WCEoLP Tamworth

Ecologically Sustainable Development Report

Prepared for: Health Infrastructure C/- Capital Insight

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Date: 17/4/2025

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Revision

Revision	Date	Comment	Prepared By	Approved By
1	31/01/2025	SD Issue	IS	RD
2	17/04//2025	Tender Issue	IS	RD

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1. Executive Summary

This Ecological Sustainable Development (ESD) Report has been prepared on behalf of Health Infrastructure c/- Capital Insight for the proposed World Class End of Life Program (WCEoLP), Tamworth facility. This report provides an overview of the ESD principles including greenhouse gas emission reduction strategies (reflecting the Government's goal of net zero by 2050), water sensitive urban design and sustainable material procurement, use and management, which will be implemented across the development.

ESD strategies and opportunities provided within this report intend to directly respond to relevant regulatory and project specific sustainability drivers. This report has been prepared in direct response to:

- NSW Environmental Planning and Assessment Regulation 2021
- NSW Government Resource Efficiency Policy
- National Construction Code (NCC) 2022 Vol.1
- Health Infrastructure, Design Guidance Note No.058 – Environmentally Sustainable Development
- Health Infrastructure, World Class End of Life Program - Sustainability Principles (June 2023, Rev 1.0)

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:

- The development is currently targeting **63 points** in accordance with HI's ESD Evaluation Tool;
- **Building 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 & Carbon** – including improved energy efficiency of the building operations through design and technology and consideration to Embodied Carbon.
- **Water Efficiency** – reduce potable water demand and utilizing the use of rainwater.
- **Materiality & Waste** – Considering the whole of life of materials and their selection to minimise harm to the environment, including efficiency and construction while minimising resources sent to landfill from construction and demolition works.

2. Introduction

This report outlines a series of schematic design elements which will allow the proposed Tamworth facility to align with the required sustainable development outcomes while ensuring potentially harmful ecological & environmental impacts of the project are mitigated.

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

- A minimum of 60 points (+5 point buffer) to be achieved by the design in accordance with HI's ESD Evaluation Tool;
- A mandatory requirement of demonstrating a 10% improvement** in energy performance on NCC Section J.

This is a stand alone unit for Palliative Care to expand the Nioka Palliative Care unit from six (6) to twelve (12) beds. The size and scope of the project create inherent limitations on spatial and scope aspects, the facility is currently targeting **63 points** under HI's ESD Evaluation Tool. As this is in an existing hospital site, credits which investigate aspects such as transport will be applied to the extent of scope / allowable design flexibility to this development. This pathway, as shown in appendix A, has been approved and coordinated with Health Infrastructure NSW.

2.1 General Overview

The WCEoLP Tamworth facility intends to improve the palliative care services and support capability of the Tamworth hospital. The facility will increase access to end-of-life care locally, deliver purpose-built facilities that support contemporary models of care, improve patient safety and quality of care and improve environments for patients, carers and staff.

The facility will be a stand alone unit, extended to the north-eastern corner of the main hospital building, increasing the total number of palliative care beds from six (6) to twelve (12).

2.1.1 Site Location

Figure 1 Location of the site. Source: Google Maps

2.2 Sustainable Design Framework & Project Response

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 2021;
- NSW Government Resource Efficiency Policy
- National Construction Code (NCC) 2022 Vol.1
- Health Infrastructure, Design Guidance Note No.058 – Environmentally Sustainable Development
- Health Infrastructure, World Class End of Life Program - Sustainability Principles (June 2023, Rev 1.0)

2.2.1 NSW Environmental Planning and Assessment Regulation 2021

Section 193 “Principles of ecologically sustainable development” under division 5 “Environmental impact statements” of the Environmental Planning and Assessment Regulation 2021 states the following:

1) *The principles of ecologically sustainable development are the following-*
    a) *the precautionary principle,*
    b) *inter-generational equity,*
    c) *conservation of biological diversity and ecological integrity,*
    d) *improved valuation, pricing and incentive mechanisms.*

2) *The precautionary principle is 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.*
3) *In applying the precautionary principle, public and private decisions should be guided by—*
    a) *careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and*
    b) *an assessment of the risk-weighted consequences of various options.*

4) *The principle of inter-generational equity is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*

5) *The principle of the conservation of biological diversity and ecological integrity is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.*
6) *The principle of improved valuation, pricing and incentive mechanisms is that environmental factors should be included in the valuation of assets and services, such as—*

    a) *polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and*
    b) *the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and*
    c) *established environmental goals 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.*

The following provides a direct response to the specific principles of ecologically sustainable development, as documented within the Schedule 193 of Division 5 of Part 8 of the Environmental Planning and Assessment Regulation 2021.

The Precautionary Principle:

An appropriately qualified professional shall undertake investigations to determine if the natural features of this site are habitat to local and native wide-life, and or threatened and endangered species. The proposed facility will be located within an existing building on previously developed land within an established urban area. The risk of creating environmental damage to aspects such as waterways, water table, native habitat, and other biological features is considered low.

If the ESD principles set out in the applicable regulatory policies, plans, controls and Australian best-practice guidelines are considered, supported and acted upon to satisfy their objective, serious or irreversible environmental damage is not foreseen.

Inter-generational equity:

The proposed development approaches inter-generational equity with respect to ecological sustainability by minimising the consumption of resources whilst upholding the health and well-being of its occupants into the future. The project has objectives that place lower demand on resources (energy, water, materials) in construction and operation, when compared to standard practice, by introducing Australian best-practice energy, water and materials conservation measures. These objectives and corresponding initiatives set-out to use today's resources in a manner that enables future generations to meet their own needs using equivalent resources.

Conservation of biological diversity and ecological integrity:

Because the proposed development is situated on previously developed land it can be assumed there is limited biological diversity impact. However, the sustainability targets set for the project will aim to improve conservation of resources. As such, the proposed development is likely to have a smaller gross biological and ecological footprint than equivalent projects in standard practice.

Improved valuation, pricing, and incentive mechanisms:

This project will integrate several 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 waste will be borne by the project team. They shall be required to target 90% recycling of construction waste. This may 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 costs of producing the following pollution: sewage, landfill waste, and CO2 emissions are partially borne by the project team and accounted for in the project's sustainability initiatives. The project has voluntarily elected to:

- improve water consumption efficiency, thereby paying to reduce production of sewage;
- reduce energy consumption, which means solutions to reducing CO2 emissions will be paid to be investigated during the design phase;

2.2.2 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:

- E1 - Target to save energy across all government sites.
- E3 - Minimum standards for new electrical appliances and equipment

- E5 - Whole-of-government solar target
- W1 - Report on water use
- W3 - Minimum standard for new water-using appliances
- P1 - Report on top three waste streams
- A2 - Low VOC materials
- R1 - Agencies will publicly report on their progress on the GREP annually.

These are addressed in their relevant sections throughout this report.

