THIESS

Royal North Shore Hospital

ESD Report for Project Application Environmental Assessment

Issue1

THIESS

Royal North Shore Hospital

ESD Report for Project Application Environmental Assessment

October 2008

Ove Arup & Partners Ltd
Level 10 201 Kent Street, Sydney NSW 2000
Tel +61 2 9320 9320 Fax +61 2 9320 9321
www.arup.com

Job number 86605

ARUP

Document Verification

Job title	Royal North Shore Hospital	Job number 86605
Document title	ESD Report for Project Application –Environmental Assessment	File reference
Document ref		

Revision	Date				
Draft 1	15/10/08	Filename	ESD Report.doc		
		Description	First draft		
			Prepared by	Checked by	Approved by
		Name	CJK	HS	HS
		Signature			
Issue	23/10/08	Filename	ESD Report issue1.doc		
		Description			
			Prepared by	Checked by	Approved by
		Name	CJKCJK	HS	HS
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

Issue Document Verification with Document ✓

Contents

1 Introduction

The proposed development is for the construction of a new Acute Hospital, Community Health Facility, multi-level car park and associated works on land known as the 'Royal North Shore Hospital Redevelopment', (RNSH), and is to be administered as a Project Application under Part 3A of the Environmental Planning and Assessment Act 1979, (the Act). The Project is referred to as MP 08_0172.

In summary, the proposed scope of works includes:

- Acute Hospital Building
- Community Health Facility
- Multi-level car park for 576 vehicles
- Refurbishment/alterations to the Douglas Building
- Pedestrian bridge linking new Hospital and Douglas Building
- New roads associated with the development of the Acute Hospital building, Community Health Facility and Car Park
- At grade parking and the temporary use of land for parking purposes during construction
- Public Domain works including footpaths, lighting and street tree planting
- Demolition of Buildings 1, 2, 10 and part 19 (demolition of all other buildings requiring demolition has already been approved)
- Landscaping
- Civil works including storm water and drainage infrastructure, new roads and utilities

This Report has been prepared to address those matters related to ESD and the assessment of MP 08_0172. Refer to 'Background' discussion below.

1.1 Background

1.1.1 Concept Plan

A Concept Plan Approval was issued by the Minister for Planning on 9 February 2007, (Major Project Application No. 06_0051), which gave concept approval for the following hospital related components:

- Subdivision of the site into a hospital precinct and other development precincts.
- A maximum floor area of 178,370m^2 across the development precincts (maximum FSR are prescribed for each precinct)
- Minimum and maximum FSR for the various components of the proposal including residential, employment generating uses, nurses accommodation etc.
- The conceptual road design.
- Urban design, landscaping, open space and heritage concepts.
- Maximum heights.
- Car parking provision to be in accordance with Willoughby Council DCP.
- Improved servicing of the site.
- Staged re-opening of Westbourne Street to through traffic.

Project Application Approval was given for demolition works and site preparatory works to ground level.

On 31 January 2008, the Concept Plan and Project Application Approval was modified in so far as amendments being to conditions related to agreements with public transport providers and with respect to the scheduling of a Traffic Management and Accessibility Plan (TMAP) (Conditions M9.1 and M10.1).

The Concept Plan and Project Application was further modified on 7 April 2008. The modification allowed for the erection temporary buildings and imposed relevant conditions.

1.1.2 Project Application

Further to the Concept Approval for the whole RNSH site, and along with it the identification of development precincts within the site, on 19 August 2008 a request was made to the Minister to declare the core medical precinct as “Critical Infrastructure Project”, under Clause 6 of SEPP Major Projects 2005 (the SEPP), to permit the lodgement of a Project Application, under Part 3A of the Act.

The application was accompanied by a Preliminary Environmental Assessment, (PEA), for development within the core medical precinct and a request for any relevant Director-General’s environmental assessment requirements (DGR’s).

On 30 September 2008, the DGR’s were issued by the NSW Department of Planning, under s.75F of the Act. The project has been declared a Major Project Application, (MP 08-0172).

2 ESD

2.1 Introduction

The design of the new Royal North Shore Acute Hospital block and the Community Health Building will respond to the latest ESD standards and guidelines and address the following design principles:

- to achieve leadership in sustainable hospital design and set international benchmarks for indoor environment quality, greenhouse gas reduction and water conservation;
- to achieve an innovative and ecologically sustainable development, which will provide healthy clinical care areas, workplace and laboratory environments and reduce the ecological impact and operating costs of the development;
- to maximise the advantages of the urban site and aspect ensuring access to natural daylight, external views and garden access for all occupants and;
- to embed sustainability objectives (environmental, social and economic) into the design at the outset of the project then measured, tracked and improved throughout the project life to meet the NSW Health's stated requirements.

