

ENQUIRIES: NICHOLAS JOHNSON
PROJECT NO: 35503

31 October 2018

NSW Health Infrastructure
C/ Johnstaff

ECOLOGICAL SUSTAINABLE DEVELOPMENT STATEMENT – CONCORD REPATRIATION HOSPITAL

This Ecologically Sustainable Development (ESD) statement has been prepared for the Concord Repatriation General Hospital Concept and Stage 1 Redevelopment, located at Hospital Rd, Concord, NSW 2139.

Description of Works

This SSDA report seeks consent for the proposed redevelopment of Concord Repatriation General Hospital to improve and replace outmoded facilities to meet the substantial growth in clinical service demand across the hospital's catchment:

- Concept approval is sought for the redevelopment indicatively comprising 82,000sqm GFA, to be undertaken in two (2) stages including:
 - Clinical Services Building (CSB) and multi storey carpark (Stage 1); and
 - Acute Services Building (ASB) and multistorey carpark (Stage 2).
- Detailed approval is sought for the Stage 1 construction of the proposed CSB (44,000sqm GFA) and the construction of a multi-storey car park located to the north of Hospital Road.

Detailed development approval for the proposed Stage 2 works will be completed at a later date and does not form part of this SSDA. The Stage 1 Detailed works are estimated to be completed by end 2021.

The proposed Concept redevelopment is in accordance with the concept architectural package prepared by Jacobs.

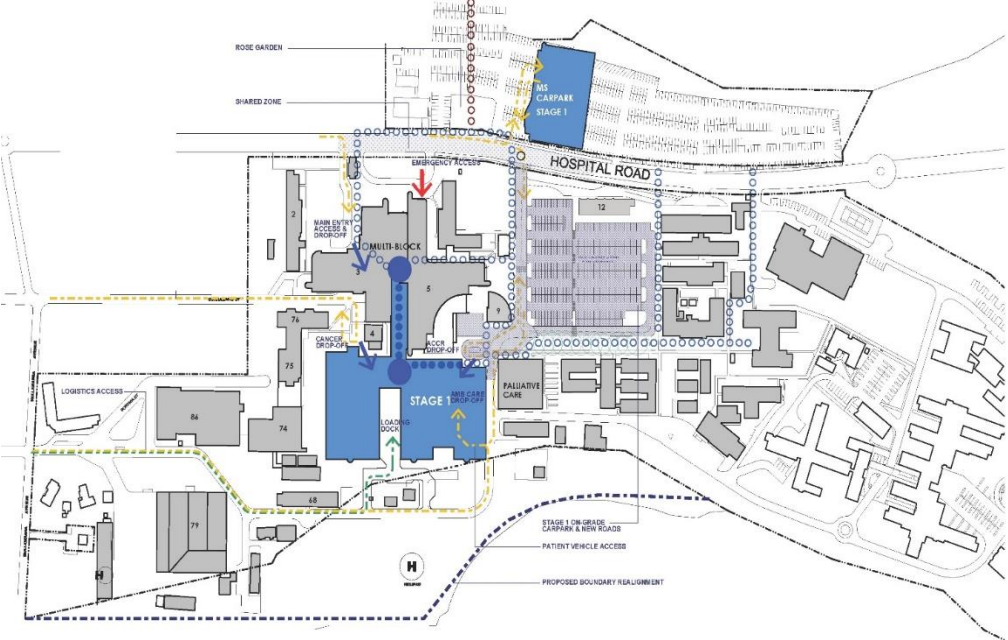
The proposed Stage 1 detailed development (CSB and multistorey carpark) is in accordance with the architectural drawings prepared by Jacobs.

The areas in the below staging plans have been assessed and are included within this report.

