

HEALTH INFRASTRUCTURE

# Sustainability Plan for REF

Albury Wodonga Regional Hospital project – REF 1 (Albury Hospital Northeast Building)

9/03/2025

Version 1



REVISION HISTORY

Version	Date	Author	Approval	Description
Rev 1	9/03/2025	Arjuna Thiru Moorthy, Project Director	Arjuna Thiru Moorthy, A/Senior Project Director	Submission

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## Executive summary

The NSW, Victorian and Australian governments have committed \$558 million to the Albury Wodonga Regional Hospital project, one of the largest regional health projects currently underway in NSW and Victoria. The new Albury Wodonga Regional Hospital will provide enhanced and expanded health care services in contemporary facilities to support Albury, Wodonga and Border communities now and into the future. The Albury Wodonga Regional Hospital project will support the region's growing population, provide contemporary models of care and better connectivity across the Albury Hospital Campus.

The REF 1 works at the Albury Hospital Campus as noted on the REF drawings are;

1. Northeast Building
2. North west carpark
3. Related demolition work and external works

The sustainability objectives of the project are;

1. Support the Albury Hospital in being the best place to work
2. Support a world-class patient experience
3. Create social and community uplift within the local community
4. Build internal capacity to deliver sustainable outcomes
5. Achieve Climate Resilience
6. Achieve a future One Plant Footprint

# 1. Mitigation Measures for REF

The REF 1 works will comply with these initiatives that will be included as a REF mitigation measure;

1. 100% electric in operation
2. A minimum 10% improvement in energy efficiency compared to a baseline of National Construction Code (NCC) 2019 Section J
3. A minimum of 60 points (5 Stars) under the HI ESD Framework (Design Guidance Note 058).
4. Installation of new 80kW PV system on NEB.
5. Installation of recycled (from existing building to be demolished) 70kW PV system on NEB.
6. Landscaping to external areas to promote biophilic design.
7. Future proofing of NEB infrastructure to allow for Zero Food Waste implementation.
8. Future proofing of NEB electrical infrastructure to accommodate EV charging infrastructure by allowing spare capacity on the switch boards and distribution boards.
9. Future proofing of external areas to accommodate Green Travel requirements.

The mitigation measure should read;

1. Prior to the commencement of construction, unless otherwise agreed by HI's Executive Director – Capital & Commercial Advisory, it must be demonstrated to the Crown Certifier that the ESD initiatives recommended by the Sustainability Plan for REF have been incorporated into the design, construction and operation of the activity.

## 2. Purpose

The purpose of the Sustainability Plan is to support decision making and outline what and how the project will incorporate sustainable outcomes in response to *Health Infrastructure's Sustainability Strategy and Commitment* and the minimum requirements in *Design Guidance Note 058 Environmentally Sustainable Development*. As a key supporting document, it helps embed sustainability initiatives early and deliver value to the community by creating future-focused and sustainable healthcare infrastructure.

## 3. Project description

The Northeast Building is part of the Albury Wodonga Regional Hospital project (<https://www.hinfra.health.nsw.gov.au/projects/project-search/albury-wodonga-regional-hospital>) and is the main part of the REF 1 works.

To facilitate construction of a new Clinical Services Building in the south-west corner of the Albury Campus, some services and staff in the Allied Health Building will be relocated to a contemporary new facility called the Northeast Building. The new facility will be located adjacent to East Street and completed as part of early works.

The following departments, currently housed in the Allied Health Building and surrounding buildings will relocate to the new, purpose built two-storey Northeast Building when complete: Allied Health clinical spaces including the gym and consultation rooms; Outpatients including: Specialist Outpatient Clinics, Cardiac Clinic, Pre-admission clinics; Administration areas such as Allied Health, Support Services, Medical Workforce, IT, Progression of Care Hub, Clinical Nurse Educators; Pharmacy; Conference Rooms and Library; Medical Staff Lounge.

The other parts of the REF1 works are the North west carpark and the related demolition work and external works.

