Cowra Hospital Redevelopment

Ecologically Sustainable Development Report

Prepared for: Health Infrastructure C/- CWPM

Attention: Sophie Smith

Date: 26th October 2022

Prepared by: Madhu Muthumalai

Ref: 301350989

Stantec Australia Pty Ltd
Level 6, Building B, 207 Pacific Highway, St Leonards NSW 2065
Tel: +61 2 8484 7000 Web: www.stantec.com

\\WGE-SYD-FS-01.WGE.INTERNAL\PROJECTS\301350989\PROJECT DOCUMENTATION\SUSTAINABILITY\GENERAL\SU-RE-ESD REPORT_002.DOCX

Stantec

Revision

Revision	Date	Comment	Prepared By	Approved By
1	05/09/2022	Issue for REF	MPM	RD
2	26/10/2022	Final Issue for REF	MPM	RD

Contents

Contents

1. Executive Summary

This Ecological Sustainable Development Report has been prepared on behalf of Health Infrastructure c/- CWPM for the Cowra Hospital Redevelopment located at 64 Liverpool Street, Cowra NSW.

The report aims to identify the ESD concepts and initiatives that are proposed to be included within the project & ensure the development delivers a sustainable project outcome.

Information contained within Ecologically Sustainable Development (ESD) Report has been prepared in direct response to:

- NSW Environmental Planning and Assessment Regulation 2000;
- NSW Government Resource Efficiency Policy
- National Construction Code (NCC) 2019 Amendment 1
- Health Infrastructure Design Guidance Note No.058 – Environmentally Sustainable Development
- Health Infrastructure (HI) ESD Evaluation Tool
- Cowra Shire Council Development Control Plan (DCP) 2021

This report includes:

- An overview of the sustainability drivers for the project (both regulatory & identified project drivers).
- An assessment of the energy and water uses and proposed measures to ensure energy and water efficiency.
- Detail regarding specific ESD initiatives which are to be targeted throughout all phases of the project.
- A comparison of the project's ESD principles and how they have been considered in line with the NSW Health Infrastructure position on ecological sustainable development.

In accordance with the above, the project will implement several sustainable design principles which include initiatives designed to mitigate the development's environmental impact across the following areas:

- **Management –** including reviews of commissioning and tuning, building information and other operational processes.
- **Indoor Environment Quality** – including high air quality, acoustic/lighting comfort and reduction of indoor pollutants.
- **Energy** – including improved energy efficiency of the building operations through design and technology.
- **Sustainable Transport** – access to public transport and sustainable transport options
- **Water Efficiency** – reduce potable water demand and potentially utilizing the rainwater.
- **Materiality** – Considering the whole of life materials and their selection to minimise harm to the environment, including efficiency and construction.
- **Ecology** - Maintaining ecology through landscaping & on-site environmental management processes during both construction & operation.
- **Emissions** – minimisation of pollution to the environment.

2. Introduction

This report contains a series of design elements to assist the project design team to deliver a sustainable development outcome, while ensuring the on-going ecological & environmental impact of the project is minimised.

According to the Principles outlined within the NSW HI Engineering Service Guidelines (DGN 058), the project is to demonstrate the following outcomes, specified to sustainable development:

- A minimum of 45 points (4 star equivalent) to be achieved by the design in accordance with HI's ESD Evaluation Tool;
- All new buildings will have a mandatory requirement of delivering a 10% improvement in energy on NCC Section J.

This report has been prepared having regard to the above & provides further detail on the project specific response within the following pages.

2.1 General Overview

The Cowra Hospital Redevelopment project aims to redevelop the Cowra Hospital in-line with the current endorsed Clinical Services Plan including the master planning, design, and delivery of the following health services:

- Emergency department
- General inpatient ward
- Sub-acute inpatient unit
- Peri-operative suite
- Maternity and birthing services
- Ambulatory care
- Renal analysis
- Chemotherapy
- Oral health
- Integrated outpatient and community clinic rooms and treatment spaces

2.2 Site Location

Figure 1 Location of the site. Source: Google Maps

2.3 Sustainable Design Framework

In pursuit of ESD design principles across the development, the Project will pursue Ecological Sustainable Development (ESD) excellence benchmarks to deliver a sustainable project outcome.

These include best practice design initiatives from:

- NSW Environmental Planning and Assessment Regulation 2000;
- NSW Government Resource Efficiency Policy
- National Construction Code (NCC) 2019 Amendment 1
- Health Infrastructure Design Guidance Note No.058 – Environmentally Sustainable Development
- Health Infrastructure (HI) ESD Evaluation Tool
- Cowra Shire Council Development Control Plan (DCP) 2021

This report addresses the proposed developments approach to ESD in response to the Environmental Planning and Assessment Regulation 2000.

2.3.1 NSW Government Resource Efficiency Policy

The project will be required to demonstrate compliance with all applicable policy measures of the NSW Government Resource Efficiency Policy (GREP).

The relevant policy measures include:

- E3 – Minimum Standards for New Electrical Appliances and Equipment
- E5 – Whole-of-Government Solar Target
- W3 – Minimum Standard for New Water-Using Appliances
- A2 – Low VOC Materials

These are addressed in their relevant sections throughout this report.

2.3.2 NCC Section J – Energy Efficiency

The project will be required to demonstrate compliance with the NCC (2019 Amendment 1) Section J – energy efficiency provisions.

Section J outlines minimum performance requirements including,

- Maximum greenhouse gas emissions (GHG) levels;
- Minimum thermal envelope performance for building elements such as walls, floors, roof and external glazing;
- Minimum performance requirements for building sealing;
- Maximum lighting power densities for internal lighting design;
- Minimum performance levels for building air-conditioning and ventilation systems;
- Minimum requirements for energy and water metering;
- Minimum requirements for energy and water data collection; and
- Minimum access for maintenance requirements.

The proposed performance standards for Section J (2019 amendment 1) will outline the thermal performance requirements for code compliant façade designs, meaning consideration must be shown for the amount of exposed glazing included within the façade design.