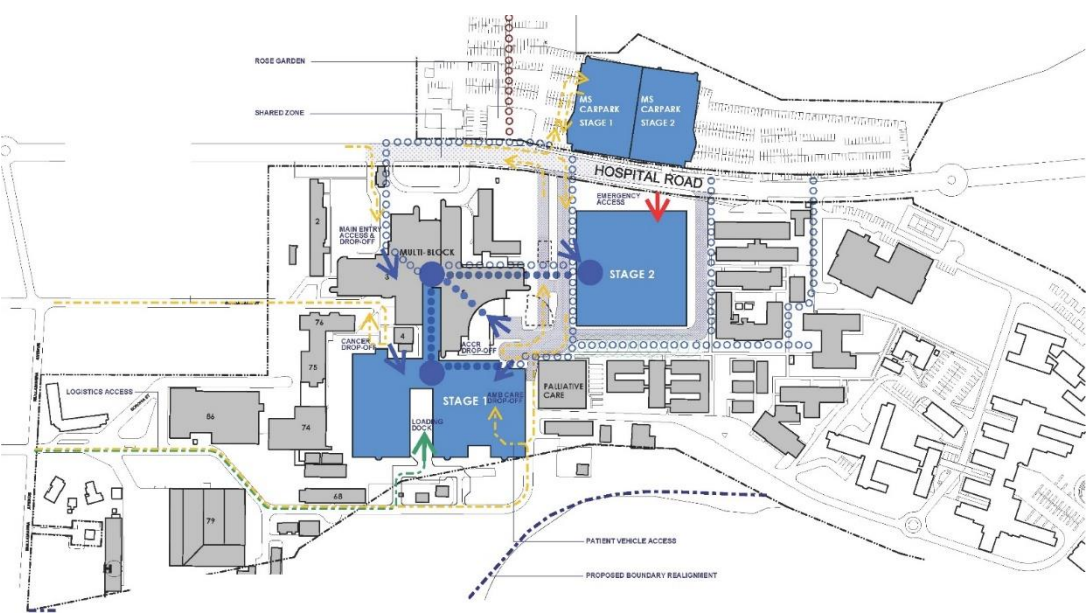
To us, it's more than just work

Level 6, Building B, 207 Pacific Highway, St Leonards NSW 2065
Phone +61 2 8484 7000 Fax +61 2 8484 7100 Email sydney@wge.com.au www.wge.com.au
Wood & Grieve Engineers Limited ACN 137 999 609 trading as Wood & Grieve Engineers ABN 97 137 999 609
Albany • Brisbane • Busselton • Melbourne • Perth • Sydney

STAGE 1 PROPOSAL



STAGE 2 (FUTURE EXPANSION)



The statement is intended to provide an overview of the proposed project's ESD commitments in response to Secretary's Environmental Assessment Requirements (SEARs) and support the project's development application via the Environmental Impact Statement (EIS).

Specifically, this statement responds to Key Issue No.6 – Ecological Sustainable Development and the Office of Environment and Heritage Comments and seeks to:

- *Detail how ESD principals (as defined within Clause 7(4) of Schedule 2 of the Environmental Planning & Assessment Regulation 2000) will be incorporated in the design and ongoing operation phase of the development;*
- *Demonstrate that the development has been assessed against suitably accredited rating scheme to meet industry best practice; and*
- *Include a description of the measures that would be implemented to minimise consumption of resources, water (including water sensitive urban design) and energy.*
- *Identify the climate change projections for the project using the NSW and ACT Governments Regional Climate Modelling climate change projections.*

Information contained within this statement has been prepared in accordance with:

- NSW Health Infrastructure Engineering Service Guidelines, August 2016;
- Green Star – a holistic environmental certification scheme created by the Green Building Council of Australia (GBCA); and
- NSW and ACT Governments Regional Climate Modelling (NARCLiM) projections for Sydney Metropolitan area.
- Recognised best practice principles of ESD including relevant legislation, standards & industry benchmarks.

The following information provides a detailed response to the above Key Issues as identified within the Secretary's Environmental Assessment Requirements, Application No# SSD 18_9036.

Clause 7(4) – Schedule 2 – Environmental Planning & Assessment Regulation (2000)

The above nominated Clause identifies the Principles of ecological sustainable development as follows:

- (a) the precautionary principle, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:
 - (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and*
 - (ii) an assessment of the risk-weighted consequences of various options,**
- (b) inter-generational equity, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,*
- (c) conservation of biological diversity and ecological integrity, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,*
- (d) improved valuation, pricing and incentive mechanisms, namely, that environmental factors should be included in the valuation of assets and services, such as:
 - (i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,*
 - (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,*
 - (iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.”**

Concord Hospital redevelopment response;

NSW Health Infrastructure (NSWHI) has taken a fundamentally responsible approach to ensuring the principles of ESD are incorporated into all of its new and refurbishment projects regardless of project value or size.