2.2.3 NCC Section J – Energy Efficiency

The project will be required to demonstrate compliance with the NCC (2022 Vol.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 (2022 Vol.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. Where feasible, the development will need to optimise energy efficiency & thermal performance through optimized envelope elements which improve the building façade performance including façade design, thermal envelope, HVAC system selection and lighting design.

2.2.4 Health Infrastructure, Design Guidance Note No.058 – Environmentally Sustainable Development

Being a development under Health Infrastructure, this WCEoLP facility will be required to demonstrate adherence to the ESD initiatives dictated by the Design Guidance Note No.58 (DGN.058) prepared by HI. DGN.058 outlines the roles and responsibilities of relevant parties and establishes guidelines to implement ESD initiatives in HI projects.

The DGN.058 provides an ESD Evaluation Tool which has been developed to recognize sustainability initiatives and reflects best-practice industry rating tools such as Green Star. The ESD Evaluation Tool uses a points-based scoring system and requires, pending project applicability and HI approval, a minimum of 60 points to be achieved. It is recommended that an additional 5-point buffer is targeted. The scores used in the ESD Evaluation Tool reflect the merit of various initiatives applicable to health facilities and were developed by specialists to meet the needs of Health Infrastructure. In using the tool, emphasis should be given to meeting the intent of each initiative, with sufficient evidence to support the claim that the initiatives have been achieved.

The ESD Evaluation Tool covers the following ESD initiative categories;

1) Management,
2) Indoor Environment
3) Energy & Carbon
4) Climate risk and resilience
5) Transport
6) Water
7) Materials & Waste,
8) Land Use & Ecology
9) Discharge to Environment, and
10) Innovation

The ESD Evaluation Tool has been developed for the WCEoLP Tamworth facility and has been included as 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.

2.2.5 Health Infrastructure, World Class End of Life Program - Sustainability Principles (June 2023, Rev 1.0)

Building upon the mandatory requirements established within the DGN.058, WCEoLP facilities are strongly encouraged to prioritize and embed further sustainability initiatives. The document responds to relevant policies and targets including the; Future Health Strategy, NSW Health Resource Efficiency Plan, NSW Government targets for Net Zero, NSW GREP, HI Corporate Strategy 2021-2025 & The United Nations Sustainable Development Goals. The document outlines thirteen key sustainability priorities for the WCEoLP facilities which are;

1) Wellbeing and Healthy Living
2) Celebrate Culture and Cultural Practice
3) Connected and Inclusive
4) Connecting to Country
5) Greener Places and Places for Nature
6) Healthy and Connected Built Environment
7) Sustainable Buildings and Precincts
8) Climate Risk Ready & Net Zero Ready
9) Materials & Waste
10) Governance and Reporting
11) Sustainable Choices and Procurement Practices
12) Empowering people and partnerships
13) Embedding sustainability

2.2.6 Project Response

The project team have proposed a number of energy efficiency measures that will reduce the greenhouse gas emissions and carbon footprint of the project. An array of best practice sustainable initiatives will be incorporated so that potential environmental impacts are mitigated. These are outlined in further detail within section 3 of this report.

There are no perceived threats of serious or irreversible environmental damage as a result of the proposed redevelopment. The facility is within an existing site and will therefore have minimal localised environmental impact. The proposed development will have predominantly the same uses as the existing Tamworth hospital whilst providing high quality spaces and amenities for users.

The development will give strong consideration to potential environmental impacts through the application of best practice design initiatives and operational processes such as those listed in section 3. The documented initiatives to be implemented – which are the basis for the response to the relevant Sustainable Design Frameworks include:

- Re-use of existing structural and façade building elements, reducing the demand for new material and inherently embodied carbon.
- Energy efficient lighting systems (internal and external) and lighting controls;

- High efficiency HVAC equipment;
- Explore opportunities to reduce embodied emissions associated to the proposed material selections;
- Ample access to natural daylight and fresh air where possible;
- Water efficient fixtures and fittings (WELS rating);
- Selection of native & low water plants / trees;
- Increased indoor & outdoor environmental quality, through the use of low emission materials and finishes;

A Construction Environmental Management Plan that incorporates mitigation measures to ensure that environmental impacts to the site are minimised during construction. All sub-contractors will also be requested to provide and abide by an Environmental Management System to be in accordance with NSW Environmental Management Systems Guidelines or a similar standard. This places a value on environmentally responsible building practices to ensure they are held responsible for the environmental management of the building site as they complete their work.

Once the facility is under activity, operational guidelines and appropriate monitoring and control measures shall be set in place in accordance with the sustainable strategies adopted by the development and will be distributed to the tenants to ensure environmental impacts associated with operational processes are minimised wherever possible.

3. Ecological Sustainable Development Initiatives

3.1 Building Management

In line with industry recognised best practice frameworks, the project design and built form will seek to respond to the ongoing environmental challenges of urban development and ensure the project implements a range of ESD initiatives aimed at improving ongoing building management.

Through specific contractual commitments and documented design intent the project proposes to address environmental management & building operational performance through the following initiatives.

- **Building Commissioning & Tuning Procedures** including succinct handover material ensuring design initiatives are well-documented and are carried through to construction phases.
- **Commitment to Environmental Performance Targets** such as energy, water, operational waste and end-of-life waste streams will ensure building owners/occupants are aware and considerate of the efficient consumption and management of resources during the operation of the building.

3.2 Indoor Environment

Indoor Environment Quality (IEQ) has been defined as a key sustainable building category to improve indoor environments for building occupants, which in turn improves their overall wellbeing. Consideration to improving indoor environmental quality will be a vital step within the development's design process.

The proposed development seeks to improve the overall IEQ for building occupants by addressing the following elements:

- **Improved Ventilation** to ensure occupants have sufficient access to fresh air and indoor pollutants sources are effectively eliminated or exhausted from habitable spaces.
- **Improved Acoustic Performance** to ensure occupants can enjoy private, quiet spaces with family and visitors.

- Glazing performance shall be specified to **maximise useful daylight** while maintaining a high degree of thermal performance to minimize energy consumption. Artificial lighting fixtures shall be selected to ensure comfortable lighting levels are maintained throughout the facility.
- **Low Volatile Organic Compound (VOC)** – Selection of all internally applied paints, carpets, adhesives and sealants used on site with low volatile organic compound (VOC) content.
- **Low Formaldehyde Emission Wood** – Selection of all internally applied engineered wood products from low formaldehyde emission products.

3.3 Energy & Carbon

The Tamworth

facility is required to demonstrate compliance with the Energy Efficiency provisions of the BCA outlined within the NCC, Section J, 2022 - Vol.1. In response to the DGN.058 and the WCEoLP Sustainability Principles, the project shall meet a mandatory 10% improvement beyond the National Construction Code (NCC) Section J – Energy Efficiency standards.

The current energy efficiency strategy has generally followed the hierarchy pyramid demonstrated below in Figure 2. Best practice energy conservation dictates that in the first instance, energy demand is reduced, which has a much greater benefit to the overall long-term energy performance of the facility compared to retrospective efficiency measures or renewables/offsets. As such, the focus will be on the elements that provide the greatest return on investment.