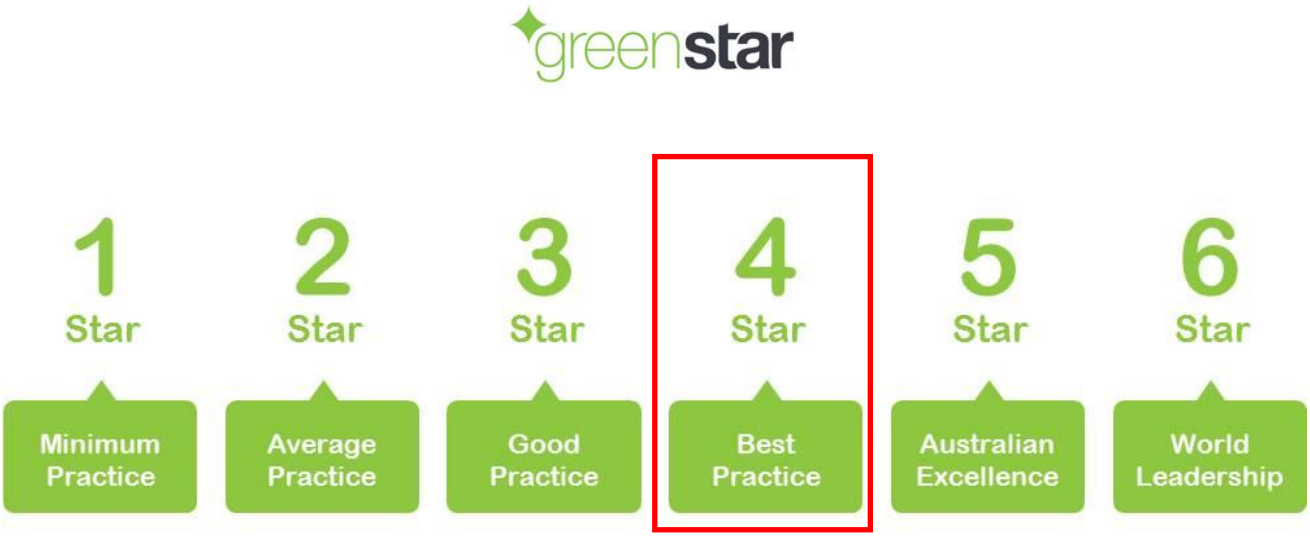
The development will need to seek to optimise energy efficiency & thermal performance via design elements which improve the building façade performance including façade design, thermal envelope, HVAC system selection and lighting design.

2.3.3 Best Practice Sustainable Development Framework

The Project has to benchmark itself against a sustainability framework which reflects 'national best practice sustainable building principles' as a minimum performance requirement. Historically, project team teams have responded to this requirement by benchmarking their performance against *Green Star Design & As Built*, published by the Green Building Council of Australia.

This development is proposing to use HI's ESD Evaluation Tool equivalency pathway, developed by HI NSW to ensure the facility meet the standards with a targeted point requirement of 45. HI's ESD Evaluation Tool uses some of the key ESD initiatives included in the GBCA rating tools however does not produce a "Green Star" rating, but instead prescribes a minimum number of "points" to be achieved. Please note, during the design phase of works HI requires a 5-point buffer within the ESD evaluation tool be maintained.

2.3.4 Green Star Equivalency



Green Star is widely considered as the benchmark environmental assessment tool within the Australian property industry, Green Star is an independent accreditation framework which delivers sustainable built outcomes throughout the project lifecycle. Green Star is a credits-based star rating system ranging from one through to six stars.

Green Star assesses the environmental performance of projects in design, construction and operation via the following category frameworks:

- Management
- Indoor Environment Quality
- Energy
- Transport
- Water
- Materials
- Land use & Ecology
- Emissions; and
- Innovation

Cowra Hospital Redevelopment is pursuing a 45 (+5 buffer) points pathway / **4 Star Green Star Equivalency, assessed under Design and As Built v1.3**. This benchmark demonstrates “Best Practice” Sustainability through the design, construction, and operation.

2.3.5 HI's ESD Evaluation Pathway

HI's ESD Evaluation Tool lists the initiatives demonstrating the project's ability to achieve sustainable performance.

A list of ESD and environmental initiatives in accordance with the Green Star framework and HI's ESD Evaluation has been identified below.

- Green Star accredited professionals will be engaged throughout the project to guide the design team and ensure a high level of environmental performance is achieved;
- Services and maintainability reviews of commissionability, controllability, operability and safety;
- High WELS rated water fittings ensuring lower building water demand;
- High level of daylight to occupants within building;
- LED lights, which have longer lives, consume less energy and produce a higher quality light than their counterparts, reducing overall energy demand;
- Energy & water metering for effective monitoring & demand reduction;
- Low-VOC paints, sealants, adhesives, carpets (where applicable), which do not emit dangerous volatile components, risking the health of users;
- Steel sourced from manufacturers who are members of the Australian Steel Institute Sustainability Charter for sustainable and energy reducing steel manufacture;
- Best practice PVC plastics in formwork, piping, cables and conduits. These materials have a reputation for damaging the environment in their production, both upstream and downstream of the manufacturing process;
- Operational waste procedures including defined streams for effective material recycling;
- Contractors will be requested to provide and abide by an Environmental Management Plan and Environmental Management System that is in accordance with NSW Environmental Management Systems Guidelines;
- Consideration of additional material specifications which select & prefer materials and products which include reused content, environmental product declarations, third party sustainability certifications or product stewardship programs;
- Acoustic performance in accordance with both Green Star and health guidelines;
- Dedicated site-specific transport plan including suitable provision for sustainable modes of transport to be utilised by students, staff and visitors;
- Any identified hazardous materials to be removed and disposed of in accordance with relevant EPA and NSW best practice legislation;
- Light pollution shall be managed via effective external lighting design;
- Legionella risks shall be managed via air-cooled HVAC systems;
- Efficiency, high performance HVAC systems with a focus on energy efficiency to be installed. Consideration of mixed-mode natural ventilation shall be considered further during detailed design phase; and
- Additional Green Star innovation challenges in line with HI NSW standards for pre-awarded credits.

HI's ESD Evaluation Tool lists of initiatives demonstrating the project's ability to achieve the 4 Star Green Star equivalent performance (plus a 5-point buffer as per DGN 058 requirements) outcome has been included within Appendix A of this

report. Note, the provisional list of initiatives will be subject to further amendment during project detailed design phase following development approval.

3. Ecological Sustainable Development Initiatives

3.1 Greenhouse Gas Emissions & Energy Efficiency

The proposal will require compliance with the Energy Efficiency provisions of the BCA outlined within NCC Section J 2019. The Project is targeting a mandatory 10% improvement on National Construction Code (NCC) Section J – Energy Efficiency standards.

The energy efficiency strategy generally follows the hierarchy pyramid showed in Figure 2. Best practice energy conservation dictates that in the first instance, demand for Greenhouse Gasses are reduced. This has a much greater benefit to the overall long-term sustainability of the site compared to efficiency measures or renewables/offsets. As such, the focus will be on the elements that provide the greatest return on investment.

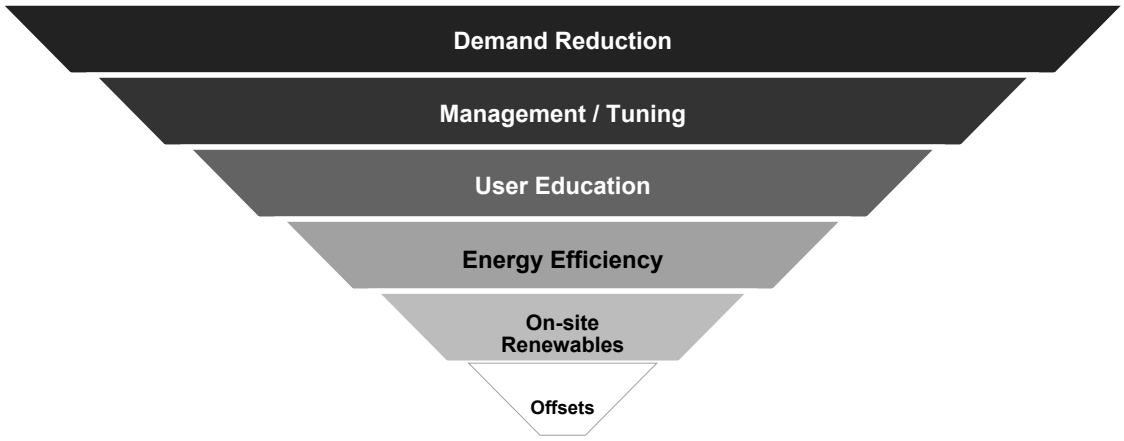


Figure 2 - Energy Saving Hierarchy

Energy efficiency measures which will be applied across the development to reduce its energy consumption include:

