# Finley Hospital Redevelopment

## Sustainable Development Strategy

Health Infrastructure (NSW Government Health Infrastructure)

02 April 2024

→ **The Power of Commitment**

| Project name | | Finley and Finley Hospital Redevelopment | | | | | |
|---|---|---|---|---|---|---|---|
| Document title | | Finley Hospital Redevelopment \| Sustainable Development Strategy | | | | | |
| Project number | | 12600017 | | | | | |
| File name | | 12600017 Sustainable Development Plan Finley.docx | | | | | |
| Status Code | Revision | Author | Reviewer | | Approved for issue | | |
| | | | Name | Signature | Name | Signature | Date |
| S3 | 0 | S Sun | S Mathian |  | T.Little |  | 30/10/2023 |
| S3 | 1 | L. Barry, C.Newall | S Mathian |  | T Little |  | 2/04/2024 |
| [Status code] | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**GHD Pty Ltd | ABN 39 008 488 373**
Contact: Sylvie Mathian, Sustainability Engineer | GHD
Suite 10, Zenith Building, 6 Reliance Drive
Tuggerah, New South Wales 2259, Australia
**T** +61 2 4350 4100 | **F** +61 2 9475 0725 | **E** centralcoastmail@ghd.com | **ghd.com**

# Contents



# Table index



# Figure index

# Appendices

# 1. Introduction

## 1.1 Purpose of this report

GHD have been engaged by NSW Health Infrastructure to complete Parts 1 to 9 for the Finley Hospital Redevelopment.

This report provides a summary of the sustainable development strategy adopted for the Finley Hospital Redevelopment. This report details the following:

– The Ecologically Sustainable Design (ESD) statutory requirements and guidelines applicable to the development (refer Section 2).
– Our methodology (refer section 3)
– Summary of proposed sustainability initiatives (Section 4).

The project is currently in the schematic design stage. This report will be updated at each design stage with the latest design.

## 1.2 Project Description

The NSW Government has committed $25 million to the Finley Health Service redevelopment, which will provide a high-quality contemporary health facility and ensure health care services are carefully planned to meet community needs now and into the future. The project is currently in the planning stage, with schematic design report currently underway.

The works will be limited to the refurbishment of a section of the existing hospital IPU into imaging, staff rooms, FOH spaces and treatment bays and an extension where additional IPU space will be located.

## 1.3 Workshops

A number of workshops were held during Part 0 to Part 2 phase to coordinate and develop initiatives:

– ESD working group workshop on 08/06/2023.
– Design team ESD workshop on 13/07/2023

## 1.4 Scope and limitations

This report: has been prepared by GHD for Health Infrastructure (NSW Government Health Infrastructure) and may only be used and relied on by Health Infrastructure (NSW Government Health Infrastructure) for the purpose agreed between GHD and Health Infrastructure (NSW Government Health Infrastructure) as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Health Infrastructure (NSW Government Health Infrastructure) arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and

information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

## 1.5 Reference documents

This report has been based on:

– Architectural Documentation issued 01/02/2024.
– Mechanical, Structural, Civil, Electrical and Hydraulic Schematic Design Reports issued on February 2nd, 2024.
– Commitments made by HI in relation to targeting 45 points rating in accordance with the HI ESD evaluation toolkit.
– MLDH Climate Change Risk Assessment Register V4 21/06/2023 .

# 2. Sustainability Requirements

The relevant regulations (incl. state planning requirements) and other drivers which collectively influence the sustainability response for the proposed development at Finley hospital are as follows:

– National Construction Code 2022 – Section J
– DGN 058 / ESD Evaluation Tool
– Environmental Sustainability Strategy 2022-2024 from Health Murrumbidgee Local Health District
– Secretary Environment Assessment Requirements (SEARS) (Yet to be issued)
– Other drivers e.g., decarbonisation of the built environment

## 2.1 Building Code of Australia – Section J

Section J in The National Construction Code (NCC) 2022 Volume 1 Building Code of Australia (BCA) sets the mandatory minimum energy performance requirements. The objective is to reduce building greenhouse gas emissions by efficiently using operational energy whilst maintaining comfort levels.

The building must as a minimum meet the requirements as set out in the NCC BCA Section J building fabric, glazing, building sealing, HVAC and light and power provisions.

Note that the project is targeting improved energy performance over the minimum code requirements. This is to support better operational performance outcomes and to address DGN58 performance requirements.

## 2.2 Design Guidance Note 058 (DGN 58)

Health infrastructure has introduced its own sustainability evaluation tool. The HI tool defines a range of principles and performance targets covering the design and major refurbishment of HI projects. DGN58 provides instructions on how to how to use the tool to evaluate the projects performance and describes the assessment procedure required by HI on all of its projects.

Health infrastructure has defined minimum targets, in alignment with the NSW Government Resource Efficiency Policy v2 section E4, for individual point categories.

Based on the location of our project the following requirements apply:

– A minimum of 45 points is to be achieved by the design in accordance with the Hi ESD evaluation tool. The preliminary strategy was updated for the schematic stage. It is presented in appendix A.
– A minimum 10% improvement in energy efficiency compared to a baseline NCC section J compliance is applicable.

## 2.3 Local Health District Environmental Sustainability strategy

The Murrumbidgee Local Health District has produced a sustainability strategy for 2022-20224. The document follows the NSW government strategic commitments to achieve net zero by 2050 and the NSW health commitments around energy consumptions reductions to achieve a 10% reduction in electricity and gas use.

The plan identifies key sustainability actions:

– Energy use reduction
– Water consumption reduction
– Whole Of Life approach
– Waste reduction

## 2.4 NSW Government Resource Efficiency Policy

The NSW Government Resource Efficiency Policy (GREP) objective is to reduce the NSW Government's operating costs and lead by example in increasing the efficiency of its resource use. The policy includes measures and targets to reduce and report on energy, water, waste and air emissions from NSW government operations, including facilities. The policy includes a 10% energy improvement target. Relevant Policy requirements will be adopted as part of the design.

## 2.5 NSW Climate Change Policy

NSW Government have committed to reaching Net Zero by 2050. Whilst no formal target has yet been set by NSW HI, this project, in anticipation of a future target will opt to design and construct the project to be "Net Zero Enabled" to allow for future net zero operation with the use of 100% green power and offsetting residual emissions from waste and water.

## 2.6 Other tending issues

### 2.6.1 Climate risk and resilience

The project will aim to develop strategies to increase resilience of the project in response to potential risks arising from climate change. An analysis of key risks arising from climate change projections [1]which could affect the project include:

– Global temperature rise with warmer and longer heat waves with fewer cool days;
– Increased in proportion of high intensity storms;
– Heavier rainfall storms more intense;
– Longer fire weather season,

### 2.6.2 Energy transition and decarbonisation of the built environment

NSW Government have committed to reaching Net Zero by 2050. In anticipation of a future target HI NSW has opted to design and construct the project to be "Net Zero Enabled".

Net Zero enablement typically requires adoption of the following strategies:

– Maximise building energy efficiency though passive and active means.
– Include onsite renewable energy systems where practical (or allow for future provision for installation of renewable energy systems)
– Avoidance fossil fuel-based building services such as gas for heating hot water plant

Following enablement buildings can easily transition to net zero operation by using 100% renewable energy and offsetting any residual carbon emissions associated with water and waste.

The Finley development does not currently include equipment relying on fossil fuel.

[1] https://www.climatechangeinaustralia.gov.au/en/projections-tools/regional-climate-change-explorer/sub-clusters/

### 2.6.3 Circular economy and social outcome

In adherence to the NSW Circular Economy Policy principles (Principle #) [2]and the NSW Circular Design Guidelines for the Built Environment (Guideline #)[3], the refurbishment and extension of the regional hospital will incorporate the following:

**– Re-Use of Existing Assets**: The refurbishment should revolve around renewing existing resources. By re-using existing assets or materials (Guideline #6) and designing for longevity (Guideline #1), the hospital rejuvenates its infrastructure, ensuring resources continually serve the community. This approach resonates with sustainable management of all resources (Principle #1) and valuing resource productivity (Principle #2).