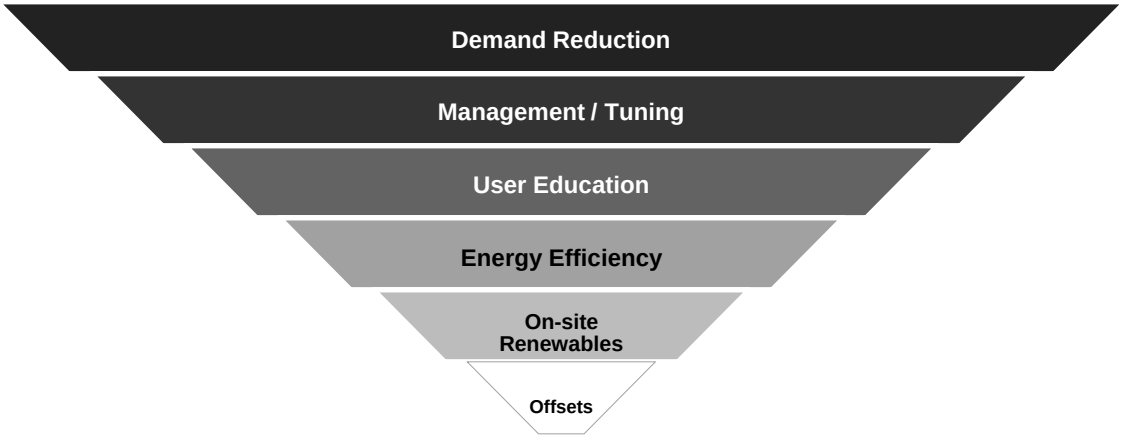

Figure 2 - Energy Saving Hierarchy

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

- **Architectural Form** - Designed to deliver comfort, practicality, daylight, connection to the outside through views and energy conservation.
- **Shading and Blinds** –Use of internal devices such as blinds to 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.
- **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.
- **Embodied Carbon** - A measurement of the Embodied Carbon of materials used across the development should be undertaken using the NABERS Embodied Emissions Materials Form. Refer to Section 3.6 of this report for initiatives to reduce the Embodied Carbon of the facility.

3.3.1 Energy Compliance – NSW HI ESG (7.4) & NCC 2022 Section J

The NCC 2022 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. 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, undertaken by the Mechanical design consultant. A Performance Solution involves detailed simulation modelling of the proposed building 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.

As part of the project's sustainability drivers & under the mechanical consultant services scope of works, the project design team is required to demonstrate a 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 passive strategies which limit the amount of undesirable energy flows entering or leaving a thermally controlled space.
- Mechanical equipment to comply with or improve upon minimum energy performance (MEPS).
- Energy management systems integrated with a direct digitally controlled BMCS allows monitoring, targeting and load-shedding capability of selected plant.
- Efficient insulation of hot and warm water distribution pipework to minimize heat losses.
- 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.

A detailed NCC Section J1V3 report is to be provided in association with the project tender documentation demonstrating compliance with the provisions outlined above.

3.4 Climate Risk & Resilience

As part of the provisional design response for the project, an assessment of project risks associated with the predicted impacts of Climate Change has been provided.

Key risks identified for the project site include:

- Elevated peak temperatures, extended duration of heat waves.
- Reduction in annual rainfall, but more intense rainfall events

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 'Central Slopes Cluster' region as defined by the CSIRO and BOM and is taken as the most representative of future conditions due to climate change for Tamworth.

*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)	1 (0.6 to 1.3)	1.1 (0.7 to 1.5)	2.1 (1.4 to 2.7)	4.2 (3 to 5.4)
Maximum temperature change (°C)	1.1 (0.6 to 1.4)	1.2 (0.5 to 1.6)	2.2 (1.5 to 3)	4.2 (3.2 to 5.5)
Minimum temperature change (°C)	1 (0.6 to 1.1)	1 (0.7 to 1.4)	1.9 (1.3 to 2.7)	4.1 (3 to 5.3)
Extreme temperature (days per year over 35°C)	Substantial increase in intensity and frequency of extreme temperature days			
Mean annual rainfall change (%)	-2 (-11 to +7)	-1 (-13 to +8)	-4 (-16 to +6)	-6 (-23 to +18)
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 (%)	0.5 (-0.7 to 1.8)	0.6 (-0.7 to 2.1)	1.3 (-0.3 to 2.6)	0.9 (-1.7 to 3.3)
Relative humidity (%, absolute)	-0.6 (-2.5 to 0.9)	-0.8 (-2.8 to 1.6)	-1.6 (-4.1 to -0.3)	-2.4 (-7.4 to 1.1)
Wind Speed (%)	-1 (-5.3 to 1.5)	0.2 (-1.9 to 3.5)	-0.7 (-5.3 to 1.7)	1.4 (-3.5 to 6.8)
Sea level rise (m)	N/a	N/a	N/a	N/a

Table 1: Summary of 'Central Slopes 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 rise by 2030 and triple by 2090 (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. Appropriate shading, high performance glazing and good-practice operating procedures shall all contribute to ensure the proposed project responds appropriately to the projected risks of climate change.

3.4.1 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 2022 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.

Operational and handover 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.

3.5 Water

A variety of water efficiency measures can be applied to the proposed development. Best practice water efficiency measures implemented to reduce water consumption may include:

- **Water efficient fixtures and fittings (WELS rating):** By implementing low-flow water fixtures, the consumption associated with amenities can be reduced. This includes taps, wash basins, WCs, Urinals, showers and supplementary water uses.
- **Water use metering and monitoring:** Which can identify leaks and amend losses before greater loss occurs.
- **Selection of native & low water plants / trees:** Native plants which have adapted to thrive in the Australian environment and are typically more resilient than their exotic counterparts. Low water species will reduce further irrigation demand.
- **Irrigation:** sub-soil irrigation systems should be favoured with a time clock to water planter beds/substrate at night. Doing so can significantly reduce water lost to evaporation and hence overall water demand.

Figure 3 - Example WELS Rated Product Label

3.6 Materials & Waste

In accordance with the project's sustainability principles, the development should prioritize the use of responsibly procured materials with respect to the following initiatives:

- **Low Embodied Carbon:** Materials which hold a third-party verified Environmental Product Declaration (EPD) should be of preference to allow for life cycle accounting. Timber and other biogenic materials should be considered where feasible such as internal finishes and fixtures. The project has inherently reduced the total Embodied Carbon when compared to a standard practice, new-build due to the extent of the existing structure and façade being retained and reused.
- **Circularity Principles:** Such as prioritizing the local procurement of materials which have been manufactured using sustainable, low carbon practices. Through reusing significant portions of the existing structure and façade the facility has inherently extended the useful life of these building elements and reduced the number of resources sent to landfill compared to typical demolition works. The development should aim to prolong and maintain the useful life of the materials and structures used. A detailed end-of-life or decommissioning strategy should also be prepared and included in handover which outlines opportunities for reuse and details best-practice recycling options which divert resources from entering landfill.
- **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 and hence should be limited where possible. Alternatively, products with Best Environmental Practices (BEP) certification should be selected.
- **Timber** products used must come from sustainable forestry practices and hold a forest stewardship council (FSC) or Program for the Endorsement of Forest Certification (PEFC) certification.
- **Construction & Demolition Waste** should be diverted from landfill and reported by the waste contractor in kg. The development is targeting a diversion rate of 90% from landfill.