- **Architecture -** Vernacular architecture principals, designed to maximise the specific needs of all occupants and users of the building. The building is designed to deliver comfort, practicality, daylight, connection to the outside through views and energy conservation with its architectural design intent. The development will also offer fresh air and daylight access to occupants in many forms to indoor spaces.
- **High quality light** – Focusing on the wellbeing of the occupant to delivering daylight comfort.
- **Shading and Blinds** – Design of external shading and use of internal blinds will reduce direct solar gains, control radiant heat and increase comfort without compromising the connection to the outside.
- **Glazing** – Considering high performance glazing, to exceed the thermal requirements of the Building Code of Australia.
- **Thermally Efficient Construction** – Consideration of thermal mass, insulation where required and the lack of insulation where beneficial. Airtightness in the façade design to reduce bulk airflow, a pragmatic approach to wrapping the entire building to exceed code requirements and using the appropriate colours and finishes.

- **Efficient HVAC System** – Selection the efficient HVAC systems with high COPs, appropriately designed to meet the needs of the internal loads. HVAC systems will require adequate efficiency, with economy cycle to promote energy efficiency in the design. It is recommended to use floor diffuser for air conditioning of common room to reduce the volume of conditioned area in space.
- **Photovoltaic System** – Incorporating a roof-mounted PV system to reduce the energy consumption and Carbon Impact. This will contribute to *E3: Whole-of-government solar target* as required by the GREP.
- **Water Efficient Fixtures and Fittings** - Selection the low-flow showers and taps, which will reduce the hot water demand across the development associated with showering, sinks and hand basins.
- **Efficient Lighting Systems** – Providing high efficiency LED and fluorescent lighting with lighting controls including timers and occupancy sensors to reduce the demand on the lighting system.
- **Energy Efficient Appliances** – Specifying high energy star rated refrigerators/freezers and dishwashers to improve general building energy use, minimum ratings (as per *E3: Minimum Standards for New Electrical Appliances and equipment* of the GREP) include:
    - **Refrigerators -** 2.5 Stars
    - **Dishwashers** – 4 stars
    - **Fridge/freezers** – 3.5 Stars
    - **Freezers** – 3 Stars
    - **Televisions** – 5 stars

  Computers, printers, photocopiers and DVD players will have an Energy Star label recognising high efficiency.
- **Smart Energy Metering and Monitoring** - Metering shall be designed to meet metering guidelines under the weights and measurement legislation, as outlined under the current National Measurement Regulations. A detailed monitoring system will be installed to help with early identification of excessive energy users. Metering to be provided to each floor and for any single loads exceeding 5% of the total energy use, or 10% of the total water use.

3.1.1 NCC Section J - Building fabric requirements

NCC 2019 Section J – energy efficiency provisions will apply to the design & construction of the development with the intent to ensure the build form and associated building services demonstrate a minimum level of energy efficiency performance.

All conditioned (heated or cooled) areas of the project are required to comply with the thermal performance requirements of Section J 2019. In order to demonstrate section J compliance, the conditioned areas will be assessed in accordance with the energy modelling provisions of an Alternative Solution, known as a JV3 Performance Solution assessment.

A Performance Solution is based on assessing the energy performance of a proposed building against that of a reference building. This involves detailed simulation modelling of the proposed buildings to provide a holistic assessment of the building's energy efficiency in accordance with the requirements of Section J of the BCA. This method of compliance provides much higher levels of flexibility in the design of a building's envelope.

The proposed building fabric will likely exceed prescriptive values in order to work with the architecture and mechanical performance of the building, including:

- Light coloured roof (<0.45 Absorptance)
- **Windows:** As required to exceed compliance. Options include:
    - Double glazed systems

- Low E coatings
- Shading structures as documented
- Operable windows for efficiencies

A detailed NCC Section JV3 report is to be provided in association with the project tender design demonstrating compliance with the provisions of the NCC Section J – energy efficiency.

3.1.2 Energy Target Compliance – NSW HI ESG (7.4)

As part of the project's sustainability drivers & under the mechanical consultant services scope of works, the project design team is required to demonstrate the 10% improvement on NCC Section J via JV3 energy modelling protocols. Detailed computer simulation in accordance with Specification JV3 is to demonstrate compliance via a full year energy demand assessment. A number of different design elements and configurations are to be considered to reduce impacts on energy consumption, including:

- Consideration of gravity systems and inherently low energy demand designs and techniques, all mechanical equipment to comply with minimum energy performance (MEPS)
- Energy management systems integrated with a direct digitally controlled BMCS allows monitoring, targeting and load-shedding capability of selected plant
- The incorporation of modular variable speed pumps to minimise and reduce energy output for peak and non-peak demands
- Efficient insulation of hot and warm water distribution pipework to minimise heat losses
- Consideration of energy input for hot water systems including energy and heat recovery from mechanical plant heating systems including tri-generation where applicable
- System zoning and time control of reticulated services to enable maximum turn down during night and weekend off peak parameters
- Intelligent design of maintenance and duty-cycle parameters to ensure availability and maintenance cycles encourage energy efficiency, noting that tariff efficiency may also be impacted in terms of load-factor issues for example.

3.2 Water Efficiency

Reduced potable water demand is a key ESD initiative identified within industry best practice standards. The development is targeting a reduction in potable water demand via the inclusion of the following initiatives:

- **Sanitary Fixtures** - By implementing low-flow water fixtures, the consumption associated with the bathrooms will be significantly reduced. As per *W3: Minimum Standards for New Water-using Appliances* of the GREP, all sanitary fixtures are to be at least the WELS ratings identified below:

Fixture / Equipment Type	WELS Rating (minimum)
Taps	5 Star
Toilet	4 Star
Showers	3.5 Star (<= 9 L/min)
Dishwashers	5 Star

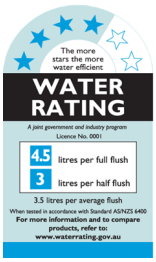


Figure 4: Example of a WELS water efficiency rating label.

- **Utility Meters and Water Consumption Monitoring** - Metering will be designed to meet metering guidelines under the weights and measurement legislation, as outlined under the current National Measurement Regulations. A water monitoring system will be installed to help with early identification of leaks.
- **Rainwater Capture and Reuse** – A rainwater tank will optimize the potential for rainwater reuse on the site refer to **Error! Reference source not found.Error! Reference source not found.**.

3.3 Environmentally Friendly Materials

In accordance with the Project's principles, it is essential to ensure the materials that are consumed or utilised in health areas are organic and non-toxic, since they are all equally exposed to the composition of the materials. To meet the requirements of *A2: Low-VOC materials* of the GREP, The Cowra Hospital Redevelopment is targeting to use environment-friendly via the inclusion of the following initiatives:

- **Low Volatile Organic Compound (VOC) -** Selection of all paints, carpets, adhesives and sealants used on site from low volatile organic compound (VOC) content.
- **Low Formaldehyde Emission Wood -** Selection of engineered wood products from low formaldehyde emission products.