**– Sustainable Design with Flexibility**: The hospital should adopt a design that allows flexibility and adaptability (Guideline #2) of spaces, and disassembly principles (Guideline #3) for material reuse at the end of their life cycle. Such measures ensure the premises remain relevant over time, allowing spaces to be repurposed without extensive modifications.

**– Energy Efficiency and Sustainable Design**: Championing the principle of designing for materials efficiency (Guideline #4) and sustainable management of all resources (Policy #1), the hospital will prioritise energy efficiency. Incorporating renewable energy sources and selecting low-impact materials (Guideline #10) will cultivate a supportive atmosphere for both patients and staff.

**– Waste Management and Recycling**: Aiming to design out waste and pollution (Principle #3), the hospital's redevelopment will introduce a comprehensive waste reduction and recycling plan. This mirrors the design for best practice operational waste management (Guideline #5), ensuring a conscientious handling of both construction and operational waste, and a healthier environment, both within the facility and in its surrounding community.

**– Therapeutic Natural Spaces**: Circular principles extend to the design of hospital spaces, integrating greenery and views to natural elements (Guideline #11). The aim should be to create a therapeutic ambiance that enhances patients' well-being, contributing to their overall recovery and mental health.

**– Circular Procurement and Community Impact**: Circular procurement practices offer a dual benefit, as they reduce waste and support local suppliers committed to sustainability (Guidelines #7 to #10, and #13). This approach aligns with the broader objective to create new circular economy jobs (Principle #6).

**– Engaging the Local Community**: Aligning with the NSW Circular Economy Policy's Principle #7 on fostering behavioral change, the hospital redevelopment should propose some education initiative to communicate the adopted circular and sustainable solutions to the community.

[2] NSW CE Policy summary of principles:
1. Sustainable management of all resources
2. Valuing resource productivity
3. Design out waste and pollution.
4. Maintain the value of products and materials.
5. Innovate new solutions for resource efficiency.
6. Create new circular economy jobs.
7. Foster behaviour change through education and engagement.

[3] NSW Circular Design guidelines for the built environment
1. Design for longevity
2. Design for flexibility and adaptability
3. Design to maximise materials circularity and enable disassembly.
4. Design for materials efficiency
5. Design for best practice operational waste management
6. Re-use existing assets or materials
7. Select products with recycled content.
8. Select products that are designed for disassembly.
9. Select products and materials that have an identified end-of-life use.
10. Select low impact materials.
11. Incorporate green infrastructure.
12. Maintain a material database.
13. Procure products as a service.

# 3. Sustainability approach

Review and integration of the sustainability performance requirement and principles has been a key driver of the design thus far. The focus during these early stages of the design has been to collaborate closely with the project team to facilitate and drive integrated sustainable strategies with regard to capital and life cycle cost and other engineering and practical constraints.

Regular meetings and workshops with the wider project team have been held. Refer workshop slides in **Error! Reference source not found.**.

GHD also undertook preliminary analysis to inform development of design strategies in relation to the building water performance. Refer to summary in Appendix B.

As the project design develops in the next phase there will be a need to refine and further assess the strategies identified in schematic design. Once final design decisions have been made the project sustainability / ESD consultant focus should then transition from sustainable design optimisation to a review and coordination role focusing efforts on checking the design and reporting against key sustainability targets.

During construction stage, the sustainability consultant will also need to assist the contractor with technical clarifications regarding implementation of the sustainability initiatives and collation and preparation of documentation required to support the HI tool Matrix updates.

If there are changes to the design impacting the targeted credits in the HI ESD evaluation tool, the project shall identify alternative points to maintain the project buffer (minimum points + 5 points buffer). A full Matrix will be reviewed for detailed credit as provided in the ESD evaluation tool in appendix. The current Matrix can be found in **Error! Reference source not found.**

The focus of the sustainability initiatives is exclusively on the refurbishment sections of the development, delineating a distinct boundary within which these efforts are concentrated. This limitation creates a challenge when assessing the building's sustainability against a specific framework, as certain credits within the framework become notably difficult to achieve. For instance, comprehensive energy efficiency improvements and systemic water conservation initiatives, often integral to sustainable development, might be constrained within this defined area.

# 4. Sustainability Initiatives

The requirements set in Section 2 have been used to inform the design response. The strategies summarised in this section are to be considered, developed, and documented as the design progresses. Verification of the measures will need to be made through the formal building certification and ESD validation process using the HI ESD validation tool.

The current schematic design scheme has been evaluated against the HI ESD evaluation tool in consultation with the disciplines and the architect. Comments and status of the targeted strategies have been included in the ESD schedule and provided in **Error! Reference source not found.** of this report. Below is a summary of the current design ESD strategy:

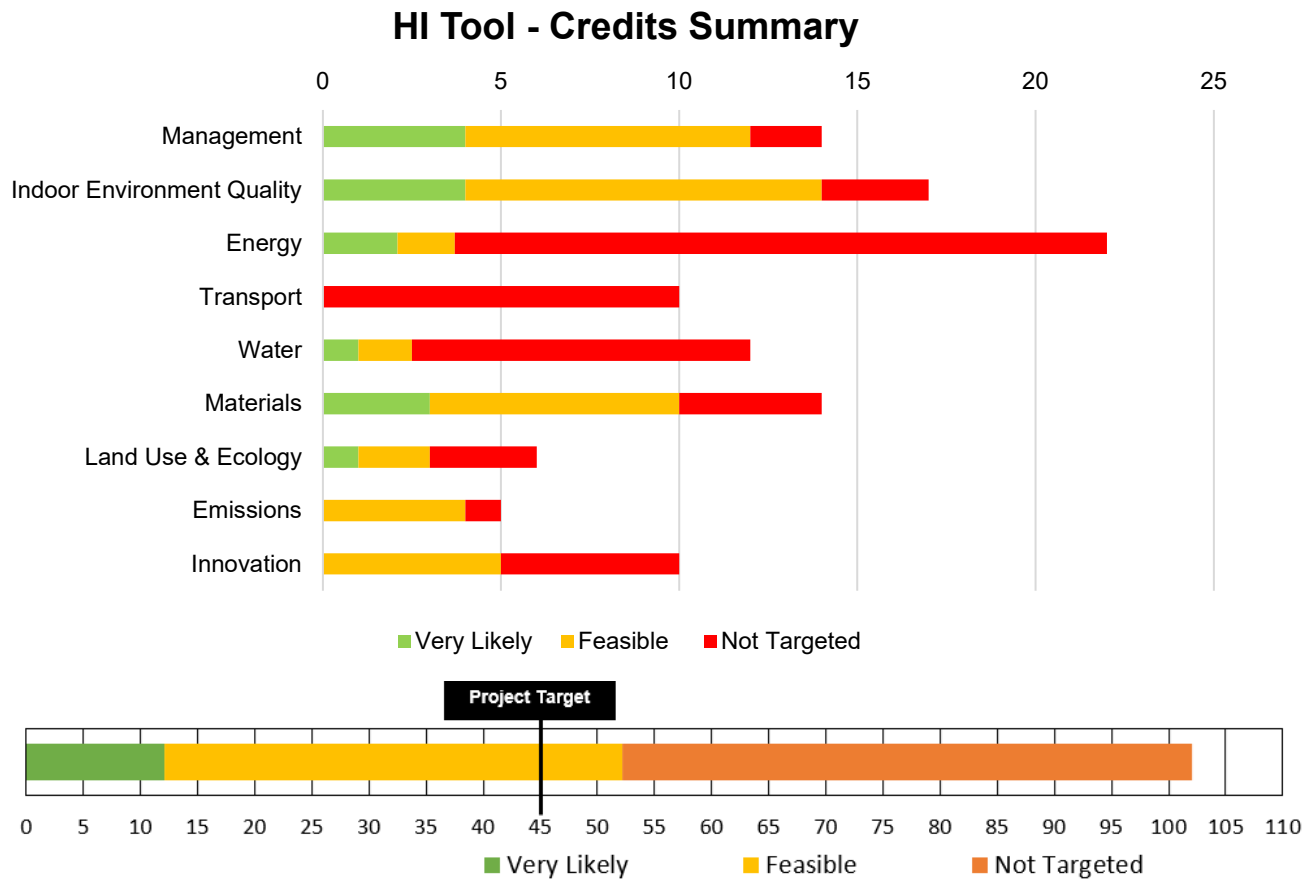



*Figure 4.1 HI ESD tool – Current ESD strategy*

As the project is currently in schematic design phase, most proposed sustainability initiatives that have been identified and are being considered for value management. As the design progresses a Whole of Life Approach to decision making will be followed. Relatively inexpensive sustainable solutions will be prioritised to achieve good ESD outcomes in a cost-effective manner. Discussion and coordination with the project team will be undertaken during all stages of the design to reconfirm the implementation of the selected strategies. The following sections summarise the intent and design considerations of each HI tool category.