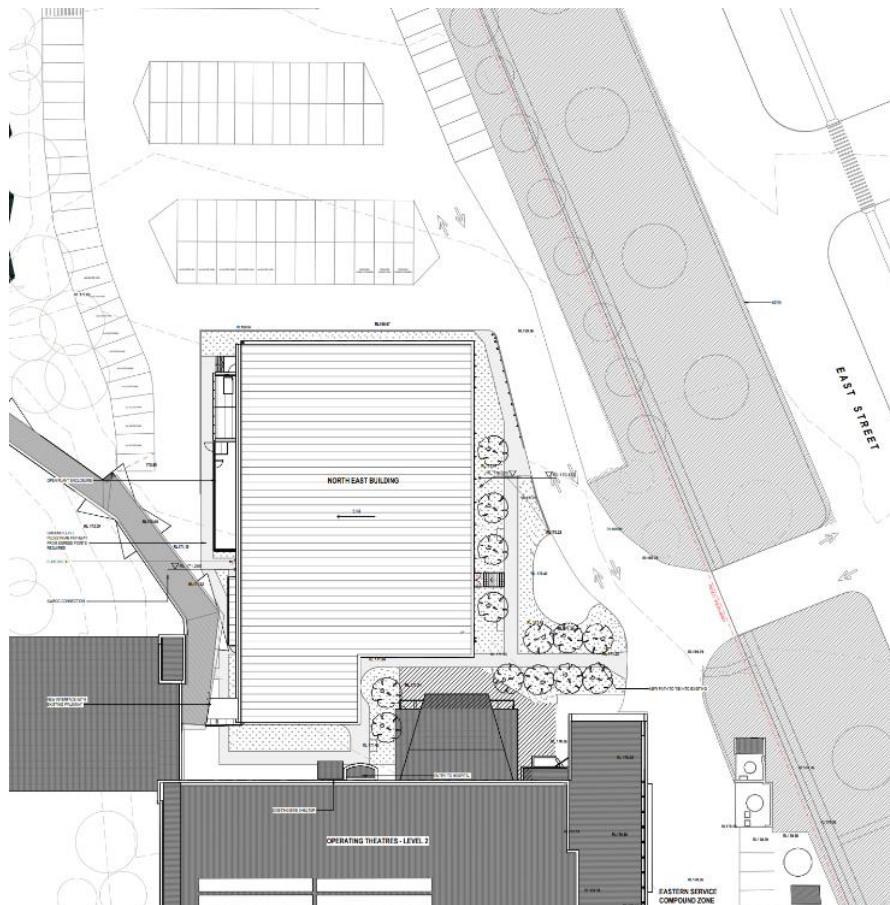


Figure 1. Northeast building location

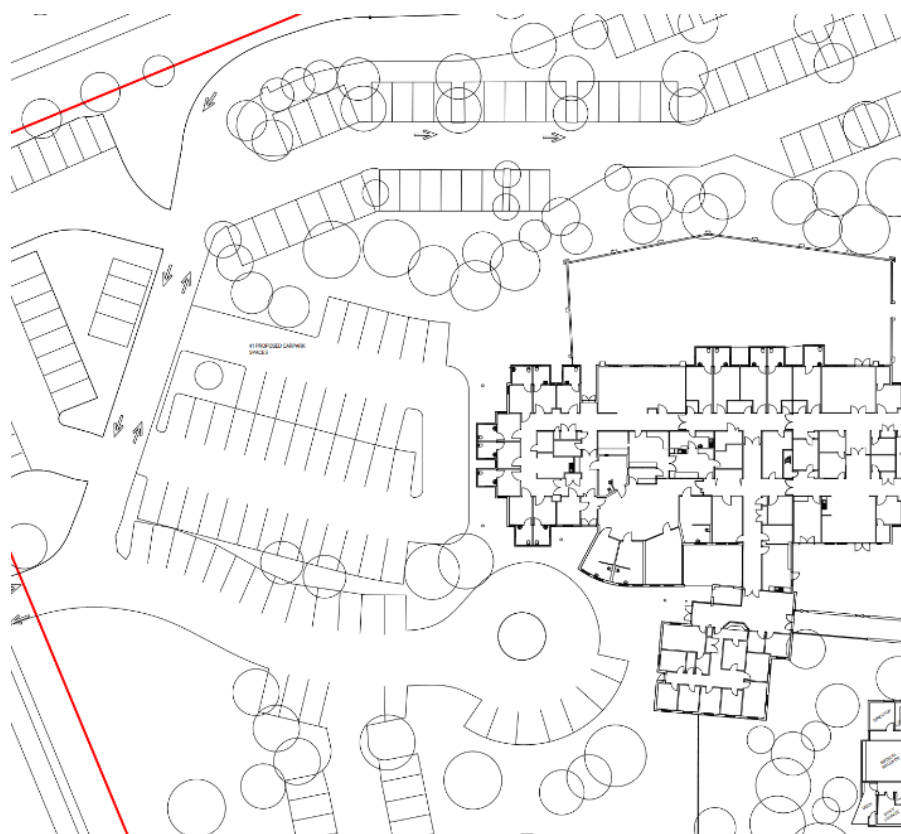
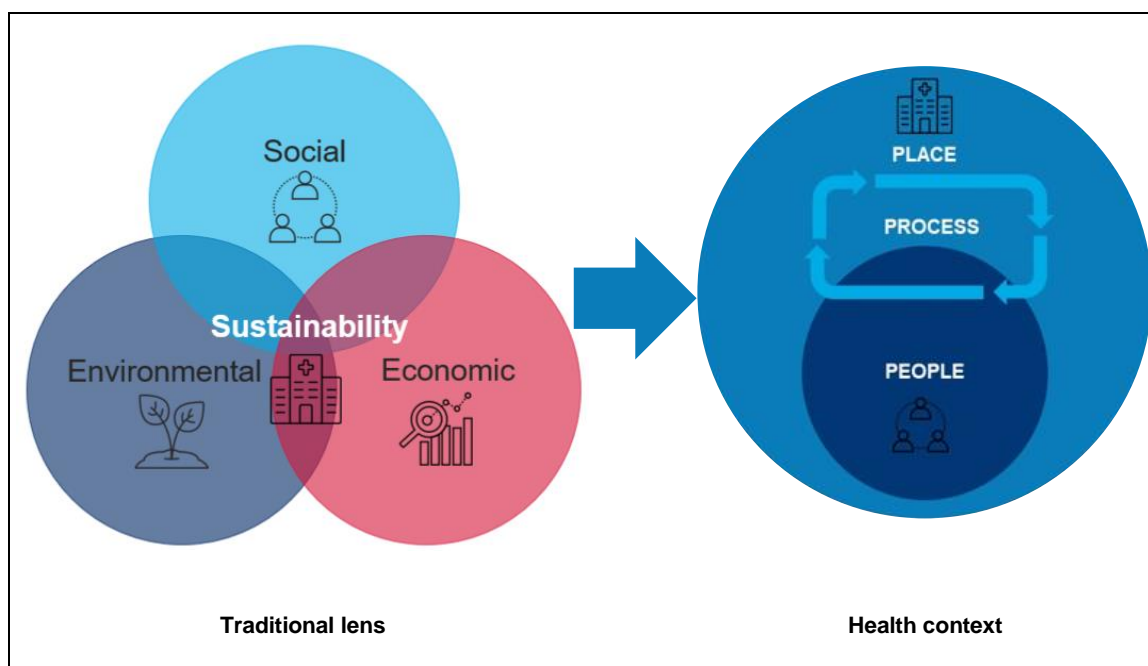


Figure 2. North west carpark

## 4. Approach to sustainability

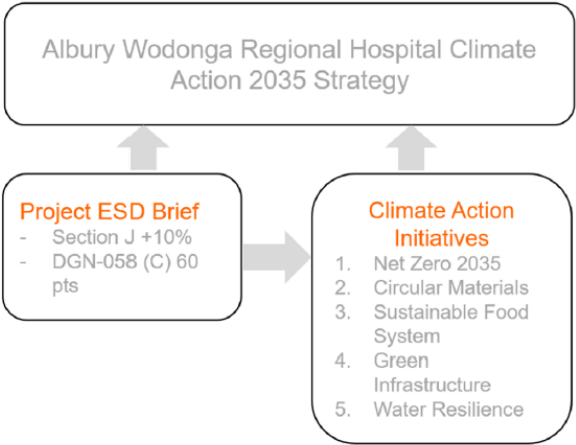
The following policies, frameworks, guides and supporting documents contain various sustainability requirements or guidance that may be applicable to the Albury Wodonga Regional Hospital project;

- NSW Government Resource Efficiency Policy 2019
- NSW Government DPIE Net Zero Plan Stage 1: 2020-2030
- Victorian Government Climate Change Strategy
- Victorian Government Decade of Action 2030
- Victorian Health Building Authority Guidelines for sustainability in health care capital works v2 2021
- NSW Government DPIE Waste and Sustainable Materials Strategy 2041
- NSW Government DPIE NSW Climate Change Policy Framework 2016
- Infrastructure NSW Gate 1 Gateway Workbook – Strategic Options v2 2018
- Health Infrastructure NSW 20-Year Health Infrastructure Strategy 2020
- Victorian Department Health Environmental Sustainability Strategy 2018-19 to 2022-23
- NSW Health Infrastructure Design Guidance Note No. 058
- NSW Health Facility Planning Process (Guideline) (2020)
- NSW DPIE (Government Architect NSW) Better Placed – Design Guide for Health 2023



The project sustainability strategy is based on the Project ESD Brief and the Climate Action Initiatives which informs the Albury Wodonga Regional Hospital Climate Action 2035 Strategy.