3.4 Material Waste Management

Construction Waste

Construction and demolition waste is becoming much easier to recycle as the traditional landfill evolves into waste recovery centres. Construction waste will be managed through contractual requirements outlining the target recycling rate within the main works contract for the construction and demolition waste produced on this project.

Operational Waste

Operational waste which involves the waste produced in the day-to-day operations of the project can also be minimised through effective sorting methods. A dedicated on-site waste management plan will be prepared.

3.5 Projected Impacts of Climate Change

As part of the provisional design response for the project, an assessment of project risks associated with the predicted impacts of Climate Change must be undertaken for the proposed development. The assessment has been undertaken to ensure the project design allows for suitable provisions for the predicted impact of climate change scenarios.

To do so, risk assessment of the potential environmental impacts and provide responsive design solutions in collaboration with technical consultants for the following challenge are essential:

- Climate Adaptation for extreme weather conditions

- Heat island effect mitigation
- On site renewable energy generation
- High quality practices for longevity in building design and construction

The table below summarises the projected impacts of climate change across two scenarios (RCP4.5 and RCP8.5*): the near future 2020-2039 (referred to 2030) and far future 2080-2099 (referred to 2090). These projections are generalised for the 'Murray Basin Cluster' region as defined by the CSIRO and BOM and is taken as the most representative of the proposed site's future climate-change enhanced conditions in Cowra.

*Representative Conservation Pathway – 4.5 represents normalised emission levels. 8.5 represents worst case scenario based upon 2005 emissions trends.

Climate Variable	Climate Projections (change relative to 1986 – 2005 baseline)			
	2030		2090	
	RCP4.5	RCP8.5	RCP4.5	RCP8.5
Mean temperature change (°C)	0.8 (0.6 to 1.1)	0.9 (0.7 to 1.3)	1.8 (1.3 to 2.4)	3.8 (2.7 to 4.5)
Maximum temperature change (°C)	0.9 (0.6 to 1.3)	1.1 (0.8 to 1.4)	2 (1.3 to 2.6)	4.1 (2.9 to 5)
Minimum temperature change (°C)	0.7 (0.5 to 1)	0.9 (0.7 to 1.2)	1.7 (1.1 to 2.1)	3.5 (2.8 to 4.2)
Extreme temperature (days per year over 35°C)	12 (9.4 to 14)	12 (9.4 to 14)	17 (13 to 23)	29 (22 to 39)
	Substantial increase in intensity and frequency of extreme temperature days			
Mean annual rainfall change (%)	-2 (-9 to +5)	-1 (-11 to +5)	-6 (-16 to +4)	-5 (-27 to +9)
Extreme rainfall	Extreme rainfall events to increase in intensity			
Drought	Time spent in drought conditions to increase			
Bushfire weather (Number of severe fire danger days; FFDA > 50)	Severity of fire-weather climate to increase			
Solar radiation (%)	0.7 (-0.1 to 1.7)	1 (-0.4 to 2)	1.5 (0.1 to 3.2)	2.2 (0 to 4.9)
Relative humidity (%, absolute)	-0.7 (-1.6 to +0.5)	-0.9 (-2.3 to +0.2)	-1.6 (-4.1 to -0.3)	-2.7 (-5.8 to -0.8)
Wind Speed (%)	-1 (-2.9 to 1.5)	0.1 (-2.6 to 2.4)	1.3 (-1.7 to 3.7)	-1.3 (-4.6 to 0.8)
Sea level rise (m)	0.12 (0.08-0.16)	0.13 (0.08-0.17)	0.46 (0.29-0.63)	0.61 (0.40-0.84)

Table 1: Summary of 'Murray Basin Cluster Report: Climate Change in Australia- Projections for Australia's NRM Regions' (Source: Climate Change in Australia, CSIRO 2015)

Summary of major impacts assessment:

Mean & Average Temperature

With very high confidence, for the near future (2030), air temperatures are projected to increase due to continued substantial warming from a mean warming of around 0.6°C to 1.3°C above the climate of 1986-2005 with only minor difference between RCPs. Because of rising temperatures, peak temperature events will become more frequent whereby the number of days above 35°C are expected to more than double by 2030 and triple by 2080 (CSIRO, 2022).

In response to the above, the project design seeks to ensure the passive thermal design elements are fundamentally sound ensuring that average daily temperature and peak extreme temperature days are managed as best as possible. External shading, glazing design, HVAC and natural ventilation shall all be fundamentally proven to ensure the proposed project design responds appropriately to the projected risks of climate change.

3.5.1 Responses to Impact Assessment

The Project aims to implement the following initiatives to combat the following climate related challenges described above:

Climate Adaptation for extreme weather conditions/Resilience of the development against climate change

The development is targeting a 10% over-and-above improvement on the NCC 2019 energy efficiency requirements. This will improve the ability of the building to maintain comfortable indoor temperatures in response to the expected external ambient temperature rises.

Furthermore, the use of water efficient fixtures can reduce the consumption of potable water, mitigating the projected reduction in rainfall levels and alleviate pressure on available potable water.

Heat island effect mitigation

Through selection of a high Solar Reflective Index (SRI) colour for the building exterior, the heat absorption of the development and therefore the heat island effect of the project can be reduced.

On site renewable energy generation

A solar photovoltaic system is being proposed for the development. Through the ability to generate renewable energy onsite, the reliance on fossil fuelled power generation is reduced.

High quality practices for longevity in building design and construction

By reviewing the services and maintainability of the building design and ensuring a detailed commissioning process occurs, longevity of the design and construction can be ensured.

4. Summary

The proposed Cowra Hospital Redevelopment will incorporate several ecologically sustainable initiatives and energy efficiency measures. These have been developed as a specific response to:

- NSW Environmental Planning and Assessment Regulation 2000;
- NSW Government Resource Efficiency Policy
- National Construction Code (NCC) 2019 Amendment 1
- Health Infrastructure Design Guidance Note No.058 – Environmentally Sustainable Development
- Health Infrastructure (HI) ESD Evaluation Tool
- Cowra Shire Council Development Control Plan (DCP) 2021

Through the following initiatives presented in this report:

- Energy Efficiency initiatives (10% NCC improvement, energy ratings of appliances, LED light fixtures, PV system)
- Water Efficiency Initiatives (WELS ratings on fixtures/appliances)
- Sustainable Material selection (Low VOC materials)

The ESD initiatives outlined in this report reflect the Project's design development to date and a summary of the proposed response to the drivers nominated above & the expectations of NSW HI. The specific initiatives that will be installed across the development will be determined throughout the design finalisation process and will be subject to feasibility analysis, including that of the final use and layout provided by the main works contractor.

