Cardno

Rev: A1.4 Date: 10.Oct.18
Status: Preliminary
All services consultants shall comply with the Green Star requirements for the targeted points.

Green Star - Design & As Built Scorecard

Project: 1&2 Murray Rose Ave, Sydney Olympic Park NSW
Targeted Rating: 6 Stars - World Excellence

Core Points Available	Targetted Points
98	77.4

CATEGORY / CREDIT	AIM OF THE CREDIT / SELECTION	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED	ASSESSMENT COMMENTS
Management				14		
Green Star Accredited Professional	To recognise the appointment and active involvement of a Green Star Accredited Professional in order to ensure that the rating tool is applied effectively and as intended.	1.0	Accredited Professional	1	1	Contractually engage GSAP as part of the project team to provide advice and support on Green Star related matters at all stages of the project - Cardno will fufil this role
Commissioning and Tuning	To encourage and recognise commissioning, handover and tuning initiatives that ensure all building services operate to their full potential.	2.0	Environmental Performance Targets	-	Complies	Set environmental performance targets for the project and demonstrate compliance by developing a Design Intent Report OR an Owner's Project Requirements (OPR) document during design phase stage and outline at least the following items: • Description of the basic functions, operations, and maintenance of the nominated building systems • The targets for the project energy and water consumption and energy and water budgets for all nominated building systems. • Description of how energy, water, and aspects of indoor environment quality are metered and monitored. Including a meter diagram that illustrates how energy and water budgets are confirmed in operation
		2.1	Services and Maintainability Review	1	1	Carry out comprehensive services and maintainability review led by head contractor/ Owner's representative/ ICA during the design stage and prior to construction that addresses the folllowing aspects for all nominated building systems: • Commissionability • Controllability • Maintainability • Operability, including 'Fitness for Purpose' • Safety The review and outcomes shall be summarised in a 'Service and Maintainability Report'; signed and off by involved parties and incorporated in the Design Intent Report or OPR.
		2.2	Building Commissioning	1	1	Commissioning Specification detailing commissioning requirements for each system must include the following details and demonstrate compliance with relevant commissioning standard/ guide: • List the design parameters for each system • List the required commissioning activities • Define how each system is intended to operate • List the acceptable tolerances during commissioning • Indicate divisions of reponsibilities, pre-commissioning procedures commissioning requirements, witnessing requirements, phased completion requirements (if required), post-occupancy checks and any training requirement for the operator According to the Commissioning Specification, Commissioning Plan shall be developed to include at least the following and signed off by the designer, the head/ main contractor, the commissioning manager (or ICA) and the project manager (or owner's representative): • Objectives, or basis, of the design • Scope fo the commissioning plan • Commissioning team list, the individual responsibilities and interface matrix • General sequence of commissioning • Proposed commissioning procedures • Witnessing requirements • Commissioning program • Requirements for subcontractor commissioning manuals
		2.3	Building Systems Tuning	1	1	Owner/client's formal commitment to a tuning process for all nominated building systems that includes minimally quarterly adjustments and measurement for the first 12 months after occupation and a review of building system manufacturer warranties. Commitment can be included in Commissioning Plan OR provided as a separate document in accordance with the approved standard and guidelines: • Operating & Maintenance (O&M) manuals developed in accordance with approved standard and guidelines • Building tuning manual or plan • Confirmation of building tuning team • Owner has engaged parties to tune the system
		2.4	Independent Commissioning Agent	1	1	Client to separately engage an ICA to advise, monitor and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning and tuning phases. Compliance to requirement to be demonstrated via: • CV of the ICA detailing the qualifications and experience relevant to the project
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	A Climate Adaptation Plan would be required. It is assumed that major risks such as coastal erosion, sea level rises, flooding risk, severe thunderstorms and high winds etc. have been addressed as part of the design approach. Further treatment may be required as part of the design development stage should any high risks be identified as part of the Climate Adaptation Plan report.
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	Based on providing building information at project handover.
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	Strata management must commit to environmental performance targets for **common areas** and services through an internal requirement. Incorporate requirements into tenancy lease agreements and tenancy fitout guides for retail areas.
		5.2	End of Life Waste Performance	1	1	Strata management must commit to extending the life of the finishes to all **common areas** to at least 10 years. Incorporate requirements into tenancy lease agreements and tenancy fitout guides for retail spaces.
Metering and Monitoring	To recognise the implementation of effective energy and water metering and monitoring systems.	6.0	Metering	-	Complies	Individual apartment metering to be installed for energy and water.
		6.1	Monitoring Systems	1	1	Separate energy and water smart metering required for each apartment and retail tenancy and linked to a BMS system. Assumed 50% premium on smart meters (energy & water) for remaining apartments, approx. BMS integration and additional energy and water meters for large load items.
Responsible Building Practices	To reward projects that use best practice formal environmental management procedures during construction.	7.0	Environmental Management Plan	-	Complies	Based on good quality Head Contractor
		7.1	Formalised Environmental Management System	1	1	Contractor will need to be ISO14001 certified.
		7.2	High Quality Staff Support	1	1	Based on good quality Head Contractor that provides mental health support to staff and education of sustainable construction practices.
Operational Waste	Performance Pathway	8A	Performance Pathway - Specialist Plan	1	1	Design to include the following provision to achieve best practice outcomes in operational waste management: • Separation of waste streams --> Provide clearly marked bins/ storage containers throughout the building for general waste, paper and cardboard, glass, plastic and at least one other waste stream • Dedicated Waste Storage Area --> Provide at least one dedicated and adequately sized waste collection and storage area • Access to Waste Storage Area --> Waste storage area to be easily accessible with reference to third party best practice guidelines e.g. City of Sydney's Policy for Waste Minimisation in New Developments
Total				14	14	