## 5. Goals and targets

### 5.1 HI minimum sustainability requirements

Requirement	Addressed?			
	Yes	No	N/A	Comment
<b>Documentation</b>				
1. Sustainability Plan	X			This document.
2. Net Zero Plan including i.Full electrification analysis ii.Energy efficiency measures iii.Embodied carbon iv.Solar or renewable energy assessment	X			To be completed for Albury Wodonga Regional Hospital Project REF 3 (main works).
3. EV charging infrastructure plan	X			To be completed for Albury Wodonga Regional Hospital Project REF 3 (main works).
4. Climate risk assessment	X			Refer to appendixes to this document for a summary
5. Climate adaptation plan	X			Refer to appendixes to this document for a summary
6. Operational waste management plan	X			Refer to separate REF appendix
7. Final list of sustainability initiatives	X			Refer to Section 5.2 of this report
8. Tender documents and tender evaluation plan	X			To be completed for Albury Wodonga Regional Hospital Project REF 3 (main works).
<b>Performance targets (minimum)</b>	<b>Proposed</b>		<b>Comment</b>	
60 points*	60 points			
100% electric in operation	Yes			
10% energy performance beyond NCC Part J requirement	Yes			
% reduction in upfront carbon emissions	No current target		No current target but to be calculated using NABERS Embodied Emissions Materials Form	
% reduction in potable water usage to NCC	No current target		To be completed for Albury Wodonga Regional Hospital Project REF 3 (main works).	
% construction waste diverted from landfill	No current target		To be completed for Albury Wodonga Regional Hospital Project REF 3 (main works).	
% recycled content in construction materials	No current target		To be completed for Albury Wodonga Regional Hospital Project REF 3 (main works).	

## 6. Strategies and initiatives

### 6.1 Summary of opportunities

Opportunities to be investigated as part of the wider project include but are not limited to;

1. Landscaping
2. Elevated landscaped courtyards
3. Operable windows
4. Bioswales
5. Rainwater harvesting re-use
6. On site greywater treatment and reuse
7. Zero Food Waste (Food Waste Composter)
8. Fixed pedestrian shelters
9. Photovoltaic (PV) car park shelters
10. Electric vehicle charging infrastructure
11. Geothermal heat pumps
12. Photovoltaic (PV) panels

### 6.2 Sustainability initiatives

The strategies and initiatives currently under consideration by the wider project are listed below;

1. Elevated courtyards
2. Operable windows
3. Bioswales
4. Rainwater harvesting re-use
5. On site greywater treatment and reuse
6. Zero Food Waste (Food Waste Composter)
7. Fixed pedestrian shelters
8. Photovoltaic (PV) car park shelters
9. Electric vehicle charging infrastructure
10. Geothermal heat pumps

These will be further refined as the project progresses and be finalised for Albury Wodonga Regional Hospital Project REF 3 (main works).

## 7. HI ESD Evaluation Tool

A copy of the Health Infrastructure ESD Evaluation Tool worksheet is included at Appendix A.

A summary of the credits are noted below.

Code	Requirement
1.0 Accredited Professional	Required
2.0 Environmental Performance Targets	Required
2.1 Services and Maintainability Review	Recommended
2.2 Building Commissioning	Recommended
2.3 Building Systems Tuning	Recommended
2.4 Independent Commissioning Agent	Optional
4.1 Building Information	Recommended
5.1 Environmental Building Performance	Recommended
5.2 End of Life Waste Performance	Recommended
6 Metering	Required
6.1 Monitoring Systems	Required
7 Environmental Management Plan	Required
7.1 Formalised Environmental Management System	Recommended
7.2 High Quality Staff Support	Recommended
8A Performance Pathway – Specialist Plan	Recommended
8A(i) Operational Waste Management Plan	Required
8B Prescriptive Pathway – Facilities	Optional
9.1 Ventilation System Attributes	Recommended
9.2 Provision of Outdoor Air	Recommended
9.3 Exhaust or Elimination of Pollutants	Recommended
9.4 Paints, Adhesive, Sealants and Carpets	Recommended
9.5 Engineered Wood Products	Recommended
10.1 Internal Noise Levels	Recommended
10.2 Reverberation	Recommended
10.3 Acoustic Separation	Optional
11 Minimum Lighting Comfort	Required
11.1 General Illuminance and Glare Reduction	Recommended
11.2 Surface Illuminance	Recommended
11.3 Localised Lighting Control	Recommended
12 Glare Reduction	Required
12.1 Daylight	Recommended
12.2 Views	Recommended
14.1 Thermal Comfort	Recommended
14.2 Advanced Thermal Comfort	Recommended
15E.0 Reference Building Pathway	Required
15E.0(i) 10% energy performance beyond NCC	Required
15E.1 Comparison to a Reference Building Pathway: Building Fabric	Recommended
15E.2 Comparison to a Reference Building Pathway: GHG Emissions Reduction	Required
15E.3 Off-site renewables	Optional
15E.4 District Services	Optional
15E.5.1 Net Zero Plan	Required
15E.5.2 100% electric in operation	Required
15E.6.0 Measurement of embodied carbon	Required
15E.6.1 Target reduction in upfront carbon emissions	Required
16A(i) Solar or renewable energy assessment	Required
16A(ii) Solar or renewable energy generation	Recommended
16B Performance pathway – Reference Building	Optional