The development's commitment to reducing the overall environmental impact is evident of the holistic approach taken to long-term sustainability. Documented initiatives cover a range of concepts including:

- Energy & Greenhouse Gas Emissions
- Potable water reduction
- Minimising waste to landfill
- Occupant amenity and comfort
- Environmentally-Friendly Material
- Building Management practices

Appendix A – HI ESD Evaluation Pathway

CATEGORY / CREDIT	AIM OF THE CREDIT / SELECTION	CODE	CREDIT CRITERIA	POINTS AVAILABLE	INPUT	Overlaps HI ESG AusHFG NCC 2019 SSDA Req	Standard Practice (1) Minimum requirement (C)	Healtcare relevant initiatives (1) Primarily for IPU type spaces.	Low focus initiatives	Discipline Design Requirements for 4 Star	4 Star Targeted Points	Consultant comments 08/22	Consultant comments 09/22
Management				**14**							**50**		
Accredited Professional	To recognise the appointment and active involvement of an Accredited Professional (under an Environmental Rating System) in order to ensure that the rating tool is applied effectively and as intended.	1.0	Accredited Professional	1	ESD		1				1		
Commissioning and Tuning	To encourage and recognise commissioning, handover and tuning initiatives that ensure all building services operate to their full potential.	2.0	Environmental Performance Targets	-	HI		C				C		
		2.1	Services and Maintainability Review	1	PM		1			Provide document records (e.g. meeting minutes) demonstrating the project design has considered: • Commissionability; • Controllability; • Maintainability; • Operability, including 'Fitness for Purpose'; and • Safety.	1		
		2.2	Building Commissioning	1	PM ARCH MECH ELEC STERILE HYD FIRE CONTR		1			PM: Provide extract from construction tender documents that will require "a Commissioning Plan that includes the following: • Objectives, or basis, of the design; • Scope of the commissioning plan; • Commissioning team list, the individual responsibilities and interface matrix; • General sequence of commissioning; • Proposed commissioning procedures; • Witnessing requirements; • Commissioning program; and • Requirements for subcontractor commissioning manuals." ARCH, MECH, ELEC, STERILE, HYD, FIRE: Provide extracts for tender documents that list the commissioning requirements, including the following: • List the design parameters for each system; • List the required commissioning activities; • Define how each system is intended to operate; and • List the acceptable tolerances during commissioning. CONTR: Air Permeability Performance Testing	1	**ARUP**: Confirm that commissioning requirement will be included in our specification. Façade pressure testing- Suggest to test only a sample of rooms and not every room as this is more expensive. **DJRD (ARCH):** Ok.	
		2.3	Building Systems Tuning	1	HI		1			HI: Provide confirmation that HI is committed to a 12-month tuning period, including engagement of building services contractors to make quarterly adjustments, and oversight from the building's facility management team.	1		
		2.4	Independent Commissioning Agent	1	HI HNE				Requires an additional consultant. HI undertake a similar role to ICA.	HI: Provide confirmation that HI or a facility manager will be reviewing the commissioning plan and commissioning results.	0		
Adaptation and Resilience	To encourage and recognise projects that are resilient to the impacts of a changing climate and natural disasters.	3.1	Implementation of a Climate Adaptation Plan	2	PM ESD	SEARS condition: Credit canbe used to demonstrate CSIRO project climate Impacts				PM: Engage an ESD consultant to undertake a climate change risk assessment and adaptation plan. Allow for implementation of adaptive measures.	2	**ARUP:** CWPM to confirm. Please advise the impact on design temperature should be allowed for the project after the assessment.	
Building Information	To recognise the development and provision of building information that facilitates understanding of a building's systems, operation and maintenance requirements, and environmental targets to enable the optimised performance.	4.1	Building Information	1	PM		1			PM: Provide extract from construction tender documents that requires the provision of "operations and maintenance information, including operating parameters and procedures, and preventive maintenance requirements, including procedures and schedules".	1		
Commitment to Performance	To recognise practices that encourage building owners, building occupants and facilities management teams to set targets and monitor environmental performance in a collaborative way.	5.1	Environmental Building Performance	1	HI		1				1		
		5.2	End of Life Waste Performance	1	WASTE								
Metering and Monitoring	To recognise the implementation of effective energy and water metering and monitoring systems.	6.0	Metering	-	MECH ELEC HYD		C			MECH, ELEC: Provide floor-by-floor metering if the entire floor has a single use. If a floor has multiple uses, the different uses shall be metered. Therefore, should a floor be composed of office space and a seminar room, both spaces shall be separately sub-metered. If a floor has multiple tenants, each tenancy shall also be separately sub-metered. Where an energy load for a single item exceeds 5% of the total energy use for the building, or 100kW, it must be independently metered. HYD: Provide floor-by-floor water & gas (if relevant) metering if the entire floor has a single use. If a floor has multiple uses, the different uses shall be metered. Where a common water use consumes 10% of the project's water use, these must be independently metered e.g. cooling towers.	C		
		6.1	Monitoring Systems	1	MECH		1			MECH: Specify a monitoring system which is capable of: • Collecting data from all meters; • Alerting to missing data due to failures; • Recording energy use and water consumption, and providing a reporting capability at user adjustable intervals; • Raising an alarm when the energy or water use increase beyond certain parameters and automatically and instantly issue an alert the facilities manager. • Providing a breakdown of the information by building system (mechanical, electrical, etc.), or by space (or by tenanted floor); • Including the consumption water or energy, the load versus time (load profile), and the power factor (in the case of energy); and • Producing, as a minimum, a quarterly report that is automatically emailed to the facilities manager responsible for the building.	1	**ARUP (MECH):** Confirm this will be included in Arup spec.	
Responsible Building Practices	To reward projects that use best practice formal environmental management procedures during construction.	7.0	Environmental Management Plan	-	CONTR		1			CONTR: Provide EMP	1		
		7.1	Formalised Environmental Management System	1	CONTR		1			CONTR: Provide EMS	1		
		7.2	High Quality Staff Support	1	CONTR				Construction related credit for contractor to consider.	CONTR: Provide mental health and physical wellbeing programs and initiatives to sub-contractors. Provide sustainability education in site-inductions.			
Operational Waste	Performance Pathway	8A	Performance Pathway - Specialist Plan	1	HI		1			HNE/HI: Provide Operational Waste Management Plan	1		**CWMP:** Confirmed that this will be undertaken.
		8B	Prescriptive Pathway - Facilities	-	WASTE								
Total				**14**			**10**	**0**			**12**		
Indoor Environment Quality				**17**									