## 4.1 Management

The following initiatives are being targeted to demonstrate leadership by embedding commitments to targets over and above business as usual and using the HI ESD tool environmental rating system as means to verify that sustainability outcomes are implemented. The development is:

– Targeting 45 points using HI ESD framework.

– Adopting a “net zero carbon ready” design approach: HI Net Zero Road Map follows the NSW Government’s net zero plan to reduce emissions and achieve Net zero by 2050.
– Developing a Design Intent Report (DIR) or Owner’s Project Requirements (OPR) document that states the environmental performance targets for the development is to be written.
– Likely to engage an Independent Commissioning Agent (ICA) to oversee the Commissioning and Tuning requirements for the project.
– Considering to develop a Climate Adaptation Plan (this will need to be confirmed for detailed design stage).
– Developing a metering and monitoring strategy that captures all major energy and water end uses as well as provides up to date information on consumption patterns.

## 4.2 Indoor Environmental Quality

Health and wellbeing of personnel and visitors shall be maximized through incorporation of outdoor space, facilities to support active living and implementation of measures to provide best practice indoor environmental quality. These may include the following strategies that will be investigated during design:

– Outdoor shaded landscaped communal areas where feasible.
– Nominating use of the low formaldehyde engineered timber and low volatile organic compounds (VOCs) materials to improve internal air quality.
– Use of natural daylight consistent with best practice thresholds for primary spaces where feasible.
– Designing internal spaces to have views to the outside.
– Control of external noise, building services noise, reverberation management and limiting sound transmission between internal spaces for acoustic comfort
– Use of natural ventilation as part of a mixed mode system for ventilation and thermal comfort where feasible.
– Lighting designed to meet best practice illuminance levels and control glare.
– High performance building envelope to minimise heat losses and gains to provide thermal comfort.
– Air conditioning for primary and secondary spaces to provide year-round thermal comfort.

## 4.3 Energy

The minimum target is 10% reduction in electricity and gas use. As part of the overall strategy to reach a score of 45 in the HI ESD tool an energy reduction target of 30% is currently targeted (for the upgrade and the extension only).

The following strategies, applicable to only new building elements, will be investigated further during the design to reduce energy consumption and generate power though renewable sources to contribute to operational carbon emissions reduction and reduce ongoing operating costs:

– The design will follow the energy reduction hierarchy in design of the buildings: passive design, energy conservation, energy efficiency, renewable energy and use of low or zero emission energy.
– The design will investigate the use of highly efficient thermal envelopes and glazing systems (for the extension and the elements of the envelope part of the upgrade) in combination with considered shading devices to effectively manage heating and cooling loads & energy consumption.
– Building envelope considerations for the extension and the elements of the envelope part of the upgrade will include the following features to balance heat loads, glare and daylighting:
    - Walls, roofs and floors to be insulated to higher performance requirements than section J to reduce heat gains and support occupant thermal comfort.
    - Thermal mass to be made available to the internal spaces of the building by using a reverse wall construction with concrete, brick or blockwork available on the inside of the building to reduce peak heating and cooling loads, peak electricity demand, reduce mechanical equipment size and reduce energy use.
    - Shading to glazing using proprietary shades, overhangs which minimise solar heat gains.
    - Exposed areas of roof are to be light coloured with high solar reflectance and low emissivity.

- Building Services design targets improvement over minimum NCC Section J requirements as far as practicable to optimise energy efficiency. Design considerations will include:
  - All electric air conditioning using reverse cycle or heat recovery heat pump systems (for heating and cooling) with improved efficiency specified over NCC minimum requirements.
  - LED lighting with controls and lighting power densities improved over NCC minimums.
  - Electrification of domestic hot water using heat pump technology. Heat pumps offer one of the most efficient forms of hot water generation.
- Roof mounted onsite renewables with overall capacity up to 99 kWp will be considered in design.
- Energy modelling will be completed during the design stages for the new building and confirm the new building initiatives are expected to result in energy reduction more than 10% improvement over existing.

## 4.4 Transport

The following transportation related initiatives are to be developed:

- Electric vehicle charging provision and enabling infrastructure as per NCC J9 requirements.
- Bike racks to encourage staff who live in local area to use active modes of transport

## 4.5 Land Use and Ecology

The site should include a number of measures to support ecology and biodiversity:

- Retention of existing large mature native species trees where possible.
- Use of native vegetation in new landscaped area

This will help support biodiversity, ecological regeneration, management of climate change impacts, wellbeing and manage urban heat.

## 4.6 Water

The project will target a 10% reduction in water use. The following initiatives are to be considered in the design to reduce potable water usage through demand reduction measures and using rainwater capture and reuse for non-potable purpose:

- Waterless heat rejection
- Water efficient taps, toilets, showers and appliances.
- Rainwater harvesting for irrigation: A Whole of Life calculation has been carried out and shows that rainwater harvesting will have a long payback. In addition, rainwater harvesting for irrigation is reliant on replacement of the main hospital building's downpipes which is not within the project scope.

## 4.7 Materials and resources

The design is to look into incorporating initiatives specifically targeted to reduce material waste, use and life cycle impact and manage waste during construction and operation. Initiatives for investigation include:

- At least 90% of waste generated from construction and demolition will be reused or recycled and the appointed contractor will develop waste management plans prior to demolition and construction activities.
- For demolition waste the following process can be applied:
  - Create a salvage list: Some of the construction elements that may be salvaged such as bricks, doors, windows, fixtures and architectural elements of interest. That maybe carefully removed and store for future reuse.
  - Put forward a reuse program for salvaged materials; This may include reuse on site, establishing partnerships with local builders, contractors or organization that specialise in reused materials.
  - Repurpose material from demolished building: For example, bricks can be cleaned and reused in new construction projects or reused for landscaping purposes.

– Use standardised approaches to manufacture and assembly leading to reduced material waste and construction time compared to on-site construction methods.
– Reducing Portland cement content through maximising use of supplementary cementitious materials where feasible.
– Maximising use of steel and timber sourced from certified environmentally responsible suppliers.
– Use of permanent formwork, pipes, flooring, blinds and cables to be free of PVC or PVC that meets the Best Practice Guidelines.
– Sustainable timber procurement with third party environmental certification schemes.
– Adequate waste storage facilities to enable effective separation of waste streams (and transfer stations for general waste, hospital waste and organics recycling) and ease of collection.

The following additional circular economy principles shall also be adopted within the project:

– Design for increased longevity, adaptability, and disassembly
– Avoid unnecessary use of materials and components.
– Reduce use of virgin materials
– Reduce use of carbon intensive materials
– Design out use of hazardous and polluting materials

## 4.8 Emissions and discharges

Emissions and discharges from site shall be limited by the following initiatives where possible:

– Water sensitive urban design principles to be adopted to reduce stormwater flow and meet water quality targets.
– Design to minimise the use of refrigerants with high global warming potential and use only zero ozone depleting potential products.
– Light spill to neighbouring properties to be controlled.
– Light pollution to night sky to be prevented compliance strategy.

# 5. Basis of Design summary

The following table provides a summary of the recommended ESD basis of design by project elements and discipline to meet the project ESD targets and objectives. The table also provides details on initiatives that are:

– Incorporated into the current schematic design
– Recommended for inclusion in the project but require further review to confirm whether or not they are to be incorporated into the project and documented in the next stages of design.