Indoor Environment Quality						
				17		
Indoor Air Quality	To recognise projects that provide high air quality to occupants.	9.1	Ventilation System Attributes	1	1	Ductwork to be accessible and cleaned prior to occupation. Ventilation systems to be designed in accordance with ASHRAE 62.1:2013 with regards to minimum separation distances.
		9.2	Provision of Outdoor Air	2	1	Dificult to achieve for the residential component of the development. Would require increases in size of HVAC Systems, Fans, Risers etc
		9.3	Exhaust or Elimination of Pollutants	1	1	Individual kitchen and carpark exhaust has been provided as a separate riser up the building.
Acoustic Comfort	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	10.1	Internal Noise Levels	1	1	Initial Acoustic report recommends acoustic treatment to be incorporated in accordance with AS/NZ 2107:2016 standard. This is also in line with Green Star requirements. Consideration of construction noise for the remainder of the staged master plan is required to achieve the internal noise level targets.
		10.2	Reverberation	-		NA for residential apartments.
		10.3	Acoustic Separation	1	1	Demonstrate acoustic separation compliance to address noise transmission in enclosed spaces via either of these methods: • Partition between spaces constructed to achieve a weighted sound reduction index (Rw) of at least 45 • Sound insulation between enclosed spaces complies with Dw+LAeqT>75
Lighting Comfort	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	11.0	Minimum Lighting Comfort	-	Complies	Where lights in the nominated area are flicker-free and accurately address the perception of colour in the space
		11.1	General Illuminance and Glare Reduction	1	1	Lighting levels to comply with best practice for residential and retail developments.
		11.2	Surface Illuminance	1	1	At least one wall in each living space, kitchen and bedrooms are provided with at least one specific wall-washing or a wall mounted fitting. Surface illuminance will require additional requirements for the retail component. Likely to be achieved for typical light coloured surfaces in retail developments. Ceilings to have a reflectance of at least 0.75 and have an average surface illuminance of at least 30% of the lighting levels on the working plane (working plane to be defined.)
		11.3	Localised Lighting Control	1	1	Provision of sufficient power outlets for future task lights / lamps around the predicted furniture layouts and appropriate task lighting must be provided for kitchens, bathrooms, and service areas. Retail areas to have individual localised lighting control systems installed to demonstrate that occupants have the ability to control the lighting in their immediate environment, i.e. lights on and off and adjusting their light levels. Retail spaces could justify if had dimmable lighting for each tenancy. Minimal premium associated.
Visual Comfort	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	12.0	Glare Reduction	-	Complies	Demonstrate the reduction of glare in the nominated area from sunlight at all viewing façades through a combination of blinds, screens, fixed devices, or other means: • Fixed shading devices --> Design to shade from direct sunlight for 80% of the nominated occupied hours for each day of the winter and spring equinoxes and the summer and winter solstices, 1.5m in from the viewing facade • Blinds/ screens --> Provide glare reduction to ≥ 95% of the floor area --> Must be controlled by all affected occupants within each individual space --> Must have a VLT ≤ 10%
		12.1	Daylight	2	2	Demonstrate that nominated area received high levels of daylight during 80% of the nominated occupied hours via either of these options or combination of them: • Compliance using Daylight Autonomy (DA) - Achieve ≥ 160 lux based on DA simulation during 80% of the nominated occupied hours
		12.2	Views	1	1	Demonstrate ≥ 60% of the nominated area has a clear line-of-sight to a high quality internal or external view via manual calculation.
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	Demonstrate ≥ 95% of all internally applied paints, adhesives, sealants or carpets meet the max. total VOC limited specified.
		13.2	Engineered Wood Products	1	1	Demonstrate ≥ 95% of all engineered wood products: --> Meet the formaldehyde limits OR --> No new engineered wood products are used in the building
Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1	Thermal Comfort	1	1	7 Sar NatHERS - Additional insualtion and performacne Glazing
		14.2	Advanced Thermal Comfort	1		
Total				16	14	