Indoor Air Quality	To recognise projects that provide high air quality to occupants.	9.1	Ventilation System Attributes	1	MECH ARCH		1	MECH: Design minimum separation distances in accordance with ASHRAE Standard 62.1:2013. Provide access to both sides of all moisture and debris-catching components, within the air distribution system. ARCH: Coordinate locations of access panels or a tiled ceiling with mech.	1	**ARUP (MECH):** Confrim design will align with ASHRAE separation and access requireemnt. Arup spec will nominate access coordination requirement for contractor.	
		9.2	Provision of Outdoor Air	2	MECH	EFG requirements request 2.0 ACH to IPU spaces.	1	MECH: Provide outdoor air at a rate 50% greater than the minimum required by AS 1668.2:2012.	1	**ARUP (MECH):** Note that AS1668.2 doesn't have minimum ACH requirement for spaces. We have achieved 50% improveent on other HI projects from AS1668.2 and not ESG. Please confirm if this could be applied to Cowra.	**STN (ESD):** Confirming that this approach can be used.
		9.3	Exhaust or Elimination of Pollutants	1	HI HNE MECH		1	MECH: All kitchens must be ventilated in accordance with AS 1668.2:2012. A separate exhaust system must be provided for the kitchen exhaust. ARCH: All kitchens must be physically separated from adjacent spaces or have an opening no larger than an area of 2.5m2. HI: printing and/or photocopying equipment must be certified in accordance with one of the following test standards: • ECMA-328; • RAL-UZ 171; or • GGPS.003	1	**ARUP (MECH):** Confirm dedicated exhaust systems for the office store/printing rooms and kitchen will be provided. **DJRD (ARCH):** Questionable as some kitchen/beverage bays are open plan, i.e., will not comply.	**DJRD (ARCH):** Only kitchenettes in open plan areas with no cooking facilities.
Acoustic Comfort	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	10.1	Internal Noise Levels	1	HI ACOUS		1	HI: Engage an acoustic consultant ACOUS: Design internal ambient noise levels in the nominated area to be no more than 5dB(A) above the lower figure in the range recommended in Table 1 of AS/NZS2107:2016.	1		**ARUP (ACOUS):** Design internal ambient noise levels will comply with AS/NZS2107:2016 for all Primary and Secondary spaces in accordance to HI ESG.
		10.2	Reverberation	1	HI ACOUS		1	HI: Engage an acoustic consultant ACOUS: reverberation time in the nominated area to be below the maximum stated in the 'Recommended Reverberation Time' provided in Table 1 of AS/NZ 2107:2016.	1		**ARUP (ACOUS):** Design reverberation time will comply with AS/NZS2107:2016 for most spaces, with the exception of Intensive Care and Staff Rooms in accordance to HI ESG.
		10.3	Acoustic Separation	1	HI ACOUS		1	HI: Engage an acoustic consultant ACOUS: The partitions between spaces to be constructed to achieve a weighted sound reduction index (Rw) of: • At least 45; for all partitions which are: • Fixed without a door; and/or • Glazed partitions without a door. • At least 35; for all partition types that contain a door.	1		**ARUP (ACOUS):** All partitions between IPUs will meet the HI ESD Framework requirements in accordance to HI ESG. If other Primary and Secondary spaces are to be included in the nominated area during compliance, this credit might not be achievable as not all partition between primary or secondary spaces will be rated Rw 45.
Lighting Comfort	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	11.0	Minimum Lighting Comfort	-	ELEC		C		C		
		11.1	General Illuminance and Glare Reduction	1	ELEC		1	ELEC: Specify electronic drivers that feature 12-bit or greater resolution for all Light-emitting Diode (LED) lighting. Specify lighting with a minimum CRI of 80. Lighting levels comply with Table F1 of AS/NZS 1680.2.2. All bare light sources are specified to be fitted with baffles, louvers, translucent diffusers, ceiling design, or other means that obscures the direct light source from all viewing angles of occupants, including occupants looking directly upwards.	1		
		11.2	Surface Illuminance	1	ARCH ELEC		1	ARCH: Surface reflectance for ceilings to be at least 0.75. ELEC: Design a direct/indirect lighting system present such that the ceiling area has an average surface illuminance of at least 30% of the lighting levels on the working plane.	0	**ARUP (ELEC):** Indirect lighting is an infection control issue due to dust collection on surface. This point won't be achieved.	
		11.3	Localised Lighting Control	1	ELEC		1	ELEC: Provide direct lighting control for patients and staff.	1		
Visual Comfort	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	12.0	Glare Reduction	-	ARCH		C	ARCH: Provide blinds with a visual light transmittance of <10%.	C	**DJRD (ARCH):** Ok.	
		12.1	Daylight	2	ESD		1	ESD: Prescriptive methodology assessment.	1		
		12.2	Views	1	ARCH		1	ESD: Prescriptive methodology assessment.	1	**DJRD (ARCH):** Prescriptive view requirements may not be able to be achieved due to cellular nature of building. **STN:** Medium risk point. Assessment will be done when sufficient design detail is available.	
Indoor Pollutants	To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	13.1	Paints, Adhesives, Sealants and Carpets	1	ARCH		1	ARCH: Specify low VOC paints and carpets.	1	**DJRD (ARCH):** Ok.	
		13.2	Engineered Wood Products	1	STRUC ARCH		1	ARCH: Specify low formaldehyde engineered wood produts: particleboard, plywood, Medium Density Fibreboard (MDF), Laminated Veneer Lumber (LVL), High-Pressure Laminate (HPL), Compact Laminate and decorative overlaid wood panels	1	**DJRD (ARCH):** Ok.	
Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1	Thermal Comfort	1	MECH	NCC 2019 JV3 requires a PMV assessment mto be undertaken	1	MECH: Provide thermal comfort modelling results.	1	**ARUP (MECH):** Meeting NCC 2019 Section J requirements the thermal comfort requirements will be deemed to be met.	
		14.2	Advanced Thermal Comfort	1	MECH		1	MECH: Provide thermal comfort modelling results.			
Total				**17**		**0**	**15**		**13**		
Energy				**22**							
Greenhouse Gas Emissions		15E.0	Conditional Requirement: Reference Building Pathway	-	MECH ELEC	Aligns with HI ESG 10% Improvement and NSW GREP. The NCC JV3 Energy Modelling approach should be used.	C		C		
		15E.1	Comparison to a Reference Building Pathway	20		Aligns with HI ESG 10% Improvement and NSW GREP. The NCC JV3 Energy Modelling approach should be used. 10% improvement equates to 1.6 points.	1	1	MECH: Provide energy modelling results. CO2 sensors for demand control ventilation. ARCH: Provide a 15% increase in insulation and glazing thermal performance compared to minimum compliance. ELEC: Provide illumination power density 15% lower than maximum allowance under J6. Include 99kW rooftop PV system.	4	**ARUP (MECH):** AS1668.2 nominates demand control ventilation (DCV) could via CO2 monitoring or time schedule. Arup recommend to achieve DCV via nominating time schedule requirement. Where increased supply air is required for enclosed meeting rooms and alike, CO2 sensors will be provided to reduce supply air requirement for energy saving purpose. Please confirm if this is acceptable. **STN:** Confirming that it is acceptable. Mechanical to model. 99kW PV system will be required. **DJRD (ARCH):** Ok, but will cost extra. Required R rating TBA by ESD/Section J consultant.	
Peak Electricity Demand Reduction	Prescriptive Pathway	16A	Prescriptive Pathway - On-site Energy Generation	-	ELEC						