The information shown the table is intended to:

1. Serve as a record of the initiatives proposed, including those not yet fully documented in other discipline design documentation.
2. Provide further explanation on recommended initiatives.

*Table 5.1 Proposed ESD Strategies*

| FINLEY | BASIS OF DESIGN SUMMARY | |
|---|---|---|
| **Discipline** | **Element of design** | **Early schematic Design recommendations 16/01/2024 (to be updated in sustainable development plan)** |
| **Architecture** | | |
| | Walls | For walls/partitions part of the air conditioned envelope:<br>- Insulate walls to R4 (total value including thermal bridging) |
| | Floors | Floors to meet R2 (total value including thermal bridging) |
| | Roof | Roofs to be light coloured with solar absorptance to meet SA<0.43<br>Roofs to meet R5 (total value including thermal bridging). Insulate under the whole roof where budget allows. |
| | PV | Install PV panels to generate electricity to be reuse on site. No battery 600m2 99kWp. 15degrees roof. |
| | Skylights | None at present. |
| | External shading | External shading is the best solution to improve energy use For glare control to occupied spaces, consider providing blinds or design external shading desig<br>sunlight at all times. |
| | Internal blinds | Include in design for glare control |
| | Glazing/windows | Glazing windows will need to be reviewed base on preliminary section J assessment but wall generally need to be improved compared to DTS requirements<br>reduction.<br>Glazign performance to be double glazing with U -value <3 W/m2K and SHGC < 0.3 , VLT>40% (values including frame)<br>When designing windows, consider provision of daylight and clear line of sight to high quality views in all primary spaces and chose glazing with VLT > 40%<br>For spaces with 2 orientation, maximise glazing facing South, or North with large overhang. Provide vertical shades in front of west and East facing glazing |
| | Internal / linings partitions | - Consider the use of building materials which are able to be disassembled for re-use, in conjunction with considerations for the addition and removal of spa<br>-internal parturitions and surface finishes to be documented in accordance acousticians recommendations for sound isolation and reverb control |
| | Furnitures/fixtures | Consider:<br>- reuse and /or recycling of existing furniture<br>- selection of new furniture and equipment with at least 10 years life span |
| | Joinery | Consider specifying joinery as follows<br>- At least 95% of all engineered wood products to meet formaldehyde emission limits<br>- At least 95 % (by cost) of all timber used to be certified or reused<br>- With sustainable product certifications (such as EPD, Third party certs etc) |
| | Paints | Consider specifying paints as follows:<br>- 95% of all internal paints, low or ultra low VOC limits<br>- 50% of paints to have max TVOC content of <5g/L |
| | Sealants | Consider specifying sealants as follows:<br>- 95% of all adhesives and sealants to meet low or ultra low VOC limits |

| | | |
|---|---|---|
| | Operational wastes | Develop an operational waste management plan with targets<br>Outcome of plan is to inform location and size of waste storage areas required.<br>Storage required:<br>- general landfill,<br>- recycling (containers, paper cardboard<br>- soft plastics<br>- organics.<br>Consider vehicle access and bin cleaning /washdown areas.<br>Recycling of demolition waste Consider to include as contractual obligation for appointed contractor. |
| | Acoustic | Consider designing envelope to limit noise intrusion, control reverb and noise between rooms. Acoustic input required |
| | Lighting | Consider designing lighting to provide uniformity by using indirect lighting and well designed surface colours |
| | Accessibility/Universal design | - Provide circulation areas/facilities designed be accessible<br>- Provide hearing augmentation system for areas that have amplification, generally within communal areas, provide a system to assist the aurally challenge speech within the main communal spaces |
| | Kitchen | Consider specifying all electric kitchen appliances |
| | Landscaping | Design to allow:<br>- increasing significantly the area of native vegetation on site.<br>- use of rainwater for irrigation (5kL rainwater tank)<br>- preference for native drought resistant plants<br>- Use light coloured hardscaping<br>- use of permeable pavement as often as possible |
| **Structural** | | |
| | Concrete | 1. Reduce Portland cement content through maximising use of supplementary cementitious materials. Target 20-40% Cement replacement using either fly a<br>2. Use recycled aggregates. |
| | Steel | Where steel is used,<br>- procure from certified environmentally responsible suppliers who use low energy processes.<br>- Needs to have a high recycled content. |
| | Timber | Specify they use of timber that meet the following criteria:<br>- No rainforest timbers, or timbers from high conservation forests, are to be used unless plantation grown. Use only recycled timber, engineered and glued t products, or timber from plantations or from sustainably managed regrowth forests that is FSC or PEFC certified.<br>- At least 95% of all engineered wood products meet formaldehyde emission limits<br>- At least 95 % (by cost) of all timber used is certified or reused<br>- All timber used is to be termite (white ant) resistant or treated to be termite resistant to the appropriate hazard level |
| **Civil** | | |
| | Stormwater | Consider how the post development peak discharge can be kept in line with pre development peak discharge.<br>note that because increased rainfall and flood is likely to be a climate risk, consider achieving post development discharge not exceeding pre development with storm water pollution reduction to Green star levels using retention tank with filtration. |
| | | Confirm local authority requirements. Consider adding additional treatment to reduce pollution. |
| | Rainwater | Provision of 5kL water tank to be reused for irrigation |
| **Electrical** | | |
| | Internal Lighting/Controls | Install luminaires / controls capable of reducing by 20-30% the DTS Lighting power density (J6) |
| | | Specify lights in primary spaces to be Flicker-free lights and min Colour Rendering Index (CRI) of 80 |
| | External lighting | Specify external luminaires to meet Australian Standard to avoid light pollution to neighbouring development and control of obtrusive effects as per Australi |
| | PV | Included in design |

| | | |
|---|---|---|
| | Metering | Provide easily accessible data logging meter on incoming electricity for recording and monitoring |
| | Commissioning | services engineer to specify detailed commissioning requirements |
| | Acoustics | Penetrations for cabling etc to be addressed as per acoustic consultant recommendations to maintain acoustic performance of wall and floor systems |
| **Mechanical** | | |
| | HVAC systems | Consider the following in design of new systems (3 bedroooms)<br>- Choice of HVAC system with COPs and EERS (10-15% better than DTS or MEPs).<br>- energy storage where feasible<br>- Design features to achieve lower fan power ( Low pressure drop distribution with oversizing ducts to lower pressure drop/meter, use of turning vanes in lar fan efficiencies, improved motor efficiencies)<br>-including DCV and Heat recovery on all primary systems |
| | Water | Waterless heat rejection proposed |
| | | Include Legionionelose control and risk management in design of water based heat rejection systems |
| | IAQ | Consider improvement to IAQ by increasing the Outside air flow rates from minimum AS1668 requirements |
| | Metering | Provide easily accessible data logging meter on incoming electricity recording and monitoring |
| | Maintenance | Design ventilation and HVAC systems for ease of maintenance. (Dual access)<br>Allow for cleaning of components coils, fans and other systems components that can trap dust and debris.<br>minimise outdoor air pollutants with filtration and/or choice of air intake location |
| | Commissioning | specify detailed commissioning requirements as per Green star commissioning credit |
| | Acoustics | requires control of HVAC noise to achieved a total ambient noise of no more than 5db(A) above lower figure in table 1 of AS/NZA 2107:2016<br>Penetrations for duct work and duct noise transfer to be addressed as per acoustic consultant recommendations to maintain acoustic performance of wall a |
| **Hydraulics** | | |
| | DHW production | Heat pumps will be installed. Gas supply and reticulation not required on site |
| | Fixtures | Consider specifying High WELS rating fixtures:<br>- Showers 3 star WELS rated at 7.5 l/min<br>- Indoor taps 6 star WELS rated<br>- Toilet and urinals to be 4 star WELS rated<br>- Washing machines and dishwashers to be 4 star WELS rated |
| | Irrigation | 5kl rainwater harvesting tanks for irrigation. |
| | Metering | Provide easily accessible data logging meter on incoming water and gas for monitoring and inclusion of data into principled dashboard.<br>Provide metering on all main water end uses |
| | Arrestors | Arrestors for acid, grease, plaster and clay of adequate capacity must be installed to treat wastewater from critical areas such as kitchens. |
| | Commissioning | Services engineer to specify detailed commissioning requirements as per Green star commissioning credit |
| | Acoustics | requires control of Building Services noise to achieved a total ambient noise of no more than 5db(A) above lower figure in table 1 of AS/NZA 2107:2016<br>Penetrations for pipe work to be addressed as per acoustic consultant recommendations to maintain acoustic performance of wall and floor systems |
| **Contractor GENERAL / HI** | **TBC** | |
| | Consultancy team | Consider engaging CCRA consultant to prepare CCRA and review and coordinate adaptive measures into the design |
| | Commissioning | Involve commissioning team early in design |
| | Commissioning | Confirm 2 x building performance metrics with a commitment to performance |
| | Contamination | Provide contam and hazmat report detailing materials found on site and proposal for remediation |
| | Operatonal Waste | Engage waste management planner |
| | Cleaning | Develop and implement a green cleaning policy |