4. Summary

The proposed WCEoLP Tamworth Facility 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 2021;
- NSW Government Resource Efficiency Policy
- National Construction Code (NCC) 2022 Vol.1
- Health Infrastructure, Design Guidance Note No.058 – Environmentally Sustainable Development
- Health Infrastructure, World Class End of Life Program - Sustainability Principles (June 2023, Rev 1.0)

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 development is currently targeting **63 points** in accordance with HI's ESD Evaluation Tool and shall demonstrate a 10% improvement in energy performance against NCC Section J. The project has undertaken a Section J Compliance Report and addresses the compliance with the National Construction Code (NCC) through the deemed-to-satisfy methodology for Section J compliance of the new building works

The specific initiatives that will be implemented 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:

- Building Management,
- Indoor Environment
- Energy & Carbon
- Climate Risk & Resilience
- Water
- Materials & Waste,

Appendix A DGN.058 ESD Evaluation Pathway

Design with
community in mind

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Project Name:	Tamworth WCEoLP	**PROJECT SCORE**	**63**	Update by Name:	Ingrid Segovia	Total Points	**99**
HI Delivery Part:	4	60 point target + 5 point buffer		Date Last Updated:	17/04/2025	Updated Total Points (not including NA credits)	**86**

HI Environmentally Sustainable Development (ESD) Evaluation Tool

Refer to Aconex CI-GCOR-001472 for ESD budget

$ 204,848.00 2% allocation of GCC ($10.242M) = ~$204.8k

Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Risk Level	Cost Estimate	Type	Input	Stakeholders	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	Notes: (including Healthcare relevant initiatives which are primarily for IPU type spaces)	Discipline Design Requirements	Consultant Comment
Management				**12**	**11**		**$ -**							
ESD Consultant (Accredited Professional)	To recognise the appointment and active involvement of an Accredited Professional in order to ensure that the ESD tool is applied effectively and as intended.	1.0	Accredited Professional	1	1	Low	$ -	Minimum requirement	ESD	HI / LHD, ESD, Head Contractor				Included in ESD consultancy scope & head contract
Commissioning and Tuning	To encourage and recognise commissioning, handover and tuning initiatives that ensure all building services operate to their full potential.	2	Environmental Performance Targets	-	C	Low	$ -	Minimum requirement	HI	HI / LHD, Mechanical, Electrical, Lighting, V. Transport, ESD, Fire, Hydraulics, Acoustics, Civil, Landscape				WCEoLP principle (Table 4, 10c,d) - to establish post construction SU targets and track, measure and report on targets. Requires DIR or OPR including a general overview, energy, IEQ and water targets for nominated systems/spaces and detail into how these targets will be monitored.
		2.1	Services and Maintainability Review	1	1	Low	$ -	Recommended	ICA	HI / LHD, Façade, Mechanical, Electrical, Lighting, V. Transport, Fire, Hydraulics, Civil, Head Contractor, ICA			Provide document records (e.g. meeting minutes) demonstrating the project design has considered: • Commissionability; • Controllability; • Maintainability; • Operability, including 'Fitness for Purpose'; and • Safety.	Requires documented coordination between design and construction teams (main services). Stantec can provide template for review.
		2.2	Building Commissioning	1	1	Medium	$ -	Recommended	ICA	Mechanical, Electrical, V. Transport, Fire, Hydraulics, ICA			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	> Air permeability testing will be exempt as precedent set by other projects. as confirmed by HI email 7/5/2024
		2.3	Building Systems Tuning	1	1	Low	$ -	Recommended	CONTR	Mechanical, Electrical, V. Transport, Fire, Hydraulics, Head Contractor, ICA			HI: commitment will need to be included by contractor in the Commissioning Plan outlining a 12 month building systems tuning, refer also to GC21 requirements	SU: performance spec to include a requirement for 12 month Building Tuning as per D&AB (v1.3)
		2.4	Independent Commissioning Agent	1	1	Medium	$ -	Optional	ICA	HI / LHD, Project Manager, ICA		May require additional consultant.	HI: Provide confirmation that HI or a facility manager will be reviewing the commissioning plan and commissioning results.	Independent commissioning agent will be engaged.
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 and sustainable outcomes.	4.1	Building Information	1	1	Low	$ -	Recommended	CONTR	Façade, Mechanical, Electrical, V. Transport, Fire, Hydraulics, Landscape, Structural, Head Contractor			Preparation of comprehensive O&M manual, a Log book and a Building User Guide a requirement under the HI GC21 Main Work Contract. Specifications and inclusion in contractor deliverables.	CONTR to prepare comprehensive O&M manual, a Log book and a Building User Guide.