Energy						
				22		
Greenhouse Gas Emissions	B. NatHERS Pathway	15A.0	Conditional Requirement: Prescriptive Pathway	-		
		15A.1	Building Envelope	-		
		15A.2	Glazing	-		
		15A.3	Lighting	-		
		15A.4	Ventilation and Air-conditioning	-		
		15A.5	Domestic Hot Water Systems	-		
		15A.6	Accredited Green Power	-		
		15B.0	Conditional Requirement: NatHERS Pathway	-	Complies	
		15B.1	NatHERS Pathway	16	8	Based on meeting conditional requirement for energy, i.e. 5.5 star NatHERS average, (project average intensity 92 MJ/m2). It is assumed that the residential spaces are currently designed to minimum code compliance under BASIX, for this Climate Zone this is equivalent to a circ 5 Star NatHERS Rating. As part of the project Green Star pathway we have considered improvements to the building's thermal performance of 7 Star NatHERS equivalent. Would likely be signifincat cost associated with improved thermal comfort - Double Glazing, good desig and insualtion throughout
		15C.0	Conditional Requirement: BASIX Pathway	-		Alternatively, the project team may select to target 8-10 credit points using the BASIX pathway
		15C.1	BASIX Pathway	-		
		15D.0	Conditional Requirement: NABERS Pathway	-		
		15D.1	NABERS Energy Commitment Agreement Pathway	-		
		15E.0	Conditional Requirement: Reference Building Pathway	-	Complies	
		15E.1	Comparison to a Reference Building Pathway	-		
Peak Electricity Demand Reduction	Performance Pathway	16A	Prescriptive Pathway - On-site Energy Generation	-		
		16B	Performance Pathway - Reference Building	2		At this stage, no points targeted, based on the meeting with SOPA
Total				18	8	