# 6. Conclusion

This report summarises the main sustainability requirement applicable to the development including emerging and leading practice considerations such as circularity,

A sustainability strategy and supporting initiatives have been proposed that when adopted in the final design and constructed works will meet the identified ESD requirements,

Beyond meeting the stated requirements, the initiatives proposed will result in a number of operational and environmental benefits for HI NSW and the amenity of the future staff and facility users.

# Appendices

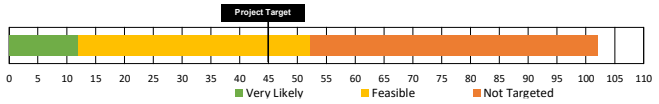
# Appendix A

## HI Toolkit Matrix

**SUMMARY OF POINTS TO TARGET AND CONFIRM**

22/01/2024

| | | Very Likely | Feasible | Not Targeted |
|---|---|---|---|---|
| Subtotal | | 12.1 | 39.1 | 49.8 |
| Innovation | | 0 | 1 | 0 |
| **Total Points** | | 12.1 | 40.1 | 49.8 |

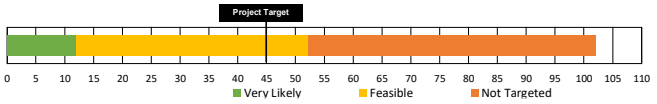



| CATEGORY / CREDIT | AIM OF THE CREDIT / SELECTION | CODE | CREDIT CRITERIA | POINTS AVAILABLE | Very Likely | Feasible | Not Targeted | DISCIPLINES | Comments from ESD team 15.03.23 | Comments from disciplines | Overlaps HI ESG AusHFG NCC 2019 SSDA Req | Standard Practice (1) Minimum requirement (C) | Healtcare relevant initiatives (1) Primarily for IPU type spaces. | Low focus initiatives |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Management** | | | | | | | | | | | | | | |
| **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 | 1 | | | ESD | GHD appointed to review the design under the Hi ESD framework tool | | | 1 | | |
| **Commissioning and Tuning** | HI ESD framework | 2.0 | Environmental Performance Targets | - | - | | | HI | Design team to set Environmental performance targets on each nominated system early on in the design | | | C | | |
| | | 2.1 | Services and Maintainability Review | 1 | 1 | | | ICA | Consider an embedded approach to commissionability, controllability and mantainability. Involve HI commissionig team during SD to facilitate. | | | 1 | | |
| | | 2.2 | Building Commissioning | 1 | 1 | | | ICA | Will require the development of a detailed commsioning plan early on in the design and delivery of commissioning activities.<br>Consider air tightness testing | | | 1 | | |
| | | 2.3 | Building Systems Tuning | 1 | 1 | | | ICA | Will require a tuning plan early on in the design | | | 1 | | |
| | | 2.4 | Independent Commissioning Agent | 1 | | 1 | | ICA | Engage a comissionign agent early on in the design | | | | | Requires an additional consultant. HI undertake a similar role to ICA. |
| **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 | | 2 | | ENV | Considering the location of the 2 hospital, implementing a Climate Adaptation Plan would encourage inclusion of resilience in the design. Is a CCRA available for the site? If not, consider engaging a qualified professional to preapre a site specific CCRA to inform project on climate risks to be addressed in the design<br>High risk may include:<br>- Water resilience (consider rainwater collection)<br>- Exttreme temperature (consider designing to increased max temperature)<br>- Flooding (consider flodd levels when deciding buildings FFlevels) | | SEARS condition:<br>Credit canbe used to demonstrate CSIRO project climate Impacts | | | |
| **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 | | 1 | | ARCH | | | | 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 | | 1 | | HI | Environmental performance targets for two items to be nominated and monitored. Is there a current monitoring system that would allow this. | | | 1 | | |
| | | 5.2 | End of Life Waste Performance | 1 | | | 1 | ARCH | Reuse of existing furniture and selection of new furniture and equipment with at least 10 years life span | | | | | |
| **Metering and Monitoring** | To recognise the implementation of effective energy and water metering and monitoring systems. | 6.0 | Metering | - | - | | | MECH | Consider sub- metering electrical and water major end uses | | | C | | |
| | | 6.1 | Monitoring Systems | 1 | | 1 | | MECH | | | | 1 | | |
| **Responsible Building Practices** | To reward projects that use best practice formal environmental management procedures during construction. | 7.0 | Environmental Management Plan | - | - | | | CONTR | Requirement to be included in spec and contracts documents | | | 1 | | |
| | | 7.1 | Formalised Environmental Management System | 1 | | 1 | | CONTR | Requirement to be included in spec and contracts documents | | | 1 | | |
| | | 7.2 | High Quality Staff Support | 1 | | 1 | | CONTR | | | | | | Construction related credit for contractor to consider. |
| **Operational Waste** | Performance Pathway | 8A | Performance Pathway - Specialist Plan | 1 | | 1 | | WASTE | Provide a waste management plan to inform design for waste collection, storage amd disposal | | | 1 | | |
| | | | **Category Total** | **14** | **4** | **9** | **1** | | | | | **10** | **0** | |
| **Indoor Environment Quality** | | | | | | | | | | | | | | |
| **Indoor Air Quality** | To recognise projects that provide high air quality to occupants. | 9.1 | Ventilation System Attributes | 1 | 1 | | | MECH | Design HVAC systems for ease of maintenance, minimise outdoor air polutants with filtration and/or choice of air intake location | | | | 1 | |
| | | 9.2 | Provision of Outdoor Air | 2 | | 1 | 1 | MECH | Consider increase of OA air flow rates compare to AS1668. Note this will impact negatively the energy use but improve occupants comfort and has been proven to reduce the spread of airborne diseases | | EFG requirements request 2.0 ACH to IPU spaces. | | 1 | |
| | | 9.3 | Exhaust or Elimination of Pollutants | 1 | 1 | | | MECH | Generally best practise to provide separate exhaust to kitchens and store rooms | | | | 1 | |
| **Acoustic Comfort** | To reward projects that provide appropriate and comfortable acoustic conditions for occupants. | 10.1 | Internal Noise Levels | 1 | | 1 | | ACOUS | Consider designing envelope to limit nois eintrusion. Acoustic input required | | | | 1 | |
| | | 10.2 | Reverberation | 1 | | 1 | | ACOUS | Consider use of absorptive finishes to control reverb. Acoustic input required | | | | 1 | |
| | | 10.3 | Acoustic Separation | 1 | | 1 | | ACOUS | Acoustic input required. | | | | 1 | |
| **Lighting Comfort** | To encourage and recognise well-lit spaces that provide a high degree of comfort to users. | 11.0 | Minimum Lighting Comfort | - | - | | | ELEC | Consider use of flicker free lights and CRI of 80 | | | | C | |
| | | 11.1 | General Illuminance and Glare Reduction | 1 | | 1 | | ELEC | Consider designing lighting to reduce glare | | | | 1 | |

**SUMMARY OF POINTS TO TARGET AND CONFIRM**

22/01/2024

| | | Very Likely | Feasible | Not Targeted |
|---|---|---|---|---|
| Subtotal | | 12.1 | 39.1 | 49.8 |
| Innovation | | 0 | 1 | 0 |
| **Total Points** | | 12.1 | 40.1 | 49.8 |

