an impermeable floor and appropriate bund walls. • Hazardous and liquid wastes should be safely contained in suitable containers and segregated to prevent accidental mixing in accordance with DECCW “<i>Bunding and Spill Management</i>” <i>Guideline</i>. • Refuelling should be carried out in accordance with a potential Refuelling & Maintenance of Vehicles, Plant & Equipment Procedure. 	Construction
6.12	Waste bins	<p>The waste management plan should identify location of waste bins:</p> <ul style="list-style-type: none"> • Covered receptacles should be provided for litter and other wastes. Separate receptacles should be provided for recyclable materials at site offices. 	Construction
6.13	Recycling	<p>The waste management plan should identify a recycling procedure, for example:</p> <ul style="list-style-type: none"> • All wastes generated on site should be sorted and stored separately where possible to maximise recycling. A recycling contractor should be engaged for collection of recyclables from the site. • Examples of wastes that will be produced include paper, cardboard, photocopier toner, printer cartridges, plastics, metals, packaging, etc. 	Construction
6.14	Waste Management Register	The waste management plan should produce a waste management register.	Pre-Construction

	Short Description	Management Measure	Timing
		<p>A Waste Management Register should be maintained until final completion, to record the type, amount and location of waste reused, recycled, stockpiled and disposed. The Waste Management Register should include the following details:</p> <ul style="list-style-type: none"> • Type of waste and its classification (according to the Protection of the Environment Operations Act 1997 and DECCW's Waste Classification Guidelines); • Tonnes of waste; • How and where the waste was reused, recycled, stockpiled or disposed • The date the waste was reused, recycled, stockpiled or disposed; and • The name of the transporter used. 	and Construction
6.15	Waste Monitoring	<p>The waste management plan should identify a waste monitoring procedure which should be included in the overarching Construction Environmental Management Plan.</p> <p>Waste management audits to assess extent of waste hierarchy in use should be carried out as a component of the overall auditing schedule.</p> <p>The waste management plan should identify a Site Environmental Manager who must maintain and document types and volumes of wastes generated, re-used, recycled and disposed of and keep records of waste contractors and landfill facilities used to ensure cradle to grave traceability of waste management.</p> <p>Waste monitoring records should be kept in the Waste Management Register (See 6.14)</p>	Pre-Construction and Construction
6.16	Waste and resource recovery	Waste management plan should detail the procedure for reporting waste recovery under the NSW Government 'Waste Reduction and Purchasing Policy' as detailed within Annexure G36/F by 31 July for the preceding financial year and at project completion.	Pre-construction and construction
6.17	Waste transport	<p>A waste management plan should detail the waste transport providers.</p> <p>Only waste transporters who hold an appropriate Environment Protection Licence (issued by DECCW) should be used. The DECCW (EPA) Industrial Waste Recycling Directory should be used to obtain information about professional recycling businesses that are operating in the surrounding area.</p>	Construction
6.18	Spills	A waste management plan should detail the spill management measures for during construction.	Construction
6.19	Stockpiling and plant servicing	A waste management plan should provide details about the location and management measures regarding stockpiling and servicing plant and equipment on site.	Construction

7 Conclusion

This Waste Management Strategy details the waste classification and likely waste streams relevant to Stage 1 of the Bega Valley Health Service Redevelopment and identifies a number of management measures which should be taken forward in developing the Waste Management Plan to manage the Stage 1 construction enabling works.

8 References

Waste Avoidance and Resource Recovery Act, 2001

Protection of the Environment Operations Act, 1997

Contaminated Land Management Act, 1997

DECCW Waste Classification Guidelines

NSW Government's Waste Reduction and Purchasing Policy (WRAPP)

Douglas Partners, Report on Geotechnical Investigation, Proposed South East Regional Hospital 1614 Tathra Road, Bega, August 2012.

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