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	1	Low	$ -	Recommended	HI	HI / LHD			HI: Energy target is 10% improvement on J1V3 compliance. Water target is set via the potable water calculator results and points target.	WCEoLP principle (Table 4, 10c,d) - to establish post construction SU targets and track, measure and report on targets. Mech to provide DTS to demonstrate compliance with HI Performance. Mech report. HI:Energy target is 10% improvement on J1V3 compliance. Water target is set via the potable water calculator results and
		5.2	End of Life Waste Performance	1	0	Medium	$ -	Recommended	WASTE	HI / LHD				NOT CURRENTLY TARGETED.
Metering and Monitoring	To recognise the implementation of effective energy and water metering and monitoring systems.	6	Metering	-	C	Medium	$ -	Minimum requirement	MECH	Mechanical, Electrical, Hydraulics, Landscape			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.	Metering recommended for detailed energy monitoring/reporting and consumption management/control should appropriate BMS (in line with credit 6.1) be implemented
		6.1	Monitoring Systems	1	1	Medium	$ -	Minimum requirement	MECH	Mechanical, Electrical			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.	WCEoLP SU principle (Table 4, 7m) - BMS and associated metering to be implemented.
Construction Environmental Management	To reward projects that use best practice formal environmental management procedures during construction and support staff sustainability awareness and education.	7	Environmental Management Plan	-	C	Low	$ -	Minimum requirement	CONTR	Head Contractor			CONTR: Provide Environmental Management Plan.	Typical practice for contractors
		7.1	Formalised Environmental Management System	1	1	Low	$ -	Recommended	CONTR	Head Contractor			CONTR: Provide Environmental Management System.	Pending contractor scope. WCEoLP SU principle (Table 4, 9g)
		7.2	High Quality Staff Support	1	1	Low	$ -	Optional	CONTR	Head Contractor		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.	Pending contractor scope. WCEoLP SU principle (Table 4, 9g)
Operational Waste	Performance Pathway To encourage project to apply waste hierarchy through the design	8A	Performance Pathway - Specialist Plan	1	1	Medium	$ -	Optional	WASTE	HI / LHD, ARCH, Waste Consultant			PM: Engage a waste consultant to prepare/update Operational Waste Management Plan for new facility	Explore disposable rooms which are big enough for the waste which needs to be managed. HNELHD : Waste management KPIs - reduce landfill waste by 10% year-on-year. Project to meet HNELHD targets. Potential to tie into existing HNELHD OWMP
		8A(i)	Operational Waste Management Plan	-	-	Low		Minimum requirement	WASTE	HI / LHD, ARCH, Waste Consultant				
		8B	Prescriptive Pathway - Facilities	-	0	Low	$ -	Optional	WASTE					ARCH concept drawings don't seem to include waste facilities for the WCEoLP - assume tie in with hospital. (if OWMP not developed)
Total				**12**	**11**		**$ -**							
Indoor Environment				**17**	**11**		**$ 30,000.00**							
Indoor Air Quality	To recognise projects that provide high air quality to occupants and safeguard occupant health through the reduction in internal air pollutant levels.	9.1	Ventilation System Attributes	1	1	Low	$ -	Recommended	MECH	Mechanical		Healthcare relevant initiative	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.	Pending coordination with MECH. May be some limitations/restrictions for separation distances with existing hospital MECH systems.
		9.2	Provision of Outdoor Air	2	1	Medium	$ -	Optional	MECH	Mechanical	ESG requirements request 2.0 ACH to IPU spaces.	Healthcare relevant initiative	MECH: Provide outdoor air at a rate 50% greater than the minimum required by AS 1668.2:2012.	WCEoLP SU principle (Table 4, 7h). Include mixed mode/Nat vent to improve access to fresh air. Concept design to favour OA access to beds via large operable doors/windows. Trip switch to each bedroom FCU to switch off when door open. TBC w/ MECH regarding OA% in supply stream to all primary & secondary areas.

		9.3	Exhaust or Elimination of Pollutants	1	1	Low	$ -	Recommended	MECH	ARCH, Mechanical		Healthcare relevant initiative	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	Concept design doesn't seem to show kitchen area. TBC (dining/REC). Kitchenettes with cooking appliance power input of <0.5kW/sqm excluded. No vehicle exhaust or printing pollutants to manage.
		9.4	Paints, Adhesives, Sealants and Carpets	1	1	Low	$ 5,000.00	Recommended	ARCH	ARCH, Façade, Mechanical, Electrical, V, Transport, Fire, Hydraulics, Acoustics, Head Contractor		Healthcare relevant initiative	ARCH: Specify low VOC paints and carpets.	WCEoLP principle (Table 4, 7k) - Low VOC products to be specified. Recommend this be implemented to provide high levels of indoor comfort and quality for patients. Cost allocated to account for product certification uplift of low VOC/Formaldehyde products.
		9.5	Engineered Wood Products	1	1	Low	$ 5,000.00	Optional	ARCH	ARCH, Structural, Head Contractor		Healthcare relevant initiative	ARCH: Specify low formaldehyde engineered wood products: particleboard, plywood, Medium Density Fibreboard (MDF), Laminated Veneer Lumber (LVL), High-Pressure Laminate (HPL), Compact Laminate and decorative overlaid wood panels	
Acoustic Comfort	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	10.1	Internal Noise Levels	1	1	Medium	$ 20,000.00	Recommended	ACOUS	ARCH, Façade, Mechanical, Acoustics		Healthcare relevant initiative	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.	WCEoLP principle (Table 4, 7l) - an acoustic comfort strategy is to be prepared. Pending design review by Acoustic consultant. Concept report seems to endorse high acoustic performance for patient privacy.
		10.2	Reverberation	1	0	Medium		Optional	ACOUS	ARCH, Acoustics, Structural		Healthcare relevant initiative	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.	NOT CURRENTLY TARGETED. Required reverberation times in these rooms unlikely to be achieved.
		10.3	Acoustic Separation	1	0	Medium		Optional	ACOUS	ARCH, Mechanical, Acoustics, Structural		Healthcare relevant initiative	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.	NOT CURRENTLY TARGETED.
Lighting Comfort	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	11	Minimum Lighting Comfort	-	C	Low	$ -	Minimum requirement	LIGHT	Electrical, Lighting	Artificial lighting initiatives can also utilise typical spaces.	Healthcare relevant initiative	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.	BAU - flicker free and high CRI lighting As specified within Northrop Concept services report (4.12.3) CRI>80 w/ DALI Dimmable driver.
		11.1	General Illuminance and Glare Reduction	1	1	Low	$ -	Recommended	LIGHT	Electrical, Lighting		Healthcare relevant initiative	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.	Appropriate illuminance levels to be designed in line with HI ESG & DGN_058
		11.2	Surface Illuminance	1	0	High	$ -	Optional	ARCH	ARCH, Electrical, Lighting		Healthcare relevant initiative	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.	NOT CURRENTLY TARGETED. Requires suspended light fixtures which are typically not approved by HI due to dust and contamination control.
		11.3	Localised Lighting Control	1	0	Medium	$ -	Optional	LIGHT	Electrical, Lighting		Healthcare relevant initiative	ELEC: Provide direct lighting control for patients and staff.	NOT CURRENTLY TARGETED. Some localised lighting control assumed to be provided (bed side, desks, etc) Extent TBC Common areas and corridors lighting control may be difficult to implement.
Visual Comfort	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	12	Glare Reduction	-	C	Low	$ -	Minimum requirement	ESD	ARCH, Façade		Healthcare relevant initiative	ARCH: Provide blinds with a visual light transmittance of <10%. Design to incorporate blinds or screen selections for	Blinds or screens to be provided to bed rooms and offices.
		12.1	Daylight	2	2	Medium	$ -	Optional	ESD	ARCH, Façade, ESD	Modelling of typical spaces for the daylighting initiative is acceptable, provided a sensible coverage of spaces is accounted for. Issues such as elevation, shading/overshadowing, orientation, window to wall ratio and material finishes should be considered for the determination of typical spaces.	Healthcare relevant initiative	ESD: Prescriptive methodology assessment.	**Pending assessment** Glazing extent to consider required 10% improvement on NCC Section J (impacting daylight/views access). Class 9a ward DtS requirements may imply very high performance glass. TBC w/MECH.
		12.2	Views	1	1	Low	$ -	Optional	ARCH	ARCH	Views can also be assessed using typical spaces.	Healthcare relevant initiative	ESD: Prescriptive methodology assessment.	

Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1	Thermal Comfort	1	1	Medium	$ -	Optional	MECH	Mechanical	NCC 2022 JV3 requires a PMV assessment to be undertaken	Healthcare relevant initiative	MECH / ESD: Provide thermal comfort modelling results to achieve PMV +-1.	Pending coordination with MECH and extent of passive house principles implemented.
		14.2	Advanced Thermal Comfort	1	0	High	$ -	Optional	MECH	Mechanical		Healthcare relevant initiative	MECH: Provide thermal comfort modelling results to achieve PMV +-0.5.	NOT CURRENTLY TARGETED.
Total Line				**17**	**11**		**$ 30,000.00**							
Energy & Carbon				**17**	**5**		**$ 60,000.00**							
Greenhouse Gas Emissions	To encourage and recognise projects to reduce their carbon footprint through design and construction and to ensure projects are net zero ready.	15E.0	Conditional Requirement: Reference Building Pathway	-	C	Low	$ -	Minimum requirement	MECH	Façade, Mechanical, Electrical, Hydraulics				TBC w/ MECH undertaking Section J compliance scope.
		15E.1	Comparison to a Reference Building Pathway.	10	2	Medium	$ -	Minimum requirement	MECH	Façade, Mechanical, Electrical, Hydraulics			MECH: Provide energy modelling results. ERV. Heat recovery for domestic hot water. Water-based heat rejection. 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 rooftop PV system. HYD: Heat pump domestic hot water	WCEoLP principle (Table 4, 7d) - Energy use to be 20% less than reference. Pending coordination/development of Section J performance requirements. MECH: Confirm strategy for 10% improvement & opportunities for further improvement. ELEC: Confirm size of solar PV system
		15E.1	Conditional Requirement: Net zero plan	-	C	Medium		Minimum requirement						NOT CURRENTLY TARGETED.
		15E.1(i)	100% electric in operation	1	1	Low	$ -	Minimum requirement	ELEC	Mechanical, Electrical	Aligns with Sustainable Buildings SEPP - A Net Zero Statement describes how a project will avoid dependence on fossil fuels and be capable of operating at net zero emissions by 2035.			100% electrification to be achieved as new build.
		15E.1(ii)	10% energy performance beyond NCC requirement, or GREP	1	1	Low	$ -	Minimum requirement	ELEC	Mechanical, Electrical				Confirm strategy for 10% improvement/options for further improvement. 10% improvement minimum requirement for HINSW to be demonstrated in JV3.
		15E.1(iii)	Measurement of Embodied Carbon	1	0	Medium		Minimum requirement	STRUC	ARCH, Structural, Head Contractor, Façade	Aligns with Sustainable Buildings SEPP - use the Embodied Emissions Materials Form in line with the Embodied Emissions Technical Note		QS: Measurement only - using NABERS Embodied Emissions Materials Form.	NOT CURRENTLY TARGETED. HI have elected not to target this Credit. Refer Aconex CI-GCOR-001483
		15E.1(iv)	Target reduction in upfront carbon emissions	1	0	Medium		Minimum requirement	ELEC	Mechanical, Electrical			QS to confirm cost of 10% reduction in upfront carbon	NOT CURRENTLY TARGETED. HI have elected not to target this Credit. Refer Aconex CI-GCOR-001483
Peak Electricity Demand Reduction	To encourage projects to consider Peak electricity reduction through energy efficiency or on-site energy generation	16A(i)	Solar or Renewable energy assessment	-	C	Low	$ -	Minimum requirement	ELEC	Mechanical, Electrical			ELEC: provide solar or Renewable energy assessment.	ELEC to undertake assessment
		16A(ii)	Solar or Renewable energy generation	1	1	Medium	$ 60,000.00	Recommended	ELEC	Mechanical, Electrical				ELEC to undertake assessment Note: Located close to another building with risk of shading. Estimated costing of $45k - $60k for a 40-50kW PV system Approx. 250sqm roof space (Based on 200W panel).
		16B	Performance Pathway - Reference Building	2	0	Medium	$ -	Optional	ELEC	Mechanical, Electrical		Healthcare relevant initiative		NOT CURRENTLY TARGETED.
Total Line				**17**	**5**		**$ 60,000.00**							
Climate risk and resilience				**2**	**2**		**$ 19,000.00**							

Adaptation and Resilience	To encourage and recognise projects that are resilient to the impacts of a changing climate and natural disasters.	3.1	Climate risk assessment	1	1	Low	$ 4,000.00	Minimum requirement	ESD	ARCH, Façade, Mechanical, Electrical, Fire, Hydraulics, Civil, Landscape, Structural, CAP Consultant, LHD			PM: Engage an ESD consultant to undertake a Climate Change Risk Assessment and Adaptation Plan. Allow for implementation of adaptive measures.	Climate Risk Assessment incorporated into the ESD Report, implementation of response actions strongly recommended. WCEoLP SU principle (Table 4, 8a-f) - CCAP to be developed and strategies implemented across design elements. (3.2) Cost uplift for any design changes required to address high and extreme climate risks identified.
		3.2	Implementation of a Climate Adaptation Plan	1	1	Medium	$ 15,000.00	Recommended	ENV	ARCH, Façade, Mechanical, Electrical, Fire, Hydraulics, Civil, Landscape, Structural, CAP Consultant	SEARS condition: Credit can be used to demonstrate CSIRO project climate Impacts			
Total Line				**2**	**2**		**$ 19,000.00**							
Transport			**Points available**	**10**	**3**		**$ -**							
Sustainable Transport	To encourage projects to consider sustainable transport options through design	17A.1	Performance Pathway	9	0	Medium	$ -	Optional	TRANS	HI / LHD, Project Manager, ARCH, Electrical, ESD, Travel Planner		Hospitals are usually well connected to public transport nodes. Large percentage of patients require access to hospitals via vehicles. Expansion of existing hospital also require additional carparking.	PM: Engage a transport consultant TRANS: Complete the Sustainable Transport Calculator; Green Travel Plan	NOT APPLICABLE No changes to the existing transport facilities proposed under project scope. WCEoLP expected to have negligible impact on overall parking demand and transport infrastructure currently serving the site.
		17B.1	Access by Public Transport	0	0	Medium	$ -	Optional		ESD				NOT APPLICABLE
		17B.2	Reduced Car Parking Provision	0	1	Medium	$ -	Optional		ARCH, Travel Planner				NOT APPLICABLE No new carparks on site
		17B.3	Low Emission Vehicle Infrastructure	1	1	Medium	$ -	Minimum requirement		ARCH, Electrical	Consistent with DGN 46 and NSW Government Fleet		ARCH: Provide electric vehicle chargers for 5% of all parking spaces i.e. 2 EV chargers.	NOT APPLICABLE No new carparks on site. Point granted given project scope does not extend to carparks.
		17B.4	Active Transport Facilities	0	0	Medium	$ -	Optional		Project Manager, 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.	NOT APPLICABLE No changes to the existing transport facilities proposed under project scope.
		17B.5	Walkable Neighbourhoods	0	1	Low	$ -	Optional		ESD			4 amenities provided within 400m.	Piper's Café Beratza Café North Tamworth Bowling Club Ochre street medical centre
Total Line				**10**	**3**		**$ -**							
Water				**6**	**5**		**$ 5,000.00**							
Potable Water	Potable Water - Performance Pathway	18A.1	Potable Water - Performance Pathway	0	0	Medium	$ -	Optional	HYDR	ESD, Fire, Hydraulics, Civil, Landscape		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.		NOT CURRENTLY TARGETED. Likely to achieve more points via prescriptive pathway. Can do check as design progresses.
		18B.1	Sanitary Fixture Efficiency	1	1	Low	$ -	Recommended	HYDR	Hydraulics	AusHFG Requirements limit use of RW systems (maintenance / Payback / health risks)	Healthcare relevant initiative	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.	High efficiency water fixtures to be implemented. Alignment with GREP and HI guidelines.
		18B.2	Rainwater Reuse	1	1	Medium	$ 5,000.00	Optional	HYDR	Hydraulics, Landscape	AusHFG Requirements limit use of RW systems		HYDR: Provide rainwater capture and reuse infrastructure for irrigation and other end uses if possible.	Approx 10L/sqm requirement. RW demand assessment to determine best size of RWT. RW for use in irrigation only, no internal use. TBC if existing hospital has capacity allowance for required new landscaping irrigation. WCEoLP principle (Table 4, 6d), RWT harvest and WSUD design principles. Cost uplift for small RWT and connection to proposed irrigation system.
		18B.3	Heat Rejection	2	2	Medium	$ -	Optional	MECH			Healthcare relevant initiative	MECH: Provide waterless heat rejection systems.	Air-based Heat rejection
		18B.4	Landscape Irrigation	1	1	Low	$ -	Recommended	LAND	Hydraulics, Landscape			LAND: Drip irrigation with moisture sensor override or no potable water is used for irrigation.	High efficiency sub-soil drip irrigation with time clock/moisture sensor recommended. No potable water use if possible.
		18B.5	Fire System Test Water	1	0	High	$ -	Recommended	FIRE	Fire			FIRE: Reuse of 80% of the sprinkler system test water for application on landscaping. Recirculation closed-loop system can be considered too.	NOT CURRENTLY TARGETED.
Total Line				**6**	**5**		**$ 5,000.00**							