The implementation of these principle are done through the use of the Green Building Council of Australia's Greens Star (GBCA) Health Care Tool. The aspiration is to achieve a 4 star Green Star facility.

2.2 Thermal Massing

2.2.1 Orientation

The Community Health building is optimally sited with substantial exposure to the northeast and northwest. Glazing on these sides is able to enjoy the benefits of the low angle sun during the winter times, while being protected by external sun awnings during the summer when the angle of the sun is higher.

Minimal southern glazing is provided in anticipation of the future southern extension.

2.2.2 Shading

Horizontal sun shading is provided to various facades of the Community Health Building. The building will also be exposed to western sun across the Heritage Precinct due to the lower building forms. To the east, a range of existing buildings along the opposite side of Herbert Street will assist shading at early hours of summer weather.

For the Acute Hospital shading is predominantly provided on the north western façade, which would be associated with the highest solar load, to reduce the energy consumption of the building and provide the occupancy with enhanced thermal comfort.

2.2.3 Thermal Transmittance

The selected façade systems for the Acute Hospital and Community Health Building have been selected to maximise thermal performance. All aspects complies with Part J of the Buildings Code of Australia. In some areas this is exceeded by using a double glazing, jockey sash type systems that will also reduce internally noise levels.

2.2.4 Natural Daylight

Restriction of the Community Health building floor pate to a maximum cross width of twenty metres permits a high proportion of each floor to receive daylight intrusion. Wherever possible, enclosed rooms have been located to the interior, so that open work areas and open treatment areas or secured interview / counselling rooms receive daylight. A large atrium is also included in the design of the Acute Hospital bringing daylight into the centre of the building thereby further enhancing the environment for staff and patients.

2.3 Water Services

The water strategy will revolve significantly around the capture and reuse of rainwater. This, coupled with efficient fixtures and fittings, as well as implementing monitoring and targeting strategies will ensure a large reduction in potable water consumption.

All fitting and fixtures within this facility will have a minimum 4 Star WELS (Water Efficiency Labelling & Standards) Rating with the exception of showerheads, which are to have a minimum 3 Star rating due to availability. This will reduce water consumption throughout the building compared with an existing similar use building.

A rainwater collection and reuse system with a retention tank will be employed in this project for irrigation in order to reduce potable water consumption.

2.3.1 Potable cold water system

- Water collection and reuse for WC and urinal flushing and irrigation
- Toilet pans and cisterns provided with a 3-star rating
- Bathroom basin taps provided with a 5-star rating
- Tea room sink taps provided with a 3-star rating
- Shower heads provided with a 3-star rating

2.3.2 Potable hot and warm water service

- Bathroom basin taps provided with a 5-star rating
- Tea room sink taps provided with a 3-star rating
- Shower heads provided with a 3-star rating

The circulation system will be insulated with high-quality foam insulation to minimise heat losses. The hot water generation plant will include a connection to the cogen plant reclaim hot water system.

2.4 Energy Efficiency

The energy use of the new Acute Hospital and Community Health Building has been simulated to estimate its base line energy use. The following key initiates are used to generate energy efficiency.

- An optimised building envelope that limits solar gain and energy loss through careful selection of energy efficient low-E double glazing, shading construction and limiting glazing to an extent that is just sufficient for daylight and view but not excessive to cause thermal discomfort.
- Use of a high efficiency HVAC system, in conjunction with a dedicated 100% outside air system that is capable of being turned off for relevant zones in the building depending operational cycle
- Selection of modern, high efficiency central plant components combined into an intelligently controlled system capable of delivering chilled and hot water reticulation as required
- A “free cooling” operational strategy that significantly reduces chiller energy use by using the heat rejection equipment to provide chilled water in Sydney’s favourable conditions climate.
- A 4MW cogeneration plant that will provide base level heating and power using gas driven engines. This is a very carbon effective method of providing energy to site effectively reducing carbon emission by up to 20000tonnes per annum. The cogeneration plant is only relevant for the acute hospital and similar plant will not be installed for the Community Health Building.
- Extensive energy metering will be implemented to ensure fine tuning of energy performance and monitoring over time. A 2 year post completion operation and commissioning plan will be implemented with quarterly review of energy use.
- These items have been simulated using a validated energy protocol used commercially in Australia.

2.5 Recycling

2.5.1 Construction Waste

Waste management issues during construction will be addressed in an environmentally responsible way. This will include the implementation of an Environmental Management System (EMS) by a certified contractor and a Waste Management Plan (WMP) which will set a target for a high proportion of construction and demolition waste to be diverted from landfill.