3.1 Climate risk assessment	Required
3.2 Implementation of a Climate Adaptation Plan	Recommended
17A.1 Performance Pathway	Optional
17B.1 Access by Public Transport	Optional
17B.2 Reduced Car Parking Provision	Optional
17B.3 Low Emission Vehicle Infrastructure	Required
17B.4 Active Transport Facilities	Optional
17B.5 Walkable Neighbourhoods	Optional
18A.1 Portable Water – Performance Pathway	Optional
18B.1 Sanitary Fixture Efficiency	Recommended
18B.2 Rainwater Reuse	Optional
18B.3 Heat Rejection	Optional
18B.4 Landscape Irrigation	Recommended
18B.5 Fire System Test Water	Recommended
19A.1 Comparative Life Cycle Assessment	Optional
19A.2 Additional Life Cycle Impact Reporting	Optional
19B.1 Concrete	Optional
19B.2 Steel	Optional
19B.3 Building Reuse	Optional
19B.4 Structural Timber	Optional
20.1 Structural and Reinforcing Steel	Recommended
20.2 Timber Products	Recommended
20.3 Permanent Formwork, Pipes, Flooring, Blinds and Cables	Recommended
21.1 Product Transparency and Sustainability	Optional
22A Fixed Benchmark	Optional
22B Percentage Benchmark	Recommended
23 Endangered, Threatened or Vulnerable Species	Required
23.1 Ecological Value	Not required
24 Conditional Requirement	Required
24.1 Reuse of Land	Required
24.2 Contamination and Hazardous Materials	Required
25.0 Heat Island Effect Reduction	Recommended
26.1 Stormwater Peak Discharge	Recommended
26.2 Stormwater Pollution Targets	Recommended
27.0 Light Pollution to Neighbouring Bodies	Required
27.1 Light Pollution to Night Sky	Recommended
28.0 Legionella Impacts from Cooling Systems	Recommended
29.0 Refrigerants Impacts	Optional
30A Innovative Technology or Process	Optional
30A.1 Individual Comfort Control	Optional
30A.2 On-site Renewable Energy	Optional
30A.3 Building Integrated PV	Optional
30A.4 Heat Rejection System in Equipment Requiring Process Cooling	Optional
30A.5 Passive Design	Optional
30A.6 Microbial control in Warm Water Systems	Optional
30B Market Transformation	Optional
30B.1 Soft Landings	Optional
30B.2 Passive Design	Optional
30B.3 Sustainable Sourcing of Concrete Aggregates	Optional
30C Improving on Benchmarks	Optional
30C.1 Supplementary or tenancy fitout systems review	Optional
30C.2 Building Air Permeability Rates	Optional
30C.3 Building Air Permeability Rates	Optional
30C.4 Reference Building Pathway – 15% improvement	Optional
30C.5 Reference Building Pathway – 30% improvement	Optional
30C.6 No New Car Parks on Site	Optional

30C.7 Discharge to Sewer	Optional
30C.8 Comparative Life Cycle Assessment +20%	Optional
30C.9 Comparative Life Cycle Assessment +40%	Optional
30C.10 Product Transparency and Sustainability +3%	Optional
30C.11 Product Transparency and Sustainability +6%	Optional
30C.12 Reduction of Construction and Demolition Waste	Optional
30C.13 Stormwater Pollution Targets	Optional
30C.14 Stormwater Pollution Targets	Optional
30D Innovation Challenge	Optional
30D.1 Community Benefits	Optional
30D.2 Culture, Heritage, and Identity	Optional
30D.3 High Performance Site Office	Optional
30D.4 Integrating Health Environments	Optional
30D.5 Local Procurement – Products and Materials	Optional
30D.6 Local Procurement – Services and Skilled Labour	Optional
30D.7 Occupant Engagement – Occupant Survey	Optional
30D.8 Occupant Engagement – Connection to Nature	Optional
30D.9 Powered by Renewables	Optional
30D.10 Responsible Carbon Impacts	Optional
30D.11 Responsible Carbon Impacts	Optional
30D.12 Responsible Carbon Impacts	Optional
30D.13 Carbon Positive – New Buildings	Optional
30D.14 Reconciliation Action Plan	Optional
30D.15 Incorporation of Indigenous Design	Optional
30D.16 Social Return on Investment	Optional
30D.17 Universal Design	Optional
30E Global Sustainability	Optional
30E.1 Green Cleaning	Optional
30E.2 Exposure to toxins	Optional
30E.3 Procurement and Purchasing	Optional
30E.4 Groundskeeping Practices	Optional
30E.5 Ergonomics Strategy	Optional
30E.6 Indoor Pollutants – Indoor Plants	Optional
30E.7 Indoor Pollutants – Mattresses	Optional
30E.8 Indoor Pollutants – Low VOC	Optional
30E.9 Amenity and Comfort	Optional
30E.10 Enjoyable Places	Optional
30E.11 Movement and Place, credit achievement	Optional
30E.12 Biodiversity Enhancement	Optional
30E.13 Ecologist / Landscape	Optional
30E.14 Landscape	Optional
30E.15 Impacts to Nature	Optional

## Appendices

### Appendix A DGN 58 ESD Evaluation Worksheet

Project Name:	Albury Hospital Redevelopment <b>NEB</b>	Update by:	Digby Hall	Points Currently Achieved	63	Total Points Available	101
HI Delivery Part:	3 / For Tender	Date Last Updated:	19/09/2024	Points TBC	3	Total - Minimum requirements	12
Revision F Notes: 1. Notes edited to suit Tender audience 2. For detailed performance, delivery and evidence criteria refer to DGN-058 ESD Evaluation Tool Specification (Rev 4 For Tender)						Total - Recommended	32

## HI Environmentally Sustainable Development (ESD) Evaluation Tool

Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
<b>Management</b>				<b>12</b>							
<b>ESD Consultant (Accredited Professional)</b>	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		Minimum requirement	CONTR	HI / AWHS, ESD, Head Contractor		Head contractor to appoint ESD consultant for duration of Works
<b>Commissioning and Tuning</b>	To encourage and recognise commissioning, handover and tuning initiatives that ensure all building services operate to their full potential.	2.0	Environmental Performance Targets	-			Minimum requirement	HI	ESD		Operator to establish
		2.1	Services and Maintainability Review	1	1		Recommended	HI	AWHS FM Manager		By AWHS FM Manager, can also be internal HI specialist not directly involved in project design. HI to nominate reviewer. Assumed will be carried out prior to issue of Tender documentation,
		2.2	Building Commissioning	1	1		Recommended	CONTR			Include in head contract Included in ESD Specification
		2.3	Building Systems Tuning	1	1		Recommended	CONTR			Include in head contract Included in ESD Specification
		2.4	Independent Commissioning Agent	1	1		Optional	HI	HI / AWHS, Project Manager, ICA		By AWHS FM Manager. Included in ESD Specification
<b>Building Information</b>	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		Recommended	CONTR	Façade, Mechanical, Electrical, V. Transport, Fire, Hydraulics, Landscape, Structural, Head Contractor		Included in ESD Specification
<b>Commitment to Performance</b>	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		Recommended	AWHS	HI / AWHS		Met generally via GREP reporting Part 4 to establish specific targets relating to energy, water, waste, and IEQ
		5.2	End of Life Waste Performance	1	1		Recommended	AWHS	HI / AWHS		Requires commitment to reduce demolition waste at end of fitout life.



Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
Metering and Monitoring	To recognise the implementation of effective energy and water metering and monitoring systems.	6	Metering	-			Minimum requirement	MECH	Mechanical, Electrical, Hydraulics, Landscape		Included in ESD Specification
		6.1	Monitoring Systems	1	1		Minimum requirement	MECH	Mechanical, Electrical		Included in ESD Specification
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	-			Minimum requirement	CONTR	Head Contractor		Included in ESD Specification & HI head contract.
		7.1	Formalised Environmental Management System	1	1		Recommended	CONTR	Head Contractor		Included in ESD Specification & HI head contract.
		7.2	High Quality Staff Support	1	1		Recommended	CONTR	Head Contractor		Refer ESD Specification
Operational Waste	Performance Pathway To encourage project to apply waste hierarchy through the design	8A	Performance Pathway - Specialist Plan	1	1		Recommended	HI	HI / AWHS, Waste Consultant		Shared Amenity with main project: To be prepared by operator during Part 4.
		8A(i)	Operational Waste Management Plan	-			Minimum requirement	AWHS	HI / AWHS, Waste Consultant		To be prepared by operator during Part 4
		8B	Prescriptive Pathway - Facilities	0	0		Optional				NOTE: The project can target EITHER 8A or 8A(i) plus 8B. Architect to allocate sufficient area / room sizes
Total				12	12	0					
Indoor Environment				17							
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		Recommended	MECH	Mechanical		Included in ESD Specification
		9.2	Provision of Outdoor Air	2	1		Recommended	MECH	Mechanical	ESG requirements request 2.0 ACH to IPU spaces.	Refer ESD Specification
		9.3	Exhaust or Elimination of Pollutants	1	1		Recommended	MECH	ARCH, Mechanical		Refer ESD Specification. Met via dedicated print / photocopy room exhaust OR low emissions equipment
		9.4	Paints, Adhesives, Sealants and Carpets	1	1		Recommended	ARCH	ARCH, Façade, Mechanical, Electrical, V. Transport, Fire, Hydraulics, Acoustics, Head Contractor		Included in ESD Specification. Applies to all materials and FF&E inside building envelope
		9.5	Engineered Wood Products	1	1		Recommended	ARCH	ARCH, Structural, Head Contractor		Included in ESD Specification. Applies to all materials and FF&E inside building envelope

Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders Involved	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
Acoustic Comfort	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	10.1	Internal Noise Levels	1	1		Recommended	ACOUS	ARCH, Façade, Mechanical, Acoustics		Included in ESD Specification
		10.2	Reverberation	1	1		Recommended	ACOUS	ARCH, Acoustics, Structural		Included in ESD Specification
		10.3	Acoustic Separation	1		1	Optional	ACOUS	ARCH, Mechanical, Acoustics, Structural		Not currently included in ESD Specification. To be reviewed during Part 4
Lighting Comfort	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	11	Minimum Lighting Comfort	-			Minimum requirement	ELEC	Electrical, Lighting	Artificial lighting initiatives can also utilise typical	Included in ESD Specification
		11.1	General Illuminance and Glare Reduction	1	1		Recommended	ELEC	Electrical, Lighting		Included in ESD Specification
		11.2	Surface Illuminance	1	1		Recommended	ARCH	ARCH, Electrical, Lighting		Included in ESD Specification
		11.3	Localised Lighting Control	1	1		Recommended	ELEC	Electrical, Lighting		Included in ESD Specification
Visual Comfort	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	12	Glare Reduction	-			Minimum requirement	ARCH	ARCH, Façade		Included in ESD Specification
		12.1	Daylight	2	0		Recommended			Modelling of typical spaces for the daylighting initiative is acceptable, provided a sensible	Not targeted
		12.2	Views	1	0		Recommended			Views can also be assessed using typical spaces.	Not targeted
Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1	Thermal Comfort	1	1		Recommended	MECH	Mechanical	NCC 2022 JV3 requires a PMV assessment to be undertaken	Included in ESD Specification, including thermal comfort modelling requirements
		14.2	Advanced Thermal Comfort	1	0		Recommended				Not targeted
Total Line				17	11	1					
Energy & Carbon				24							
Greenhouse Gas Emissions	To encourage and recognise projects to reduce their carbon footprint through design and construction and to ensure projects are net zero	15E.0	Conditional Requirement: Reference Building Pathway	-			Minimum requirement	MECH	Façade, Mechanical, Electrical,		

Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
		15E.0 (i)	10% energy performance beyond NCC requirement, or GREP	1	1		Minimum requirement	ELEC	Mechanical, Electrical		10% improvement on NCC Section J is a mandatory requirement
		15E.1	Comparison to a Reference Building Pathway: GHG Emissions Reduction: Building Fabric	4	2		Recommended	ARCH	Façade, Mechanical,		2 points assumed via building envelope improvements. Requirements included in ESD Specification
		15E.2	Comparison to a Reference Building Pathway: GHG Emissions Reduction	16	10		Minimum requirement	MECH	Façade, Mechanical,		Conservative 17.6% reduction in GHG emissions compared to reference building (via proposed fabric and services), which equates to 4pts.  Adding 90kW PV improves to 57% GHG emissions reduction. Assume 99kW PV array and 60% overall GHG emissions reduction, equating to 10 points. To be modelled / verified in Part 4
		15E.3	Off-site Renewables	0	0		Optional				Not targeted
		15E.4	District Services	0	0		Optional				Not targeted
		15E.5.1	Conditional Requirement: Net zero plan ['Transition Plan']	-			Minimum requirement	ESD			Net Zero Ready statement by CWD
		15E.5.2	100% electric in operation ['Fuel Switching']	1	1		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.	Minimum compliance with DGN-058 (RevC)
		15E.6.0	Measurement of Embodied Carbon	1	1		Minimum requirement	ESD	ARCH, Structural, Head Contractor, Façade	Aligns with Sustainable Buildings SEPP - use the Embodied Emissions Materials Form in line with the Embodied Emissions Technical Note	Embodied Emissions Materials Form (NABERS) requires completion.
		15E.6.1	Target reduction in upfront carbon emissions	1	1		Minimum requirement	ESD	Mechanical, Electrical		Complete NABERS Embodied Emissions Materials form
<b>Peak Electricity Demand Reduction</b>	To encourage projects to consider Peak electricity reduction through energy efficiency or on-site energy generation	16A(i)	Solar or Renewable energy assessment	-			Minimum requirement	ELEC	Mechanical, Electrical		Peak demand reduced by at least 15% via PV array

Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
		16A(ii)	Solar or Renewable energy generation	1	1		Recommended	ELEC	Mechanical, Electrical		Allocate 99kW of PV to 15E.2
		16B	Performance Pathway - Reference Building	0	0		Optional				

**Total Line****24 16 0**

<b>Climate risk and resilience</b>				<b>2</b>							
<b>Adaptation and Resilience</b>	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		Minimum requirement	ESD	ARCH, Façade, Mechanical, Electrical, Fire, Hydraulics, Civil, Landscape, Structural, etc.		Site specific risk assessment has been carried out.
		3.2	Implementation of a Climate Adaptation Plan	1	1		Recommended	ESD	ARCH, MECH, LA, CIVIL	SEARS condition: Credit can be used to demonstrate CSIRO project climate Impacts	Adaptation performance guidelines included in ESD Specification

