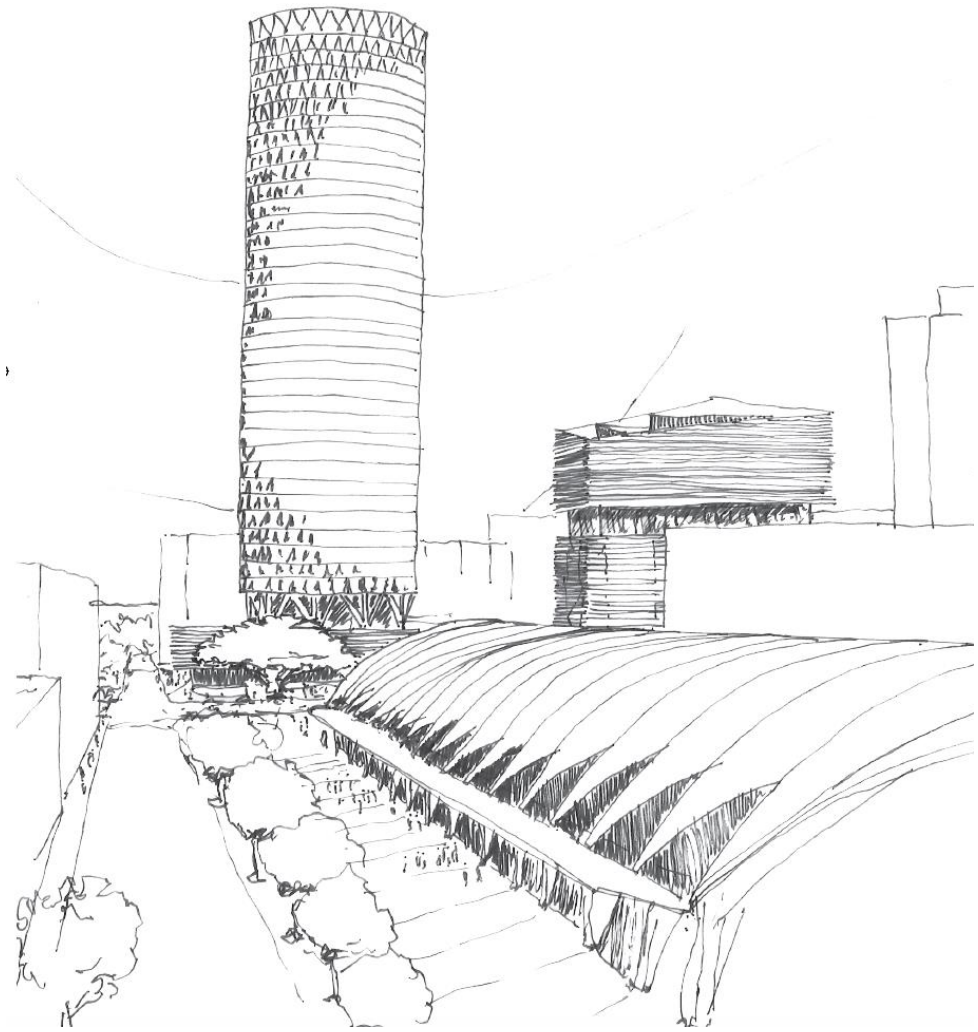

Image courtesy of Fitzpatrick + Partners

Sydney Olympic Park Site 2

Ecologically Sustainable Development (ESD) Statement

SEPTEMBER, 2022

atelier ten

Environmental Design Consultants
atelierten.com

PROJECT INFORMATION

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Contents

1.0 Introduction

1.1 Project Overview

Atelier Ten, a global consultancy of Ecologically Sustainable Development (ESD) consultants with an office in Sydney, has been engaged by the property developer Ecove to provide integrated sustainability consulting throughout the process of developing a pair of buildings on Site 2 at Sydney Olympic Park in NSW, Australia.

The SSDA seeks approval for construction and use of a mixed use (serviced apartment, commercial office and retail) development at Site 2, Sydney Olympic Park involving the following:

- Demolition of all existing improvements and structures on the site.
- Site preparation works including tree removal and excavation.
- Construction and use of three buildings including:
  - a 23-storey serviced apartment tower on Site 2A comprising:
    - Serviced Apartment rooms;
    - a podium containing a future retail/commercial/registered club use (subject to a separate approval); and
    - a two storey pavilion that connects to the 2A building at level 1 through a pedestrian bridge.
  - a 13-storey commercial office building on Site 2B with ground floor retail
  - a 5-storey pavilion on Site 2B.
- Construction of a six level basement accommodating:
  - Car parking spaces to service the development; and
  - bicycle parking spaces and end of trip facilities.
- Construction of an extension to Dawn Fraser Avenue and a service lane.
- Construction of a large activated public domain located in the frontage area between the proposed buildings and Australia Avenue.
- Extension and augmentation of services and utilities to the development as required.

Both buildings back up to a new service lane to the east, leaving generous forecourts facing Australia Avenue and Jacaranda Square beyond. The open area in front of Building 2A features a sunken garden around a large fig tree. The plaza in front of building 2B will be more urban, with a mix of hardscape and planting.

Mechanical systems (heating, cooling, and ventilation) in Building 2A will be separated between the serviced apartments and podium areas so that each stratum has its own equipment without encumbrances of shared systems. Building 2B will be served by a single set of mechanical systems. We understand that the recycled water from the WRAMS utility has no capacity for new connections, hence we will not connect to the facility on completion. The design enables future connection once WRAMS has the capacity.

The buildings are arranged such that the basement and Building 2A can be built in a first construction phase, while Building 2B can be built at a later stage if desired.