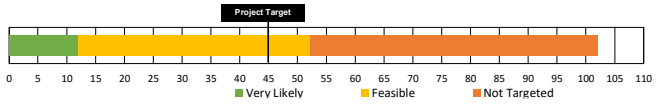



| CATEGORY / CREDIT | AIM OF THE CREDIT / SELECTION | CODE | CREDIT CRITERIA | POINTS AVAILABLE | Very Likely | Feasible | Not Targeted | DISCIPLINES | Comments from ESD team 15.03.23 | Comments from disciplines | Overlaps HI ESG AusHFG NCC 2019 SSDA Req | Standard Practice (1) Minimum requirement (C) | Healtcare relevant initiatives (1) Primarily for IPU type spaces. | Low focus initiatives |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 11.2 | Surface Illuminance | 1 | | 1 | | ARCH | Consider designing lighting to provide uniformity by using inderect lighting and well designed surface colours | | | | 1 | |
| | | 11.3 | Localised Lighting Control | 1 | | 1 | | ELEC | Consider providing localise lighting control to occupants immediate envronment | | | | 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 | Consider providing blinds or design external shading to block drect sunlight | | | | C | |
| | | 12.1 | Daylight | 2 | | 1 | 1 | ARCH | Consider provision of daylight in all primary spaces and chose glazing with VLT > 40% | | | | 1 | |
| | | 12.2 | Views | 1 | | 1 | | ARCH | Consider providing clear line of sight to high quality view in the primary spaces | | | | 1 | |
| **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 | 1 | | | ARCH | Consider the use of low VOC products | | | | 1 | |
| | | 13.2 | Engineered Wood Products | 1 | 1 | | | STRUC | Consider the use of low formaldehyde emissions products | | | | 1 | |
| **Thermal Comfort** | To encourage and recognise projects that achieve high levels of thermal comfort. | 14.1 | Thermal Comfort | 1 | | 1 | | MECH ARCH | PMV within +/-1 should be achievable. Comfort modelling required | | NCC 2019 JV3 requires a PMV assessment mto be undertaken | | 1 | |
| | | 14.2 | Advanced Thermal Comfort | 1 | | 1 | | MECH ARCH | PMV within +/-0.5 would require good façade treatment (double glazing and good solar control) . Comfort modelling required | | | | 1 | |
| | | | **Category Total** | **17** | **4** | **11** | **2** | | | | | **0** | **15** | |
| **Energy** | | | | | | | | | | | | | | |
| **Greenhouse Gas Emissions** | | 15E.0 | Conditional Requirement: Reference Building Pathway | - | - | | | MECH ELEC HYDR ARCH | Proposed building must achieve 10% improvement on NCC Section J reference building as part of HI ESG guidelines.<br>Energy saving/GHG emissions reduction strategy to include:<br>- High performance envelope (10% better than DTS)<br>- Choice of HVAC system with COPs and EERS (10-15% better than DTS or MEPs)<br>- Choice of lighting and controls to achieve 20% better than DTS.<br>- Fuel switching for:DHWS (Gas to heat pump for generation) consider switching in for kitchens so gas connection/reticulation is not required on site | | Aligns with HI ESG 10% Improvement and NSW GREP. The NCC JV3 Energy Modelling approach should be used. | C | | |
| | | 15E.1 | Comparison to a Reference Building Pathway | 20 | 1.6 | 1.6 | 16.8 | MECH ELEC HYDR ARCH | Consider aiming for a 15-20% improvement.<br>Energy saving/GHG emissions reduction strategy to include:<br>- Very high performance envelope (Double glazing, external shading and use of thermal mass to flatten the load curve)<br>- Choice of HVAC system with COPs and EERS (10-15% better than DTS or MEPs). Use of thermal mass to reduce demand. Consider evaporative cooling.<br>- Choice of lighting and improved control strategy to achieve 30% better than DTS.<br>- Fuel switching for:DHWS (Gas to heat pump for generation) consider switching in for kitchens so gas connection/reticulation is not required on site<br>- Use of on site renewables with PV panels on the roof | | Aligns with HI ESG 10% Improvement and NSW GREP. The NCC JV3 Energy Modelling approach should be used.<br><br>10% additional for PV panel generation (1.6points) | 1 | 1 | |
| | | 16B | Performance Pathway - Reference Building | 2 | 0.5 | | 1.5 | ELEC | Above mentioned energy reduction strategies will reduce peak demand as will the use of hermak mass. | | | | 1 | |
| | | | **Category Total** | **22** | **2.1** | **1.6** | **18.3** | | | | | **1** | **2** | |
| **Transport** | | | | | | | | | | | | | | |
| **Sustainable Transport** | Performance Pathway | 17A.1 | Performance Pathway | 10 | | 1 | 9 | TRANS | Consider providing transport plan and additional car parking spaces. Consider end of trop facilities, cycle paths and bicyle storage in masterplanning.<br>Low emissions vehicle infrastructure - 1 point | | | | | 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. |
| | | | **Category Total** | **10** | **0** | **1** | **9** | | | | | **0** | **0** | |
| **Water** | | | | | | | | | | | | | | |
| **Potable Water** | Prescriptive Pathway | 18A.1 | Potable Water - Performance Pathway | 0 | 1 | 1.5 | 9.5 | HYDR | Consider specifying High WELS rating fixtures:<br>- Showers 3 star WELS rated at 7.5 l/min<br>- Indoor taps 6 star WELS rated<br>- Toilet and uninals to be 4 star WELS rated<br>- Washing machines and dishwashers to be 4 star WELS rated<br>Consider rainwater harvesting for irrigation. Consider targetting a 10-15% reduction in potable water | | 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. |

**SUMMARY OF POINTS TO TARGET AND CONFIRM**

22/01/2024

| | | Very Likely | Feasible | Not Targeted |
|---|---|---|---|---|
| Subtotal | | 12.1 | 39.1 | 49.8 |
| Innovation | | 0 | 1 | 0 |
| **Total Points** | | 12.1 | 40.1 | 49.8 |