Materials & Waste				**14**	**10**		**$ 10,000.00**							
Life Cycle Impacts	Prescriptive Pathway - Life Cycle Impacts	19A.1	Comparative Life Cycle Assessment	6	0	Medium		Optional	ESD	ARCH, Façade, Mechanical, Electrical, Lighting, V. Transport, Hydraulics, Civil, Structural, LCA Consultant, Head Contractor		Life Cycle Assessor (additional consultant) required		NOT CURRENTLY TARGETED.
		19A.2	Additional Life Cycle Impact Reporting	4	0	Medium		Optional	ESD	LCA Consultant		Life Cycle Assessor (additional consultant) required		NOT CURRENTLY TARGETED.
		19B.1	Concrete	3	3	Medium	$ -	Optional	ARCH	Civil, Structural		Healthcare relevant initiative	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. STRUC: Specify that the mix water for all concrete used in the project contains at least 50% captured or reclaimed water (measured across all concrete mixes in the project). STRUC: Specify that at least 40% of coarse aggregate in the concrete is crushed slag aggregate or another alternative material (measured by mass across all concrete mixes in the project), provided that the use of such materials does not increase the use of Portland cement by over five kilograms per cubic metre of concrete; or at least 25% of fine aggregate (sand) inputs in the concrete are manufactured sand or other alternative materials (measured by mass across all concrete mixes in the project), provided that use of such materials does not increase the use of Portland cement by over five kilograms per cubic metre of concrete.	Specification clauses to be included in tender documentation.
		19B.2	Steel	1	1	Medium	$ -	Optional	ARCH	Civil, Structural			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.	Specification clauses to be included in tender documentation.
		19B.3	Building Reuse	4	0	Medium	$ -	Optional	ARCH	ARCH, Civil, Structural		Healthcare relevant initiative	19B.3.1 Façade Reuse (2points): ARCH/STRUCT to provide evidence (before and for construction) drawings/markups demonstrating at least 50% of the façade (by area) is retained (1 point) **OR** 80% retained for 2 points. 19B.3.2 Structure Reuse (2points): ARCH/STRUCT to provide evidence (before and for construction) drawings/markups demonstrating at least 30% of the structure (floors, columns, beams, load-bearing walls & foundations) is retained (1 point) measured by gross building volume. **OR** 60% retention for 2 points. ***Note. Refurbishment works** (where less than 20% of the existing element is replaced) can be counted as a retained element.	NOT CURRENTLY TARGETED. Alternative pathway - if LCA not pursued. Pending confirmation of site setting
		19B.4	Structural Timber	4	0	High	$ -	Optional	STRUC	ARCH, Structural			19B.4.0 responsible Sourcing (Min requirement): ARCH/STRUCT to ensure all structural timber used in the building is FSC or PEFC certified. 19B.4.1 Reducing Embodied Impacts (3 points): Points are awarded depending on the % of GFA constructed and/or supported by structural timber - 1 point for 30% GFA - 2 points for 70% GFA - 3 points for 90% GFA.	NOT CURRENTLY TARGETED.

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	1	Medium	$ -	Recommended	STRUC				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.	Coordination with STRUC consultant to specify compliant steel and reo.
		20.2	Timber Products	1	1	Low	$ -	Recommended	ARCH				ARCH, STRUC: 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.	Ensure 95% by cost of timber specified is certified by a forest certification scheme (fsc or PEFC). EWP included.
		20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1	Low	$ -	Recommended	HYDR MECH ELEC ARCH STRUC				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.	Ensure 90% by cost of all PVC products hold Best Environmental Practice Certifications. OR provide evidence that cables, pipes etc are PVC free.
Sustainable Products	To encourage sustainability and transparency in product specification.	21.1	Product Transparency and Sustainability	3	2	Medium	$ 10,000.00	Optional					ARCH: Specify approximately 30% of all products to have Environmental Product Declarations (EPDs) or third party certifications e.g. GECA or Green Tag. ARCH: Investigate specifying recylced tiles. STRUC: Specify any precast concrete and all steel to have Environmental Product Declaration (EPDs)	Targeting a total of 6% of the cost of all products to have sustainability credentials. Specify products with either a high recycled content, EPD or GECA/Green Tag/Green Rate. Recylcled tiles: HNELHD recycled cloting is being used for recycled tiles manufacture. There is an opportunity for these for be used fof feature tiles.
Construction and Demolition Waste	Fixed Benchmark	22A	Fixed Benchmark	1		Low	$ -	Optional						
		22B	Percentage Benchmark	-	1	Medium	$ -	Recommended	CONTR				WASTE/CONTRACTOR: Provide cumulative waste reports demonstrating at least 90% of construction and demolition waste has been diverted from landfill. Waste shall be reported in kg.	Pending contractor scope. WCEoLP principle (Table 4, 9g) 90% diversion of waste - meeting credit criteria. C&D waste to be reported in kg.
Total Line				**14**	**10**		**$ 10,000.00**								

