

ENQUIRIES: NICHOLAS JOHNSON
PROJECT NO: 29586-SYD-SU

24 October 2018

NSW Health Infrastructure
C/- Capital Insight

ECOLOGICAL SUSTAINABLE DEVELOPMENT STATEMENT (REVISED) – BOWRAL & DISTRICT HOSPITAL REDEVELOPMENT

Note: *The following statement is revised following previous issue (01 February 2018) in response to feedback received from the NSW Government Architect (02 September 2018) and Water NSW (27 September 2018).*

This revised Ecologically Sustainable Development (ESD) statement has been prepared for the Bowral & District Hospital redevelopment, located at 97-103 Bowral Street, Bowral NSW. 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 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.

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
- 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 Number SSD 8980.

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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.”**

Bowral & District 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 Bowral & District Hospital 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.

The proposed development is proposed to carry out predominantly the same use as the current building(s) on the site. Therefore, no serious or irreversible environmental damage is expected due to the operation of the building.

Inter-generational equity

The proposed Bowral & District Hospital 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.

As the site is already developed, the existing environment condition is unlikely to be significantly altered. The proposed development includes new landscaping which will maintain pockets of planted environment similar to those currently present on the site. The limited diversity of the environment currently on the site will be maintained by this project.

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.

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 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 costs associated with 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 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 Bowral & District 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 recognised industry best practice initiatives will ensure the project meets industry best practice standard via the inclusion of the following ESD initiatives:

Building / Environmental Management:

- Comprehensive building commissioning & building systems tuning prior to practical completion for maximized energy efficiency;
- Dedicated commitments to environmental building performance targets via the adoption of NSWHI Engineering Service Guidelines – minimum 10% improvement on NCC Section J;
- Metering & monitoring systems for improved operational energy & water efficiency with BMS integration;
- Formalised environmental management practices during construction (EMS/ISO14001) to be held & implemented by the main works Contractor; and
- Improved operational waste management practices via specific design response;

Indoor Environment Quality:

- Improved acoustic performance via specific design responsive acoustic treatments;
- Improved access to natural daylight improving indoor environment, patient health and reduced energy demand; and
- Reduced indoor pollutants such as volatile organic compounds & formaldehyde emissions via Architectural design specification;

Energy / GHG Emissions Reduction:

- High performance low e-glazing with a minimum thermal specification of U-value 4.59W/m²K and SHGC 0.6 installed as part of the building thermal envelope;
- Overall 10.3% improvement on minimum NCC Section J standard design including improve building fabric items, high efficiency HVAC system and LED lighting;
- Building Management System (BMS) to control all building services (A/C and lighting) including after-hours/low use shut-off. Development of this design is being examined to include split HVAC System allowing different A/C zoning and operation times;
- Maximising use of natural light through habitable areas along the perimeter, thereby reducing reliance on artificial lighting to achieve necessary illumination levels and contribute to energy savings;
- Occupancy sensors and time clock control for lighting;
- Plant greater than 100kVA will also be sub-metered. Economy cycle options available for AHUs that can be utilised for cooling the periods when ambient conditions are below the internal conditions;
- Increasing the hot water supply thermal insulation from 25mm to 38mm thick. This will reduce the heat losses from pipes (by approx 30%); and

Potable Water Reduction:

- Incorporation of a rain-garden (stormwater swale) on the north/western corner of the site to reduce potable water demand for irrigation supply; and
- Water conserving WC suites and tapware (WELS minimum ratings in accordance with GBCA standards).

Sustainable Materials:

- Physical preventative termite treatments in lieu of chemical barriers e.g. termimesh/gravel;
- Concrete with cement replacement and recycled aggregate is proposed;
- Structural steelwork and steel reinforcement with recycled content is proposed;
- Maximising the use of recycled timber, engineered and glued timber composite products, timber from plantations or from sustainably managed re-growth forests, thus excluding timbers from high conservation forests;
- Use of timber that is free from Chromated Copper Arsenate (CCA) preservatives;
- 95% of timber used in the construction is to be certified by the Forest Stewardship Council (FSC) and/or Programme for the Endorsement of Forest Certification (PEFC);
- Selection and specification of furniture, equipment materials through the design/user process with regards to:
 - Availability
 - Reliability
 - Lower adverse environmental impacts throughout their lifecycle
 - Contain a reduced (or nil) hazardous substances
 - Low Volatile Organic Compound (VOC) products
 - Minimal PVC usage through the project where applicable e.g. siphonic drainage requiring less PVC pipes
 - Manufactured from/contain recycled materials, or can be recycled at the end of their useful life; and
 - Lifecycle/operational costs

Land Use & Ecology:

- Building siting and earthworks: Minimising cut and fill to allow the natural hydrology of the site to be maintained, and minimising importing/exporting of soil;
- On-site Stormwater Detention (OSD) to reduce the risk of flooding now and in the future; and
- Incorporation of a rain-garden (stormwater swale) on the north/western corner of the site.

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.

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.

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for Wood & Grieve Engineers Ltd.