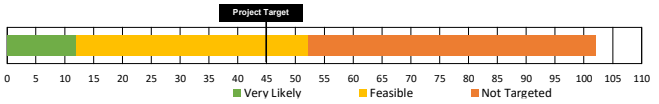



| CATEGORY / CREDIT | AIM OF THE CREDIT / SELECTION | CODE | CREDIT CRITERIA | POINTS AVAILABLE | Very Likely | Feasible | Not Targeted | DISCIPLINES | Comments from ESD team 15.03.23 | Comments from disciplines | Overlaps HI ESG AusHFG NCC 2019 SSDA Req | Standard Practice (1) Minimum requirement (C) | Healtcare relevant initiatives (1) Primarily for IPU type spaces. | Low focus initiatives |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | **Category Total** | **12** | **1** | **1.5** | **9.5** | | | | | **0** | **0** | |
| **Materials** | | | | | | | | | | | | | | |
| **Life Cycle Impacts** | Performance Pathway - Life Cycle Impacts | 19B.1 | Concrete | 3 | | 2 | 1 | STRUC | Consider:<br>1. Reducing Portland cement content by 40%. Cement replacement using either fly ash or GGBS<br>2. Water used in concrete contains at least 50% reclaimed water<br>3. Use 40% slag or recycled aggregates OR 25% of fine aggregate (sand) is manufactured sand or other alternative | | | 1 | | |
| | | 19B.2 | Steel | 1 | | 1 | | STUC | Consider:<br>- procuring steel from certified environmentally responsible suppliers who use low energy processes.<br>- Procuring steel with high recycled content. | | | 1 | | |
| | | 19B.3 | Building Reuse | 4 | | | 3 | | Retaining part of the buidling façade not considered | | | | | |
| | | 19B.4 | Structural Timber | 4 | | 1 | | 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 | | 1 | | STRUC | Consider procuring steel from reponsible suppliers | | | 1 | | |
| | | 20.2 | Timber Products | 1 | | 1 | | ARCH | Consider procuring timber from reponsible suppliers | | | 1 | | |
| | | 20.3 | Permanent Formwork, Pipes, Flooring, Blinds and Cables | 1 | | 1 | | HYDR MECH ELEC ARCH STRUC | Consider procuring sustainably sourced materials | | | 1 | | |
| **Sustainable Products** | To encourage sustainability and transparency in product specification. | 21.1 | Product Transparency and Sustainability | 3 | | 1 | 2 | HYDR MECH ELEC ARCH STRUC | This credit can typically be targeted as there are wide selection of standard products in market now that have credentials meeting the credit. Recommend this is included in strategy and reviewed at DD stage | | | | | |
| **Construction and Demolition Waste** | Percentage Benchmark | 22B | Percentage Benchmark | 1 | | 1 | | CONTR | Consider to include as contractual obligation for appointed contractor. | | | 1 | | |
| | | | **Category Total** | **14** | **0** | **9** | **6** | | | | | **7** | **0** | |
| **Land Use & Ecology** | | | | | | | | | | | | | | |
| **Ecological Value** | To reward projects that improve the ecological value of their site. | 23.0 | Endangered, Threatened or Vulnerable Species | - | - | | | ARCH | Confirmation required that site does not contain critically endangered species if targetting 23.1 | | | C | | Hospitals usually built on brown field sites |
| | | 23.1 | Ecological Value | 3 | | | 3 | ARCH | Consider increasing significantly the area of native vegetation on site. May prove difficult | | | | | Hospital sites are usually mainly buildings with minimal landscape area. |
| **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 | - | - | | | ARCH | Confirmation requried if targetting 24.1 and 24.2 | | | C | | |
| | | 24.1 | Reuse of Land | 1 | | 1 | | ARCH | Confirmation to be supplied that 75% of site was previously developed. | | | | | Most hospital and healthcare projects are located within exisitng hospital sites. For most projects, this credit would be considered achieved. |
| | | 24.2 | Contamination and Hazardous Materials | 1 | | 1 | | CONTR | Details of any existing contamination or hazardous materials are present an being removed or remediated. | | 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 | | 1 | | ARCH | This should be targetted as part of seciton J compliance with SA>0.43 | | | 1 | | |
| | | | **Category Total** | **6** | **0** | **3** | **3** | | | | | **1** | **0** | |
| **Emissions** | **FALSE** | | | | | | | | | | | | | |
| **Stormwater** | To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure. | 26.1 | Stormwater Peak Discharge | 1 | 1 | | | CIVIL | Consider how the post development peak discharge can be kept in line with pre developmeny peak discharge.<br>note that because increased rainfall and flood is likely to be a climate risk, consider achieving post development discharge not exceeding pre development based on a 5 Year ARI. | | | 1 | | |
| | | 26.2 | Stormwater Pollution Targets | 1 | | 1 | | CIVIL | Confirm local authority requireemnts. Consider adding additional treatment to reduce pollution. | | | | | |
| **Light Pollution** | To reward projects that minimise light pollution. | 27 | Light Pollution to Neighbouring Bodies | - | - | | | ELEC | This should be met if design is to standard AS4282 | | | | | Neighbouring buildings are usually the hospital buildings. Consider impacts to surrounding residential if any. |
| | | 27.1 | Light Pollution to Night Sky | 1 | | 1 | | ELEC | Requires that external luminaires do not emit light pollution to the night sky above a given benchmark to be considered in design | | | | | |
| **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 | | MECH | Consider waterless heat rejection<br>Include Legionalle control and risk management indesign of water based heat rejection systems | | | | 1 | |

**SUMMARY OF POINTS TO TARGET AND CONFIRM**

22/01/2024

| | | Very Likely | Feasible | Not Targeted |
|---|---|---|---|---|
| Subtotal | | 12.1 | 39.1 | 49.8 |
| Innovation | | 0 | 1 | 0 |
| **Total Points** | | 12.1 | 40.1 | 49.8 |



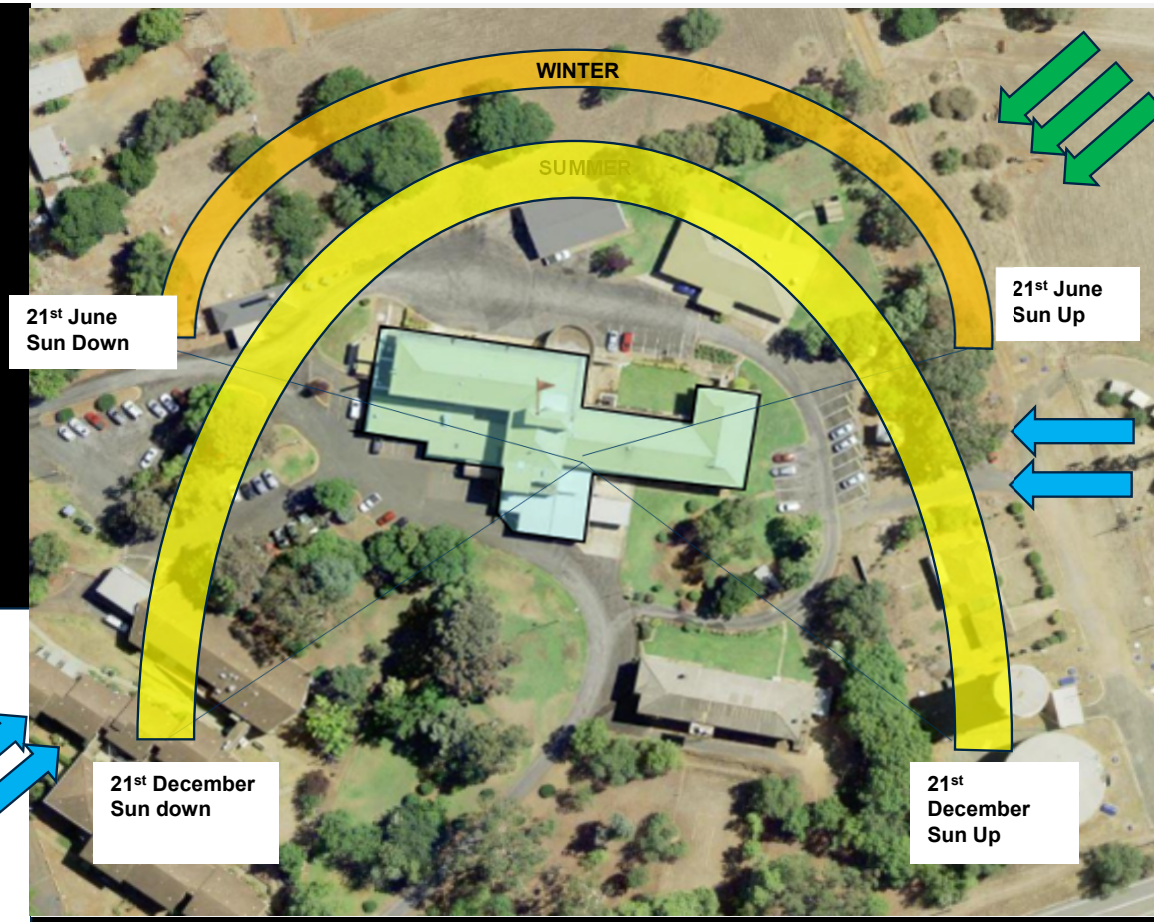

| CATEGORY / CREDIT | AIM OF THE CREDIT / SELECTION | CODE | CREDIT CRITERIA | POINTS AVAILABLE | Very Likely | Feasible | Not Targeted | DISCIPLINES | Comments from ESD team 15.03.23 | Comments from disciplines | Overlaps HI ESG AusHFG NCC 2019 SSDA Req | Standard Practice (1) Minimum requirement (C) | Healtcare relevant initiatives (1) Primarily for IPU type spaces. | Low focus initiatives |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Refrigerant Impacts** | To encourage operational practices that minimise the environmental impacts of refrigeration equipment. | 29.0 | Refrigerants Impacts | 1 | | | 1 | MECH | Not targetted. - Would requrie CO2 HP or lek detection | | | | | |
| | | | **Category Total** | **5** | **1** | **3** | **1** | | | | | **1** | **1** | |
| | | | | | | | | | | | | | | |
| **Innovation** | | | | | | | | | | | | | | |
| **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 | | | | | | | | | | | |
| **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 | | | | | | | | | | | |
| | Supplementary or tenancy fitout systems review | 30C | Commissioning and Tuning | | | | | ICA | | | | | | |
| | Daylight See credit | 30C | Visual Comfort | | | | | ARCH | | | | | | |
| **Innovation Challenge** | Where the project addresses an sustainability issue not included within any of the above Credits. | 30D | Innovation Challenge | | | 1 | | ESD HI | Community benefits (health promoting project)<br>RAP endorsed by Reconcilation Australia<br>Universal design (accessibility plan)<br>Ultra low VOC<br>Green 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 | | | | | | | | | | | |
| | | | **Category Total** | **10** | **0** | **1** | **0** | | | | | **0** | **0** | |
| | | | **Total** | | **12.1** | **40.1** | **49.8** | | | | | **20** | **18** | |