Land Use & Ecology				**6**	**3**		**$ 10,000.00**								
Ecological Value	To reward projects that improve the ecological value of their site.	23	Endangered, Threatened or Vulnerable Species	-	C	Low	$ -	Minimum requirement	ECO	Project Manager, ESD		Hospitals usually built on brown field sites		Inherent (previously developed land)
		23.1	Ecological Value	3	0	Medium	$ -			ARCH, Landscape		Hospital sites are usually mainly buildings with minimal landscape area.		NOT APPLICABLE No exposed landscape/opportunity for contribution to ecology
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	Conditional Requirement	-	C	Low	$ -	Minimum requirement	LAND	Project Manager, ESD		Healthcare relevant initiative		Inherent (previously developed land)
		24.1	Reuse of Land	1	1	Low	$ -			HI / LHD		Most hospital and healthcare projects are located within existing hospital sites. For most projects, this credit would be considered achieved.		Inherent (previously developed land)
		24.2	Contamination and Hazardous Materials	1	1	Low	$ -		CONTR	Project Manager, Head Contractor		Healthcare relevant initiative	ENV: Provide a Contamination and Hazardous Materials Survey CONT: Remove or stabilise contaminants and hazardous materials in accordance with best practice.	Inherent - assuming HAZMAT and decontamination works undertaken. Extension to existing building.
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	1	Low	$ 10,000.00	Recommended	ARCH	ARCH, Landscape			ARCH: Specify roof materials to have a minimum Solar Reflectance Index of 82.	TBC External finishes (roof SRI > 81 pending pitch). Solar PV excluded from compliant area. Cost uplift for roof finish to achieve SRI >81.
Total Line				**6**	**3**		**$ 10,000.00**								

Discharge to Environment				**5**	**4**		**$ -**								
Stormwater	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Stormwater Peak Discharge	1	1	Medium	$ -	Recommended	CIVIL	Hydraulics, Civil, Landscape			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.	To confirm applicability of credit wrt extent of scope / allowable design flexibility

		26.2	Stormwater Pollution Targets	1	1	Medium	$ -		CIVIL	Civil, Landscape			CIVIL: Achieve pollution reduction in accordance with column A from "Table Emi-5.1: Pollution Reduction Targets".	TBC with current hospital stormwater strategy and management system and whether current system demonstrates peak discharge and pollutant reductions in-line with credit criteria.
Light Pollution	To reward projects that minimise light pollution.	27.0	Light Pollution to Neighbouring Bodies	-	C	Low	$ -	Recommended		Electrical, Lighting		Neighbouring buildings are usually the hospital buildings. Consider impacts to surrounding residential if any.	LANDSCAPE, ELEC: Confirm compliance with AS 4282 Control of the obtrusive effects of outdoor lighting	TBC as design progresses. Currently assuming the emission of external lighting to be appropriately managed.
		27.1	Light Pollution to Night Sky	1	1	Low	$ -	Recommended		Electrical, Lighting			LANDSCAPE, ARCH, ELEC: No external luminaire may have an upward light output ratio greater than 5% i.e. no up lights.	
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	1	Medium	$ -	Recommended	MECH			Healthcare relevant initiative	MECH: Water-based heat rejection system is to be installed 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 inspections and 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.	Waterless heat rejection.
Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	29.0	Refrigerants Impacts	1	0	High	$ -		MECH				MECH: Criteria met (1 point) where the refrigerant systems demonstrates: > Total System Direct Environmental Impact (TSDEI) is less than 15 **OR**, > TSDEI is between 15 and 35 **AND** a leak detection system is installed **OR** > All refrigerants have an Ozone Depletion Potential (ODP) of zero and a Global Warming Potential (GWP) of 10 or less **OR** > There are no refrigerants used in the project.	NOT CURRENTLY TARGETED.
Total Line				**5**	**4**		**$ -**							

Innovation				**10**	**9**		**$ -**							
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				$ -							NOT CURRENTLY TARGETED.
Market Transformation	The project has undertaken a sustainability initiative that substantially contributes to the broader market	30B	Market Transformation				$ -							NOT CURRENTLY TARGETED.
Improving on Benchmarks	The project has achieved full points in a credit and demonstrates a substantial	30C	.		1	Medium	$ -							Potential opportunities include; > Ultra-Low VOC Paints. > 95% of C&D Waste diverted from Landfill
	Supplementary or tenancy fitout systems review	30C	Commissioning and Tuning				$ -		ICA					
	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	10	4	Medium							> Occupant Engagement (1 point). Pre and post occupancy surveys are held (BOSSA or equivalent) > Local Procurement (2 points). 1 point for procuring a % of products and materials which were produced or manufactured in AUS. (% to be set and explained). 1 point for a % of services and skilled labour employed from a local area surrounding site. (% and area TBD with explanation) > High Performance Site Office (1 point). Site office to comply with at least 75% of requirements in GS checklist & a satisfaction survey (BOSSA) undertaken for site occupants. > Integrating Healthy Environments (1 point). Undertake a community health needs analysis and prioritize strategies which address the identified needs. Develop a monitoring plan with performance metrics to evaluate the project's impact on occupant and community health. > Carbon Neutral Construction Service (2 points). Pending contractor engaged. Points awarded pending on head contractor achievement of Climate Active Carbon Neutral Certification for its construction services.	**Potential opportunities include;** > Occupant Engagement > Local Procurement > High Performance Site Office > Integrating Healthy Environments > Carbon Neutral Construction Service > Cost uplift for provisional innovation initiatives to achieve credits.

Global Sustainability	Project teams may adopt a credit from a globally recognised sustainability ratings tool not included within any of the above Credits.	30E	Global Sustainability		4	Medium							> Quality of Amenities (1 point). Amenity area per 14B of the GS Interiors v1.3 guidelines should be no less than 5% of the nominated area. > Design for Inclusion (2 points). The project must include; equal access to the building, diverse wayfinding and inclusive spaces. > Indigenous Inclusion (2 points); the building's design and construction incorporates design elements of Indigenous principles and ensures consultation and open engagement with local Indigenous communities. At minimum the four principles from the Australian Indigenous Design Charter are to be addressed. The project team must demonstrate engagement from concept through to handover. > Reconciliation Action Plan (1 point): HI NSW RAP to be submitted and actions aligned with HINSW RAP targets to be agreed.	**Potential opportunities include;** > Quality of Amenities (GS Interiors V1.3) > Design for Inclusion (GS Buildings). WCEoLP principle (Table 4, 2a). Equal access, Diverse wayfinding & Inclusive spaces - all demonstrated themes in concept plan. > Indigenous Inclusion (GS Buildings). WCEoLP principle (Table 4, 4a-d). Inclusion of Indigenous Design pathway. > Reconciliation Action Plan. (GS D&AB) > Cost uplift for provisional innovation initiatives to achieve credits.
Total Line				**10**	**9**		**$**	**-**						

Project Score	**63**	**$ 134,000.00**