**Total Line****2 2 0**

<b>Transport</b>				<b>Points available</b>	<b>5</b>						
<b>Sustainable Transport</b>	To encourage projects to consider sustainable transport options through design	17A.1	Performance Pathway	9			Optional				
		17B.1	Access by Public Transport	1	1		Optional		ESD		NEB: same as main project
		17B.2	Reduced Car Parking Provision	1	0		Optional				Permanent car parking not within scope
		17B.3	Low Emission Vehicle Infrastructure	1	0		Minimum requirement		ARCH, Electrical	Consistent with DGN 46 and NSW Government Fleet Strategy requirements	Not within NEB scope
		17B.4	Active Transport Facilities	1	1		Optional		ARCH		Shared amenity with main project
		17B.5	Walkable Neighbourhoods	1	0		Optional				Site does not achieve sufficient points in Walk Score.

**Total Line****5 2 0**

<b>Water</b>				<b>6</b>							
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Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
Potable Water	Prescriptive Pathway	18A.1	Potable Water - Performance Pathway	0	Sewer Input		Optional				
		18B.1	Sanitary Fixture Efficiency	1	1		Recommended	ARCH	Architectural FF&E	AusHFG Requirements limit use of RW systems	Included in ESD Specification
		18B.2	Rainwater Reuse	1	1		Optional	HYDR	Hydraulics, Landscape	AusHFG Requirements limit use of RW systems	Rainwater harvest and re-use included in ESD Specification. Part 4 to establish location and size of NEB-specific RW tank, for NEB landscape irrigation.
		18B.3	Heat Rejection	2	2		Optional	MECH			VRF system, non-water.
		18B.4	Landscape Irrigation	1	1		Recommended	LAND	Hydraulics, Landscape		Included in ESD Specification
		18B.5	Fire System Test Water	1	1		Recommended	FIRE	Fire		Included in ESD Specification. Test water to be diverted from stormwater / sewer via close loop testing or diversion to landscape or other uses
		Total Line				6	6	0			
Materials & Waste				14							
Life Cycle Impacts	Prescriptive Pathway - Life Cycle Impacts	19A.1	Comparative Life Cycle Assessment	6			Optional				Life Cycle Assessor (additional consultant) required
		19A.2	Additional Life Cycle Impact Reporting	4			Optional				Life Cycle Assessor (additional consultant) required
		19B.1	Concrete	3	2		Optional	STRUC	Civil, Structural		1 point for 30% Portland cement reduction, measured across all concrete mixes.  1 point added for water & aggregate per Enstruct advice. 30% PC replacement comes at 5-10% cost premium.
		19B.2	Steel	1	0		Optional				Not targeted

Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
		19B.3	Building Reuse	4	0		Optional				Not targeted
		19B.4	Structural Timber	4	0		Optional				Not 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		Recommended	STRUC			Included in specification. [Responsible Steel Maker / Fabricator]
		20.2	Timber Products	1	1		Recommended	ARCH	Contractor, architect		Included in specification. [Responsible Timber Products]
		20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1		Recommended	HYDR MECH ELEC ARCH STRUC	Contractor, architect		Included in ESD Specification
Sustainable Products	To encourage sustainability and transparency in product specification.	21.1	Product Transparency and Sustainability	3	1	2	Optional	CONTR	Contractor, architect		Included in ESD Specification
Construction and Demolition Waste	Fixed Benchmark	22A	Fixed Benchmark	1	1		Optional	CONTR			90% C&D waste diversion
		22B	Percentage Benchmark	-			Recommended				
Total Line				19	7	2					

<b>Land Use &amp; Ecology</b>				<b>6</b>							
<b>Ecological Value</b>	To reward projects that improve the ecological value of their site.	23	Endangered, Threatened or Vulnerable Species	-			Minimum requirement	ECO	Project Manager, ESD		
		23.1	Ecological Value	3	0						Not targeted
<b>Sustainable Sites</b>	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	-			Minimum requirement	ESD			
		24.1	Reuse of Land	1	1			ESD			Requirments met
		24.2	Contamination and Hazardous Materials	1	1			CONTR	Project Manager, Head Contractor		Included in ESD Specification
<b>Heat Island Effect</b>	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		Recommended	ARCH	ARCH, Landscape		Included in ESD Specification
<b>Total Line</b>				<b>6</b>	<b>3</b>	<b>0</b>					

<b>Discharge to Environment</b>				<b>5</b>							
<b>Stormwater</b>	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Stormwater Peak Discharge	1	1		Recommended	CIVIL	Hydraulics, Civil, Landscape		Assumed met via existing stormwater management. Included in ESD Specification. Part 4 - explore options to use green infrastructure / landscape
		26.2	Stormwater Pollution Targets	1	1			CIVIL	Civil, Landscape		Assumed met via existing stormwater management. Included in ESD Specification. Part 4 - explore options to use green infrastructure / landscape
<b>Light Pollution</b>	To reward projects that minimise light pollution.	27.0	Light Pollution to Neighbouring Bodies	-			Minimum requirement		Electrical, Lighting		Performance requirements included in ESD Specification
		27.1	Light Pollution to Night Sky	1	1		Recommended		Electrical, Lighting		
<b>Microbial Control</b>	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		Recommended	MECH			VRF system without water. Compliance automatically met.

Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	29.0	Refrigerants Impacts	1	0						Not targeted
<b>Total Line</b>				<b>5</b>	<b>4</b>	<b>0</b>					