# Appendix B

## Climate Overview

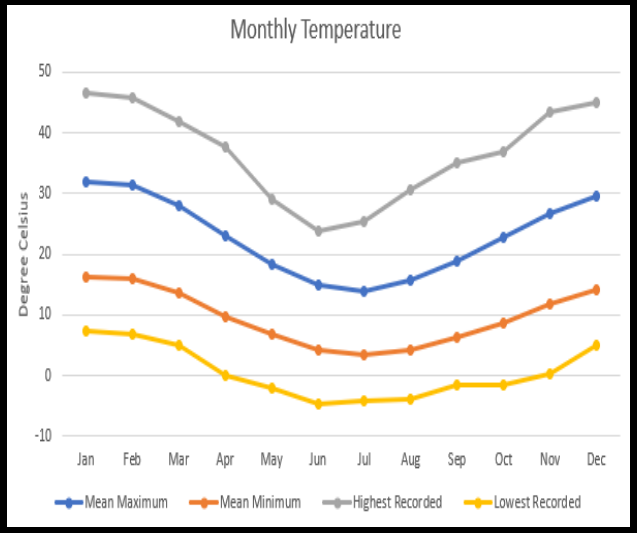
# Site Context

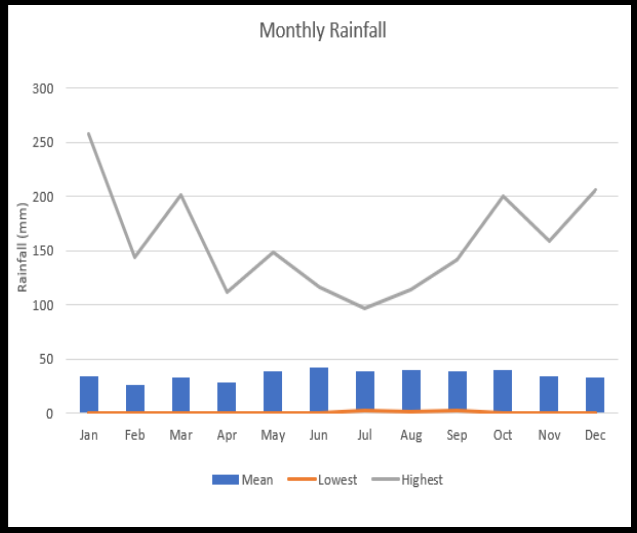
## → Finley

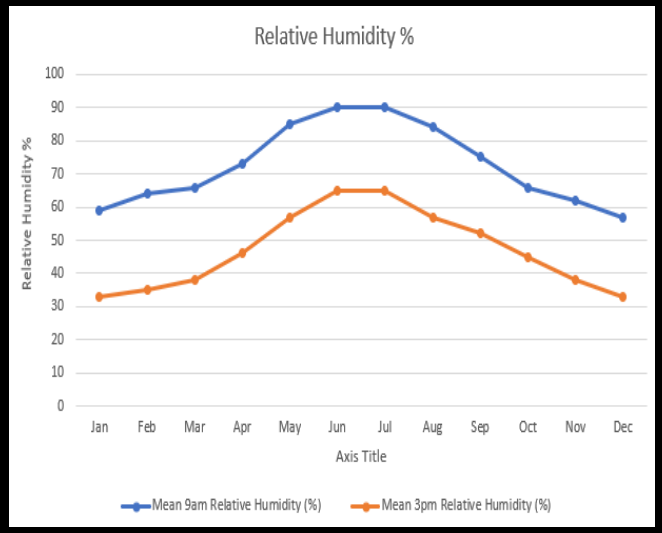



### NATURAL ENVIRONMENT

- EXISTING BUILDING
- PREVAILING SUMMER WIND
- PREVAILING WINTER WIND
- SUMMER SOLAR ARC
- WINTER SOLAR ARC
- HERITAGE TREES - TBC



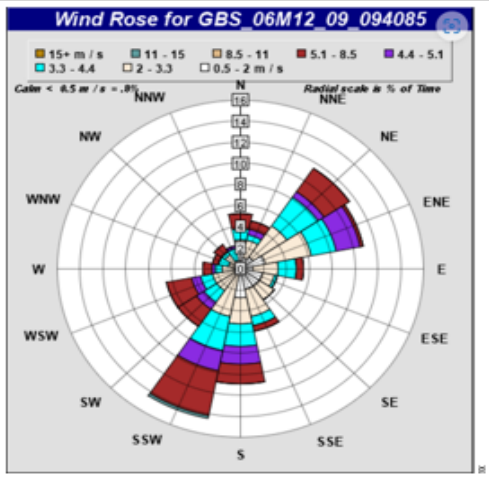



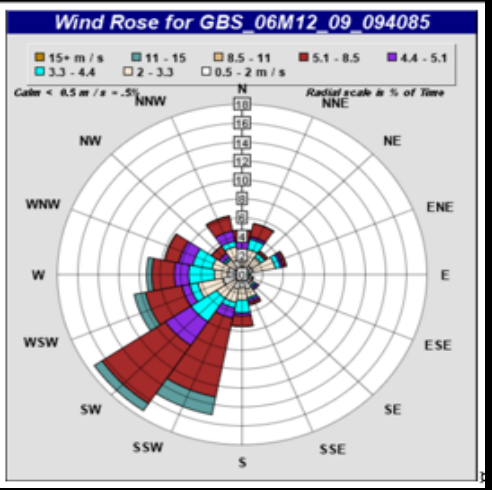

# → Site Context – Current Climate (Finley)

| Temperature | Value(°C) |
|---|---|
| Mean maximum temperature | 23.5 |
| Highest maximum temperature | 46.4 |
| Mean minimum temperature | 8.7 |
| Lowest minimum temperature | -6.8 |

9AM-Total-Observations¤




3PM-Total-Observations¤



| Hazard | Increase or decrease | Level of confidence |
|---|---|---|
| Rainfall | Winter rainfall decrease | Medium |
| Temperature | Increase in all seasons | Very high confidence |
| Extreme temperature | More hot days and warm spells | Very high confidence |
| Extreme rainfall & drought | Increased intensity of extreme rainfall events | High confidence |
| Mean sea level | Continue to rise | Very high confidence |
| Fire weather | Harsher in the future | High confidence (low confidence in magnitude of change) |

# Site Context – Future Climate Hazards – awaiting CCRA from LHD

| Variable | Near Future | Far future |
|---|---|---|
| Average temperature (°C) | | |
| Maximum temperature (°C) | -1.3 | +5 |
| Minimum temperature (°C) | | |
| Severe fire danger days per year | +1.5 | +6.3 |
| Change in rainfall | -110 mm | -250 mm |
| Maximum 1 day rainfall for a 20 year ARI event | Awaiting CCRA | Awaiting CCRA |

| Climate variable | Range: all sites | |
|---|---|---|
| | 2030 | 2070 |
| Number of days over 30°C | 40 - 48 | 56 - 66 |
| Number of days over 35°C | 10 - 11 | 15 - 18 |
| Maximum Number of days over 40°C | 4 - 8 | 5 - 8 |
| Highest temperature | 44 - 45°C | 48.1 - 49.3°C |

ghd.com

The Power of Commitment