Transport					**10**	
Sustainable Transport	Performance Pathway	17A.1	Performance Pathway	10	7	Based on close proximity to surrounding urban hub town centres, including olympic park and related infrastrucuture. Points allocated by Sustainable Transport Calculator, where assumed 5km trip time and increased use of bicycle and walking.
		17B.1	Access by Public Transport	0		
		17B.2	Reduced Car Parking Provision	0		
		17B.3	Low Emission Vehicle Infrastructure	0		
		17B.4	Active Transport Facilities	0		
		17B.5	Walkable Neighbourhoods	0		
Total				**10**	**7**	
Water					**12**	
Potable Water	Performance Pathway	18A.1	Potable Water - Performance Pathway	12	7	Performace based on extensive use of Recycled Water for toilets and irrigation alongside highly efficient fistures and fittings.
		18B.1	Sanitary Fixture Efficiency	0		
		18B.2	Rainwater Reuse	0		
		18B.3	Heat Rejection	0		
		18B.4	Landscape Irrigation	0		
		18B.5	Fire System Test Water	0		
Total				**12**	**7**	
Materials					**14**	
Life Cycle Impacts	Performance Pathway - Life Cycle Assessment	19A.1	Comparative Life Cycle Assessment	6	4	There is potential to investigate LCA based credits (19.A.1 There may be the need to significantly up spec the current design scheme in order to obtain points under these credits. Further investigation is needed to understand the costs associated.
		19A.2	Additional Life Cycle Impact Reporting	4	2	Additional reporting metrics inprovement
		19B.1	Concrete	-		
		19B.2	Steel	-		
		19B.3	Building Reuse	-		
		19B.4	Structural Timber	-		
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	Structural and reinforcing steel supplier to be ISO 14001 certified, a member of the World Association's Climate Action Programme and demonstrates energy reduction in the processing of the product. Steel suppliers such as One Steel are compliant with this criterion.
		20.2	Timber Products	1	1	Potential to target Timber as part of the Green Star pathway. However, the building appears to include timber flooring to apartments, timber soffits and timber battens for shading. 95% of timber (including engineered wood products) would need to be PEFC/FSC certified with Chain of Custody. While not too difficult to achieve, a 20% premium on standard timber is anticipated to meet this credit.
		20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1	PVC to be Best Practice certified.
Sustainable Products	To encourage sustainability and transparency in product specification.	21.1	Product Transparency and Sustainability	3		Potential to target this credit if LCA credit (19A) is pursued with the approach to upgrade finishes as part of the project pathway.
Construction and Demolition Waste	Fixed Benchmark	22A	Fixed Benchmark	1	1	Additional reporting from a qualified waste contractor is required. Construction and demolition waste diversion from landfill in line with industry norm.
		22B	Percentage Benchmark			
Total				**14**	**10**	
Land Use & Ecology					**5**	
Ecological Value	To reward projects that improve the ecological value of their site.	23.0	Endangered, Threatened or Vulnerable Species	-	Complies	
		23.1	Ecological Value	3		Limited to the proposed development site area. With the significant percentage of hardstand added as part of the project, nil points are realised under the ecological value credit.
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	-	Complies	
		24.1	Reuse of Land	1	1	Potential to claim this credit under the definition of curtilage. We would need to confirm percentage of existing land at time of purchase was previously developed
		24.2	Contamination and Hazardous Materials	0		Contaminated Land Assessment of theOlympic Pak remediation
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	In order to meet the credit criteria, at least 75% of the site area is to comprise of building or landscaping elements that reduce the impact of the heat island effect. As there is a substantial component of hardstand in the proposed development, a white roof and landscaping scattered in the car parking etc. would unlikely achieve this result alone. Unshaded hardscaping elements with a three year SRI of minimum 34 or initial SRI of minimum 39 would be required for car parking and boardwalk areas (equivalent to a light grey-white colour). Nil premium is assumed to meet this credit.
Total				**5**	**2**	
Emissions					**5**	
Stormwater	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Stormwater Peak Discharge	1	1	Based on similar standards of Council requirements for stormwater. Likely to have improved post development stormwater peak discharge based on current design.
		26.2	Stormwater Pollution Targets	1	1	Olympic Park, Stormwater and Water Cycle Management Plan should confirm that the proposed treatment measures achieves compliance with column A of the credit criteria for one point. Confirmation of treatment to hydrocarbon and free oils required for uncovered areas in which vehicles are likely to transit or park.
Light Pollution	To reward projects that minimise light pollution.	27.0	Light Pollution to Neighbouring Bodies	-	Complies	
		27.1	Light Pollution to Night Sky	1	1	External luminaires to have an upward light output ratio (ULOR) <5%, i.e. no upward light from external lights. Relatively easy to achieve.
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	Assuming a waterless heat rejection system.
Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	29.0	Refrigerants Impacts	1		Unlikely to be achieved for the apartments.
Total				**5**	**4**	
Innovation					**10**	
Innovative Technology or Process	The project meets the aims of an existing credit using a technology or process that is considered innovative in Australia or the world.	30A	Innovative Technology or Process			
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		1	Demonstration that the proposed development is part of a larger masterplan and urban strategy creating sustianbility hub at Olympic Park
Improving on Green Star Benchmarks	The project has achieved full points in a Green Star credit and demonstrates a substantial improvement on the benchmark required to achieve full points.	30C	Improving on Green Star Benchmarks	10	3	Ultra Low VOC paint for 60% of paint installed. Approximate premium associated equivalent to 20% compared to standard paint products. A significnat stormwater improment innovation credits.

Minimum additional innovation points to be targeted (based on the meeting with SOPA): 2

- Re cycled water for toilet flushing,
- Sustainable Procurement
- Other opportunities

Innovation Challenge	Where the project addresses an sustainability issue not included within any of the Credits in the existing Green Star rating tools.	30D	Innovation Challenge		4
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 Green Star rating tools.	30E	Global Sustainability		
Total				**10**	**10**

TOTALS	AVAILABLE	TARGETED
CORE POINTS	98	68.0
CATEGORY PERCENTAGE SCORE		69.4
INNOVATION POINTS	10	8.0
TOTAL SCORE TARGETED		77.4

Financial Transparency - Nil cost associated

Affordabel Housing

High Performance Site Offices - Costs associated with providing an energy and water meters, low VOC paints, indoor plants.