Precautionary Principle

There are no threats of serious or irreversible environmental damage as a result of locating the Concord Repatriation Hospital Stage 1 Redevelopment on the desired site. The proposed building is to be located on a previously developed site. As the proposed development is not a greenfield project, the risk of creating environmental damage associated with building on a greenfield site is considered low. No threatened or endangered species are located on the land due to the previous development of the site.

Perceived threats to the proposed development are to be assessed during the detailed design & construction phases of the project in which the mains works Contractor shall implement a comprehensive environmental management plan. The EMS shall be implemented in accordance with the GBCA Green Star standard which references *NSW Environmental Management System Guidelines* which are viewed within the property industry as 'best practice' guidelines. Building operation shall be in accordance with NSW HI standard operating procedures which also take account for environmental risk & mitigation measures. In accordance with this strategy, no serious or irreversible environmental damage is expected due to the construction & operation of the building.

Inter-generational equity

The proposed Concord Repatriation Hospital Stage 1 Redevelopment conserves inter-generational equity through minimising the consumption of resources whilst providing a workspace which will ensure the health and well-being of occupants into the future. The project will ensure a lower demand for resources than a standard practice development by introducing a number of best practice energy and water conservation measures. These initiatives will conserve more resources for future generations, instead of their immediate consumption by the current generation.

All waste streams will be dealt with in ecologically safe methods; waste water and storm water will be plumbed to the sewers or storm water drains as required by law. In addition, waste water will be lower for this development compared with a standard practice development as low-flow fixtures and fittings will be used to reduce water consumption throughout the building. Existing services infrastructure upgrades will be documented & included within the project where relevant and connect to the existing major services infrastructure currently serving the site.

NSW HI Engineering Service Guidelines also ensure material selection and longevity including preference for materials with low embodied energy content, high recycled material content and/or highly recyclable (at the end of life phase). By reducing materiality demand, the project ensures inter-generational equity is preserved via the design selection process.

Conservation of biological diversity and ecological integrity

There is limited biological diversity on the current site due to the property being previously developed. The proposed development will have limited, if any impact on the current level of biological diversity and ecological integrity as there is little ecological valued landscaping on the current site that will be replaced by built development in this project.

The project's sustainability targets will aim to ensure improved conservation of resources than a comparative standard practice development. This means that the proposed development is likely to have a smaller gross biological and ecological footprint than other similar sized projects.

Energy conservation measures will reduce the project's demand for electricity and gas, which slows or reduces the need for new energy infrastructure in the broader energy markets. This indirectly reduces the land required for new infrastructure, and the pollution caused by electricity generation.

Improved valuation, pricing and incentive mechanisms

This project will integrate a number of initiatives which aim to internalise pollution and other undesirable environmental outcomes. Contractors will be requested to provide and abide by an Environmental Management Plan and Environmental Management System which are in accordance with *NSW Environmental Management Systems Guidelines* or a similar standard. This places a value on environmentally responsible building practices and places a form of “polluter pays” onto the contractors to ensure they are held responsible for the environmental management of the building site as they complete their work.

The cost to recycle the construction and demolition waste will be borne by the project team. The team is required to target 90% recycling of construction waste (consistent with Green Star industry best practice standard). This will have a greater financial cost to the project, however it provides a more accurate reflection of the full life cycle costs of the materials which were on the site, and the waste from the new materials as a result of the construction. The increased cost of recycling construction materials will also incentivise the purchase of less materials, thereby reducing over-ordering and material wastage.

The costs of producing the following pollution: sewage, landfill waste, and CO₂ emissions are partially borne by project team and accounted for in the project’s sustainability initiatives.

The project has voluntarily elected to:

- improve their water consumption efficiency, thereby paying to reduce their production of sewage;
- reduce their energy consumption, which means solutions to reducing CO₂ emissions will be paid to be investigated during the design phase;
- recycle waste streams in the construction and operation of the project, which will cost more than standard practice where all material waste is directed to landfill.

Green Star – holistic environmental assessment tool (recognised as Australian Industry Best Practice in Environmental Design & Construction).

In response to the SEARs Key Issue in demonstrating the project is assessed against a suitably accredited rating scheme equivalent to industry best practice, the Concord Hospital Redevelopment project will be assessed against the industry recognised Green Star scheme.