		16B	Performance Pathway - Reference Building	2	ELEC MECH			1			ELEC: Provide solar PV to reduce peak electricity demand by 30%. 99kW likely required for 4 Star. MECH: Provide peak energy modelling results.	1	**ARUP (MECH):** With 15% improved architectural envelope performance, this will be deemed to be met. Arup spec will identify the following parameters to achieve the required energy saving in lieu of energy modelling results: 1. Identifying all default values used (e.g. occupant density) 2. Identify all of the assumptions made, design-driven inputs and referencing documents. **STN (ESD):** Energy modelling is part of the mechanical scope.	
Total				**11**			**1**	**2**				**5**		
Transport				**10**										
Sustainable Transport	Performance Pathway	17A.1	Performance Pathway	10	PM TRANS					Hospitals are usually well connected to public transport nodes. Large percentage of patients require access to hopsitals via vehicles. Expansion of exisitng hospital also require additional carparking.	PM: Engage a transport consultant TRANS: Complete the Sustainable Transport Calculator; Green Travel Plan			
		17B.1	Access by Public Transport	0										
		17B.2	Reduced Car Parking Provision	0										
		17B.3	Low Emission Vehicle Infrastructure	0	ARCH						ARCH: Provide electric vehicle chargers for 5% of all parking spaces i.e. 2 EV chargers.	1	**DJRD (ARCH):** Ok, will cost extra.	2 EV chargers required as part of HI guidelines too.
		17B.4	Active Transport Facilities	0	ARCH						ARCH: Provide end-of-trip facilities and protected bike parking for 7.5% of building occupants & 5% of visitors. 1.2 lockers per occupant bicycle space.	1	**DJRD (ARCH):** Ok-will cost extra. Coordinate SOA with requirements- have to align HI SOA to GBCA requirements.	**CWPM:** Confirm staff numbers **LHD:** number of staff / visitors arriving via active transport is maximum 2 per day ESD: Minimum space for 4 bike racks recommended via a practical approach StantecA-GCOR-000006
		17B.5	Walkable Neighbourhoods	0							8 amenities provided within 400m.	1		
Total				**10**			**0**	**0**				**3**		
Water				**12**										
Potable Water	Prescriptive Pathway	18A.1	Potable Water - Performance Pathway	0	HYDR	AusHFG Requirements limit use of RW systems (maintenance / Payback / health risks)				Hospitals require extensive use of potable water and typically lower use for recycled water. AusHFG requirements limit use of rainwater systems, limiting the use to primarily landscaping.				
		18B.1	Sanitary Fixture Efficiency	1	HYDR		1				HYDR: Specify minimum WELS ratings - Taps 5 Star, Urinals 4 Star, Toilets 4 Star, Showers 3 Star (6.0 but <=7.5L/min), Clothes Washing Machines 4 Star, Dishwashers 5 Star.	1		
		18B.2	Rainwater Reuse	1	HYDR	AusHFG Requirements limit use of RW systems	-				HYDR: Provide rainwater capture and reuse infrastructure for irrigation and other end uses as possible.	1	**ARUP (HYDR):** Confirmed RWH tank allowed for in plan.	
		18B.3	Heat Rejection	2	MECH						No cooling towers	0		
		18B.4	Landscape Irrigation	1	LAND		1				LAND: Drip irrigation with moisture sensor override or no potable water is used for irrigation.	1		
		18B.5	Fire System Test Water	1	FIRE		1				FIRE: Reuse of 80% of the sprinkler system test water for application on landscaping. Recirculation closed-loop system can be considered too.	1	**ARUP (FIRE):** Will be investigated at SD stage to direct water to RWH tank.	
Total				**6**			**3**	**0**				**4**		
Materials				**14**										
Life Cycle Impacts	Prescriptive Pathway - Life Cycle Impacts	19A.1	Comparative Life Cycle Assessment	0						Life Cycle Assessor (additional consultant) required				
		19A.2	Additional Life Cycle Impact Reporting	4						Life Cycle Assessor (additional consultant) required				
		19B.1	Concrete	3	STRUC		1				STRUC: Specify that a 30% reduction of the absolute quantity by mass of Portland cement across all concrete used in the project shall be achieved by substitution with fly-ash and/or blast furnace slag.	1	**ACOR (STRUC):** Where permissible, fly ash or blast furnace slag shall be adopted within the concrete mix to reduce the overall Portland cement content by at least 30% **provided** such mix can be accommodated without compromising the structural performance of the associated structural elements. ACOR will integrate this within our structural specification accordingly. **DJRD (ARCH):** This is a structural issue, not architectural. I understand this concrete is not available in a regional area like Cowra. **STN:** Agree that it is a structural design item. DJRD to confirm why concrete may not be available	

		19B.2	Steel	1						STRUC: For a steel framed building, achieve a reduction in the mass of steel framing through the use of high strength steel. A minimum of 95% of category A products and 25% of category B products must meet the strength grades specified in Table 19B.2.1 and Table 19B.2.2 of the Green Star Design & As Built Steel Credit. For a concrete framed building, a 5% reduction in mass of reinforcing steel used in the building shall be achieved by optimal fabrication or by innovative structural design. STRUC to provide a paragraph demonstrating how this has been achieved in accordance with Section 19.B.2B of the Green Star Design & As Built Steel Credit.	1	**ACOR (STRUC):** The structure will comprise both steel and concrete-framing elements. **Steel framing:** These requirements will be specified within our specification documents (accepted). **Concrete framing:** The structure will be optimised in design as per our typical approach rather than through a quatified reduction in comparison to a less optimal structural solution. The reinforcement fabrication may be the more appropriate route to gining this point. We can specify that reinforcement cages arrive pre-assembled to avoid material waste on-site (accepted). ACOR request copies of the relevant table excerpts or document these are contained within to inform specification inclusion. **DJRD (ARCH):** Possibly Ok- ACOR to confirm. **STN:** Stantec to provide table excerpts.	
		19B.3	Building Reuse	4										
		19B.4	Structural Timber	4	STRUC		1							
Responsible Building Materials	To reward projects that include materials that are responsibly sourced or have a sustainable supply chain.	20.1	Structural and Reinforcing Steel	1										
					STRUC		1			STRUC: Specify that 95% of the building's steel (by mass) is to be sourced from a Responsible Steel Maker. For a steel framed building, at least 60% of the fabricated structural steelwork is supplied by a steel fabricator/steel contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute. For a concrete framed building at least 60% of all reinforcing bar and mesh is produced using energy-reducing processes in its manufacture.	1	**ACOR (STRUC):** **Steel framing:** 95% of the building's steel (by mass) sourced from a RSM will be captured within ACOR specification, as will the criteria around ESCASI accreditation (accepted). **Concrete framing:** ACOR will integarte the requirement for 60% (minimum) reinforcement produced by 'energy-reducing processes' within the ACOR specification (accepted).	
		20.2	Timber Products	1										
					ARCH STRUC		1			ARCH, SRUC: Specify that all timber used in the building and construction works is FSC or PEFC certified. Timber products include: formwork, hoardings, structural timber, internal walls, cladding, flooring, wall and ceiling finishes, furniture items, plywood.	1	**STRUC (ACOR):** There will be no structural timber adopted in this development (not applicable). ARCH to ensure non-structural timber meets the requirements listed. **DJRD (ARCH):** Ok.	
		20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1										
					HYDR MECH ELEC ARCH STRUC		1			HYDR, MECH, ARCH, STRUC: All products containing PVC are to hold a Best Practice PVC Certificate, a JAS-ANZ audit verification certificate stating the GBCA's Best Practice Guidelines for PVC, or a product accreditation certificate from a GBCA accredited scheme.	1	**ACOR (STRUC):** There will be no structural PVC materials adopted (not applicable). **ARUP:** Confirm Arup specification will refer to ESD framework of this requirement. **DJRD (ARCH):** Ok.	
Sustainable Products	To encourage sustainability and transparency in product specification.	21.1	Product Transparency and Sustainability	3						Targeting a total of 3% of the cost of all products to have sustainability credentials. ARCH: Specify approximately 30% of all products to have Environmental Product Declarations (EPDs) or third party certifications e.g. GECA or GreenTag. STRUC: Specify any precast concrete and all steel to have Environmental Product Declaration (EPDs)	1	**ACOR (STRUC):** We will capture the requirement for precast concrete and all steelwork to have an EPD within the concrete and steelwork specifications accordingly (accepted). Number of points associated with this item are not shown. ESD to review and update if required. **DJRD (ARCH):** Will not meet this criteria. **STN:** Point will be targeted through concrete and steel work. Architectural products will not be targeted.	
Construction and Demolition Waste	Fixed Benchmark	22A	Fixed Benchmark	1										
		22B	Percentage Benchmark	-										
					CONTR		1			1 point is awarded where the contractor can demonstrate that at least 90% of the waste generated during construction and demolition has been diverted from landfill. Waste shall be reported in kilograms. CONTR: To calculate the amount of waste diverted from landfill, the project team is required to report the total amount of waste generated and the total amount of waste diverted from landfill, and report on the proportion diverted as a percentage.	1		
Total				**12**			**7**	**0**			**7**		
Land Use & Ecology				**6**									
Ecological Value	To reward projects that improve the ecological value of their site.	23.0	Endangered, Threatened or Vulnerable Species	-	ECO		C		Hospitals usually built on brown field sites	Upgrade of an existing building.	C		
		23.1	Ecological Value	3					Hospital sites are usually mainly buildings with minimal landscape area.	Limited landscaping	0		
Sustainable Sites	To reward projects that choose to develop sites that have limited ecological value, re-use previously developed land and remediate contaminate land.	24.0	Conditional Requirement	-	LAND		C				C		
		24.1	Reuse of Land	1					Most hospital and healthcare projects are located within exisitng hospital sites. For most projects, this credit would be considered achieved.	Upgrade of an existing building.	1		
		24.2	Contamination and Hazardous Materials	1	ENV CONTR	1				ENV: Provide a Contamintation and Hazardous Materials Survey CONT: Remove or stabilise contamintants and hazardous materials in accordance with best practice.	1		
Heat Island Effect	To encourage and recognise projects that reduce the contribution of the project site to the heat island effect.	25.0	Heat Island Effect Reduction	1	ARCH		1			ARCH: Specify roof materials to have a minimum Solar Reflectance Index of 82.	0	**DJRD (ARCH):** Can confirm project does NOT meet the requirements. Site is not large enough.	
Total				**6**			**1**	**0**			**2**		
Emissions		**FALSE**		**5**									
Stormwater	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Stormwater Peak Discharge	1	CIVIL		1			CIVIL: Ensure the post-development peak event stormwater discharge from the site does not exceed the pre-development peak event stormwater discharge, using a 5 year ARI.	1	**CIVIL (ACOR):** The design is currently not increasing the impervious area of the site, so as such the post-development stormwater discharge will not exceed pre-development flows (accepted).	