<b>Innovation</b>				<b>10</b>							
<b>Innovative Technology or Process</b>	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							HINSW confirm that Innovation points can be sought. Each proposed solution to be reviewed by HI ESD team prior to confirming point award.
	Thermal Comfort	30A.1	Individual Comfort Control	1			Optional				Provide individual comfort control in all primary spaces
	Greenhouse Gas Emissions	30A.2	removed								included in 16A(ii) above
	Greenhouse Gas Emissions	30A.3	Building Integrated PV	1			Optional				When BIPV contribute to GHG reductions of at least 15% (can be awarded in addition to above). Unlikely to achieve 15% contribution unless extensive PV are installed.
	Potable Water	30A.4	Heat Rejection Systems in Equipment Requiring Process Cooling	1			Optional				Potable water use from heat rejection in process cooling is reduced, for new equipment purchases only.
	Potable Water	30A.5	Passive Design	1			Optional				Projects that use passive water treatment systems (e.g vegetation) to achieve at least 1 point in potable water calculator.
	Microbial Control	30A.6	Microbial control in Warm Water Systems	1			Optional				Warm water systems have been designed to manage the risk of microbial control
<b>Market Transformation</b>	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								
	Commissioning and Tuning	30B.1	Soft Landings	1			Optional				Designed, built, commissioned and tuned by adopting Soft Landings approach.
	Greenhouse Gas Emissions	30B.2	Passive Design	1			Optional				For projects that achieve more than 15 points through passive design / without energy generation / without offsets or Green Power in the GHG Emissions credit
	Life Cycle Impacts - Concrete	30B.3	Sustainable Sourcing of Concrete Aggregates	1			Optional				Concrete aggregates have chain of custody or come from responsible source/s
<b>Improving on Benchmarks</b>	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								
	Commissioning and Tuning	30C.1	Supplementary or tenancy fitout systems review	1			Optional				Comprehensive services and maintainability review of supplementary or tenancy fitout systems
	Commissioning and Tuning	30C.2	Building Air Permeability Rates	1			Optional				Achieve rates from the 'normal' column
	Commissioning and Tuning	30C.3	Building Air Permeability Rates	1			Optional				Achieve rates from the 'best practice' column, or where it can be demonstrated that project has met requirements of JV4 Section J NCC 2019

Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
	Greenhouse Gas Emissions	30C.4	Reference Building Pathway - 15% Improvement	1			Optional				On-site renewable energy systems produce 5% more energy than what is required by the building. Energy must be exported or stored on site.
	Greenhouse Gas Emissions	30C.5	Reference Building Pathway - 30% Improvement	1			Optional				On-site renewable energy systems produce 5% more energy than what is required by the building. Energy must be exported or stored on site.
	Sustainable Transport	30C.6	No New Car Parks on Site	1			Optional				Includes all car parking regardless of ownership / operation
	Potable water	30C.7	Discharge to Sewer	1			Optional				90% or greater reduction in flow to sewer.
	Life Cycle Impacts	30C.8	Comparative Life Cycle Assessment +20%	1			Optional				Cumulative impact reduction is increased by 20% to 150% total.
	Life Cycle Impacts	30C.9	Comparative Life Cycle Assessment +40%	1			Optional				Cumulative impact reduction is increased by 40% to 170% total.
	Sustainable Products	30C.10	Product Transparency and Sustainability +3%	1			Optional				Percentage of compliant products is increased by 3% to 12%
	Sustainable Products	30C.11	Product Transparency and Sustainability +6%	1			Optional				Percentage of compliant products is increased by a further 3% to 15%
	Construction and Demolition Waste	30C.12	Reduction of Construction and Demolition Waste	1			Optional				Meets fixed benchmark of 5kg waste / sqm of GFA
	Stormwater	30C.13	Stormwater Pollution Targets	1			Optional				Meets Column B. Achievable via green infrastructure
	Stormwater	30C.14	Stormwater Pollution Targets	1			Optional				Meets Column C
Innovation Challenge	Where the project addresses an sustainability issue not included within any of the above Credits.	30D	Innovation Challenge								
		30D.1	Community Benefits	1			Optional				Conduct community needs analysis, develop strategy for community needs, implement plan
		30D.2	Culture, Heritage and Identity	1			Optional				Applies to buildings that are Burra Charter listed, retained, refurbished and celebrated through info / displays etc.
		30D.3	High Performance Site Offices	1			Optional				Where at least 75% of 'site office checklist' is achieved.
		30D.4	Integrating Healthy Environments	1			Optional				Conduct community health needs analysis, prioritise strategies to address needs, develop monitoring plan
		30D.5	Local Procurement - Products and Materials	1			Optional				Significant improvement in comparison to industry standard'
		30D.6	Local Procurement - Services and Skilled Labour	1			Optional				Significant improvement in comparison to industry standard'
	Occupant Engagement	30D.7	Occupant Engagement - Occupant Survey	1			Optional				AWHS scope, not included in ESD Specification.
	Occupant Engagement	30D.8	Occupant Engagement - Connection to Nature	1			Optional				Provide ongoing feedback to Biophilic research by RMIT



Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
	Pathways to Carbon Positive	30D.9	Powered by Renewables	1			Optional				15% improvement on rating requirements & no fossil fuels on site, publicly commit to 100% renewable electricity
	Pathways to Carbon Positive	30D.10	Responsible Carbon Impacts	1			Optional				At least 3 points achieved under 19A and climate change impact category reduces by 10%, and Climate Active Carbon Neutral offsets purchased for remaining embodied carbon
		30D.11	Responsible Carbon Impacts	1			Optional				20% reduction in the climate change impact category and Climate Active offsets for residual as above
		30D.12	Responsible Carbon Impacts	1			Optional				Above, plus at least 5% of embodied carbon reduction in climate change category from carbon neutral certified products
	Pathways to Carbon Positive	30D.13	Carbon Positive - New Buildings	1			Optional				Requires whole-building Climate Active Carbon Neutral Standard registration, maintained for 6 years, plus 10% of embodied carbon in addition to 100% of operational carbon OR transport emissions are offset
	Reconciliation	30D.14	Reconciliation Action Plan	1			Optional	AWHS			AWHS develops a Reconciliation Action Plan.
		30D.15	Incorporation of Indigenous Design	1			Optional				From the Australian Indigenous Design Charter, follow 1) Indigenous Led, 2) Community Specific, 3) Impact of Design, and 4) Shared Knowledge
		30D.16	Social Return on Investment	1			Optional				Complete analysis of direct and indirect costs and benefits
		30D.17	Universal Design	1			Optional	ARCH			Review Design for Dignity Guidelines, perform needs analysis, develop accessibility plan, implement accessibility plan
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								The Global Sustainability Credits shown are limited to relevant Credits from other Green Star tools only (Performance, Communities and Interiors). Credits from other international tools are also recognised, e.g. from BREEAM, DGNB, LEED, LBC, IWBI and Passive House.
	Indoor Air Quality [From Green Star Performance V1.2 <b>Credit 6.2</b> ]	30E.1	Green Cleaning	1			Optional				Green Cleaning Policy is established and all areas are cleaned in accordance with this policy.
	[From Green Star Buildings v1.3, <b>Credit 13</b> ]	30E.2	Exposure to toxins	1		0	Optional	CONTR			Requires on-site tests verify the building has low Volatile Organic Compounds (VOC) and formaldehyde levels.
	[From Green Star Performance / Buildings v1.2, Credit 21]	30E.3	Procurement and Purchasing	1			Optional				Sustainable Procurement Framework is in place for ongoing purchasing of consumables, services, and materials post-completion