Green Star, developed by the Green Building Council of Australia (GBCA), is widely recognised by the Australian development industry as representative of 'environmental best practice' in property design & construction. A holistic environmental rating tool, Green Star aims to improve environmental performance of buildings, communities and tenancies across nine assessment categories. These include:

- Building Management
- Indoor Environmental Quality
- Energy
- Transport
- Potable Water
- Materials
- Land use & ecology
- Emissions; and
- Innovation

4 Star Green Star equivalent, as nominated within the NSWHI Engineering Services Guidelines is considered consistent with Australian Best Practice in design & construction for a healthcare facility.

The design integration of Green Star intent will ensure the project meets industry best practice standard via the inclusion of ESD initiatives such as:

- Comprehensive building commissioning & building systems tuning;
- Dedicated commitments to environmental building performance targets;
- Metering & monitoring systems for improved operational energy & water efficiency;
- Formalised environmental management practices during construction (EMS/ISO14001);
- Improved operational waste management practices;
- Improved indoor air quality;
- Improved acoustic, lighting & visual comfort;
- Reduced indoor pollutants such as volatile organic compounds & formaldehyde emissions;
- Improved thermal comfort for occupants;
- Reduced greenhouse gas emissions via energy efficiency initiatives – LED lighting, automated controls, variable speed fans, economy cycle on air-conditioning, high efficiency MEPS rated equipment, optimised HVAC zoning, energy metering & BMS controls;
- Potable water savings – via high WELS rated FFE, sub-surface drip irrigation;
- Responsible building materials – best practice PVC products, steel sourced from sustainable supply chains;
- Recycling & diversion from landfill targets for construction & demolition waste;
- Maintained ecological value of the project site;
- Redevelopment of previously developed urban project site will have minimised impact on the local ecology & ecosystem;
- Effective stormwater management to ensure post-development water quality & control does not exceed pre-development levels;

- Control of light pollution beyond the site boundary;
- Effective design & operation strategies to protect against legionella risk;
- Reduce environmental impacts from HVAC refrigerants; and
- ESD Innovations.

Description of measures implemented to minimise consumption of resources, water (including water sensitive urban design) and energy.

In addition to the information nominated within the above sections, the project will ensure suitable measures which achieve positive environmental outcomes are incorporated into the project design. This will be achieved via a combined approach to both the NSWHI Engineering Service Guidelines and the design intent of Green Star.

Specifically, the implementation of design initiatives to minimise the consumption of resources will be addressed by complying with NSWHI Principle 2.5.10 – materials (refer comments above) & the design standards nominated within Green Star – materials - credits 19 – 22.

The consumption of water will be minimised by complying with NSWHI Principle 2.5.9 – water & the design standards nominated within Green Star – water - credits 18. For further information on the impacts of water sensitive urban design, refer Civil engineer's stormwater management report.

The consumption of energy will be minimised by complying with NSWHI Principle 2.5.8 – Sustainability & Energy (refer comments above) & the design standards nominated within Green Star – Management, Indoor Env. Quality & Energy - categories. Examples have been provided above.

Climate Change Projections for Building Design

The project will consider the projected impacts of climate change and will address these in a reasonable manner through building design.

The project will utilise the regional climate projection data such as rainfall, temperatures and fire danger index from NARCLiM for the next 20-year periods (2020-2039) and/or more future periods (2060-2079) to assist with the project team on the building design to ensure the project will be adapted and resilience to the impact on climate change.

NARCLiM projections for Concord include:

- Temperature rise of 0.5 degrees C
- 5% increase in rainfall, although it is also likely to be more sporadic and due to extreme rainfall events.
- Severe fire weather is expected to increase slightly for the region.
- Around 5 additional days per year of >35 degrees C maximum temperatures.

Climate change risk mitigation actions that may be implemented into the building design including but not limited to:

- Alternative water supplies to reduce the potable water consumption during drought periods
- Proper flood prevention design to manage against potential flooding and high rainfall events
- Stormwater treatment to ensure waterways water quality standards are met.

- Alternative energy sources to reduce grid electricity consumption and its associated costs

We trust the information detailed above provides sufficient response to the SEARs Key Issue – No.6 and confirms the project's commitment to ESD & ensuring the overall environmental impact of the project is minimised.

Nicholas Johnson
Principal, Sustainability Section Manager
for Wood & Grieve Engineers Ltd.