		26.2	Stormwater Pollution Targets	1	CIVIL				CIVIL: Achieve pollution reduction in accordance with column A from "Table Emi-5.1: Pollution Reduction Targets".	0	**CIVIL (ACOR):** The design currently does not include any WSUD strategies as it is not required by Council. We can incorporate WSUD to achieve Column A (the table) but this will be a cost increase to the project.	Credit to be reviewed if required.
Light Pollution	To reward projects that minimise light pollution.	27.0	Light Pollution to Neighbouring Bodies	-				Neighbouring buildings are usually the hospital buildings. Consider impacts to surrounding residential if any.	ELEC: Confirm compliance with AS 4282 Control of the obtrusive effects of outdoor lighting	C	**ARUP (ELEC):** Confirmed	
		27.1	Light Pollution to Night Sky	1					ARCH, ELEC: No external luminaire may have an upward light output ratio greate than 5% i.e. no uplights.	1	**DJRD (ARCH):** Ok.	
Microbial Control	To recognise projects that implement systems to minimise the impacts associated with harmful microbes in building systems.	28.0	Legionella Impacts from Cooling Systems	1	MECH		1		MECH: Water-based heat rejection system is to be built in accordance with AS/NZS 3666.1:2011. The system is to be designed and built to maintain constant movement to prevent water stagnation in the system; The water contained in the system is never to be at a temperature between 20°C and 50°C while not moving. CONT: Provide a Legionella Risk Management Plan including: Monthly inspectionsand maintenance of the system(s) as per AS/NZS 3666.2:2011 or as per a performance based maintenance program developed in accordance with AS/NZS 3666.3:2011; • Flushing of the system(s) where the system(s) is not in operation for more than three days; and • Inspection, cleaning and flushing of the system(s) prior to reactivation.	1	**ARUP (MECH):** Recommend to consider pathway 28C. **STN:** Stantec will include 28C.	
Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	29.0	Refrigerants Impacts	1	MECH					0		
Total				**5**		**1**	**1**			**3**		
Innovation				**10**								
Innovative Technology or Process	The project meets the aims of an existing credit using a technology or process that is considered innovative in Australia or the world.	30A	Innovative Technology or Process	10								
Market Transformation	The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in Australia or in the world.	30B	Market Transformation		ARCH HYDR MECH STRUCT CONT							
Improving on Benchmarks	The project has achieved full points in a credit and demonstrates a substantial improvement on the benchmark required to achieve full points.	30C	Improving on Benchmarks		ARCH				ARCH: Specify ultra low VOC (<5g/L) paints.	1	**DJRD (ARCH):** Ok.	
	Supplementary or tenancy fitout systems review	30C	Commissioning and Tuning		PM				PM: Facilitate a services and maintainability review of tenancy fitout systems to ensure they are properly integrated with the base building systems.			
	Daylight See credit	30C	Visual Comfort		ESD							
Innovation Challenge	Where the project addresses an sustainability issue not included within any of the above Credits.	30D	Innovation Challenge		HI				ARCH/HI/Contractor: Reconciliation Action Plan and action/activity.			
	Where the project addresses an sustainability issue not included within any of the above Credits.	30D	Innovation Challenge		PM				PM: Soft Landings: Facilitate at least 3 workshops between design/constructions teams and facility managers. Maintain a register with design gateways.			
	Where the project addresses an sustainability issue not included within any of the above Credits.	30D	Innovation Challenge		HNE				HI: Provide a Green Cleaning policy including HEPA filters on vaccum cleaners, procurement guidelines & methods of use for all cleaning products that employ best environmental practice, and adhere to the Australian National Health and Medical Research Council's Guidelines for routine environmental cleaning.			
Global Sustainability	Project teams may adopt an approved credit from a Global Green Building Rating tool that addresses a sustainability issue that is currently outside the scope of this rating tools.	30E	Global Sustainability									
Total				**10**		**0**	**0**			1		
TOTAL						**23**	**18**		**TOTAL**	50		

Design with
community in mind

Level 6, Building B
207 Pacific Highway
St Leonards NSW 2065
Tel +61 +61 2 8484 7000
E sydney@wge.com.au

For more information please visit
www.stantec.com

Stantec