Category/Credit	Aim of the Credit / Selection	Code	Credit Criteria	Points available	Points Targeted	Points TBC	Type [per DGN-058]	Lead Input	Stakeholders In	Overlaps HI ESG, AusHFG, NCC, SSDA, Design Guide	CWD Notes
	[From Green Star Performance / Buildings v1.2, Credit 25]	30E.4	Groundskeeping Practices	1			Optional				Best practice process put in place to maintain landscaped areas and hard surfaces to protect sensitive landscapes and improve ecological value.
	[From Green Star Interiors v1.3, <b>Credit 15.1</b> ]	30E.5	Ergonomics Strategy	1			Optional				Ergonomics Strategy is developed, with all work settings addressing ergonomic needs of the user, with info provided to user.
	[From Green Star Interiors v1.3, <b>Credit 12.3</b> ]	30E.6	Indoor Pollutants - Indoor Plants	1			Optional				Indoor plants are distributed across non-clinical floor areas. Include allowance for ongoing plant maintenance contract.
	[From Green Star Interiors v1.3, <b>Credit 13.1 INNOVATION</b> ]	30E.7	Indoor Pollutants - Mattresses	1		0	Optional	AWHS			All new mattresses installed emit a reduced amount of indoor pollutants (Greenguard emission criteria)
	[From Green Star Interiors v1.3, Credit 12 INNOVATION]	30E.8	Indoor Pollutants - Low VOC	1		0	Optional	ARCHI			50% of paints (by cost) have max VOC of 5g/L.
	[From Green Star Buildings v1.3, <b>Credit 14</b> ]	30E.9	Amenity and Comfort	1			Optional				Building includes one or several rooms designed to promote either inclusivity, mindfulness or exercise for staff or occupants. i.e. Parent room, relaxation/ meditation / prayer room; Exercise room. Calculated at 1m <sup>2</sup> per every 10 occupants or staff.
	[From Green Star Buildings v1.3, <b>Credit 28</b> ]	30E.10	Enjoyable Places	1			Optional				Deliver an Activation Strategy to facilitate initiation of placemaking activities.
	[From Green Star Buildings v1.3, <b>Credit 27</b> ]	30E.11	Movement and Place, credit achievement (offers up to 3 points)	1			Optional				Develop a Sustainable Transport Plan that encourages walking and walkability, public transport use, and reduced reliance on car travel.
	Biodiversity Enhancement (Green Star Buildings)	30E.12	Biodiversity Enhancement	1			Optional				The landscaping includes a diversity of species and prioritises the use of climate resilient and indigenous plants;
	Biodiversity Enhancement (Green Star Buildings)	30E.13	ecologist / landscape:	1			Optional				The project team develops a site-specific Biodiversity Management Plan and provides it to the building owner or building owner representative
	Biodiversity Enhancement (Green Star Buildings)	30E.14	landscape:	1			Optional				The landscaping includes critically endangered and/or endangered plant species
	Impacts to Nature (Green Star Buildings)	30E.15	Impacts to Nature	1			Optional				The building's design and construction conserves existing natural soil, hydrological flows and vegetation elements; and If deemed necessary by an Ecologist, at least 50% of existing site with high biodiversity value is retained.
<b>Total Line</b>				<b>10</b>	<b>0</b>	<b>0</b>					

**Project Score****63**

Appendix B List of sustainability initiatives

Refer to Section 4 of Albury Wodonga Regional Hospital Project Sustainability Strategy Rev 02 by Climatewise Design dated 27/06/2024

## Appendix C Climate Risk Assessment

Refer to Albury Hospital Redevelopment Climate Risk Assessment & Adaptation Plan Rev 01 by Climatewise Design dated 23/4/2024

Climate Hazard	Potential Risks
Ongoing increases in maximum temperatures. Modelling indicates daily maxima are likely to reach 50°C and beyond in inland NSW by 2040.	<ul style="list-style-type: none"> <li>Decreasing performance of mechanical equipment, in particular air conditioning.</li> <li>Degradation of building fabric including façade sealants.</li> <li>Heat stress to landscape, including loss of landscape.</li> <li>Heat stress for building users outdoors, reducing the safety of outdoor spaces, pedestrian connections and places of respite.</li> <li>High risk of heat-related illness, heat-stress and fatality during compound events such as high heat event combined with energy grid failure.</li> </ul>
Increased frequency of heat events (three or more days over 35°C), increased peak temperatures during heat events, and increased duration of heat events.	
Increased rainfall intensity	<ul style="list-style-type: none"> <li>Physical damage to assets, interruption of building functions and services.</li> <li>Physical risks posed to building users.</li> </ul>
Increased frequency of droughts	<ul style="list-style-type: none"> <li>Damage to building footings and structures.</li> <li>Loss of landscape.</li> </ul>

## Appendix D Climate Adaptation Plan

Refer to Albury Hospital Redevelopment Climate Risk Assessment & Adaptation Plan Rev 01 by Climatewise Design dated 23/4/2024

Climate Hazard	Adaptation Response	Adaptation (and Mitigation) Benefit
Increased peak heat & heat events	Building Thermal Load / Heat Reduction strategy, including upgrades to thermal insulation in building fabric, additional fixed external shading to facades and glazing	Improved thermal envelopes to buildings, reduced energy consumption, improved indoor thermal comfort for building occupants.
Increased peak heat & heat events	Campus Heat Resilience strategy to address outdoor heat risk. Outcomes include potential addition of indoor or controlled environment landscape within buildings.	Improved protection from heat in outdoor spaces Improved weather protection between buildings
Increased peak heat & heat events	Additional shade structures over roof areas, such as car park shading, solar panels, Agrivoltaics, green roofs.	Reduced heat load to buildings, reduced energy consumption. Potential to extend building fabric lifespan. Potential to support improved outdoor amenity and open space.
Increased heat & Rainfall intensity	Reduction of hard-paved surfaces throughout the campus	Reduced run-off volumes and intensity. Reduced heat island effect from radiant heat.
Increased heat & Rainfall intensity	Increased tree canopy and increased landscaped areas [a pre-requisite is a reliable irrigation water supply]	Increased urban shade which contributes to reduced heat island effect, supporting improved urban heat resilience and reduced air conditioning loads for buildings. Reduced stormwater runoff due to tree canopy rainwater retention.
Increased heat & Rainfall intensity	Measures may include green infrastructure such as green roofs, bio-swales, and raingardens.	Reduced run-off volumes and intensity. Reduced heat island effect from radiant heat. Improved open space and places of respite.
Increased Rainfall intensity	Additional rainwater harvesting and storage capacity, increased rainwater detention capacity through built and nature-based solutions.	Reduced stormwater runoff intensity and volume, reduced flood risk
Increased Rainfall intensity	Upgrades to roof drainage capacity including upgrade to or elimination of box gutters	Reduced risk of roof drainage blockage and/or overflow, reduced risk of roof leakage or collapse. Reduced roof maintenance costs.