1.2 Project Sustainability Brief

Sensible, high value sustainable development principles are at the heart of the design proposals for Site 2.

Following on the commitments made by Ecove in its bid for the site, and enhanced by further design exploration, this project will be achieve the following key goals and objectives:

- Smart water management, with minimal potable water use
- Energy efficient operations, with capacity for on-site energy generation and storage
- Sustainable material and service procurement
- Sustainable procurement, material management, and low waste generation
- Transport options complementing rail and bus, extending usefulness of all modes
- Healthy environments, inside and across the public realm
- Resilient, adaptable public realm and buildings

The development team has committed to following the Precautionary Principle, namely that the development of Site 2 will avoid, where practical and verifiable, inflicting environmental damage as a consequence of the development process or from future operations of the developed site.

As a quality assurance measure to ensure that these goals and objectives are delivered, along with a broader sustainability program, Ecove are currently trying to achieve 5-star Green Star rating and a minimum 5 star NABERS Commitment Agreement for the commercial building and a 5-Star Green Star for the serviced apartments in accordance with the Green Building Council of Australia Green Star Design & As Built Guidelines, notwithstanding that mixed use developments in Sydney Olympic Park are subject to a 4-star Green Star requirement.

1.3 ESD Requirements:

This report has been written to address the following Sydney Olympic Park and State of NSW requirements for an Ecologically Sustainable Development (ESD) at Site 2. Table 1, below, lists the specific requirements addressed by this report, and notes where in the report each item is addressed.

Table 1: Sustainability reporting requirements

DOCUMENT	ITEM	REPORT RESPONSE SECTION
SEARS for Site 2A and 2B, Sydney Olympic Park, Key Issue 6: Ecologically Sustainable Development	The EIS shall: • detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) will be incorporated in the design, construction and ongoing operation phases of the development;	ALL
	• demonstrate how the proposed development responds to sustainable building principles and best practice, and improves environmental performance through energy efficient design, technology and renewable energy;	ALL
	• include a description of the measures that would be implemented to minimise consumption of resources, water and energy; and	7.0 (Materials) 6.0 (Water) 4.0 (Energy)
	• include details of how the proposal will achieve the Green Star requirements in section 4.2 of the Sydney Olympic Park Masterplan 2030 (2018 review).	14.0 Appendix B: Green Star pathways
Sydney Olympic Park Masterplan 2030 (2018 review), section 4.2	1) engage an ESD consultant as a core member of the project team	1.0
	2) connect all new development to Sydney Olympic Park's recycled water system for all approved uses of recycled water	6.2
	3) Prioritise sustainable materials selection, including sustainably sourced timber, low-emissions fibreboard, minimal chlorine-based products. All copper chrome and arsenic treated timber must be avoided.	7.2
	4) achieve minimum ratings set out in Table 4.1 Environmental Ratings. • Mixed Use development: 4 Star Green Star Design & As Built Site 2A & 2B is a 'mixed-use' service apartment and commercial building requiring a minimum of 4 Star Green Star requirement, but currently targeting 5 Star Green Star.	14.0 Appendix B: Green Star pathways
	5) All developments should consider the impacts resulting from climate change and include elements in building design and construction that specifically address these major impacts, consistent with guidance provided in the GBCA Green Star Design & As Built Guidelines.	2.2

NSW Environmental Planning and Assessment Regulation 2000, Schedule 2, Clause 7(4)	The principles of ecologically sustainable development are as follows: (a) the ***precautionary principle***, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by: (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and (ii) an assessment of the risk-weighted consequences of various options,	1.2
	(b) inter-generational equity, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,	10.2
	(c) conservation of biological diversity and ecological integrity, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,	7.2 8.2
	(d) improved valuation, pricing and incentive mechanisms, namely, that environmental factors should be included in the valuation of assets and services, such as: (i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste, (iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.	7.2

For clarity of reporting, the content of this report has been organised around the sustainable development categories in the Green Star Design & As Built green building rating tool: Sustainable Management, Indoor Environment Quality, Energy Efficiency, Transport, Water Efficiency, Materials, Land Use & Ecology, Emissions and Innovation. A further category has been added, entitled 'Connected Communities', to reflect the progressive social sustainability ambition of this project.

2.0 Sustainable Management

2.1 Sustainable Management Key Goals:

Objective:	Target:
Sustainability Benchmarking	• Achieve Green Star 5 Star, 'Australian Excellence' Office and Service Apartments
Best Practice Commissioning and Tuning	• Full compliance with Green Star Commissioning and Tuning requirements

Metering and Monitoring	• Best practice metering and monitoring provision in line with Green Star and NABERS requirements
Climate Adaptation and Resilience	• Incorporate measures for future resilience and adaptation to changing climate
Operational Waste	• Facilitate circular economy approach through adequate space provision for multiple waste recycling streams and coordination with locally available recyclable and compostable waste collection providers
Life Cycle Analysis	• Conduct a life cycle analysis of the materials to reduce building material and product material impacts across a range of categories

2.2 Design Proposals:

Whole Development:

2.2.1 The Green Star Design & As Built benchmarking tool will be used as a quality assurance methodology for the delivery of a development that represents 'Australian Excellence' in sustainability. A Green Star review has been carried out at this design stage to ensure that the design has potential for delivery of this ambition.

2.2.2 Buildings 2A and 2B will be rated independently of each other using Green Star, Both targeting a 5 Star rating. The basement facilities will be apportioned to each building using standard Green Star methodology for shared facilities.

2.2.3 The building will be designed and constructed with the end user tenancies in mind; to facilitate their ability to carefully manage energy and water consumption, minimising their running costs and environmental impact. During the design development stages, consultation will be held with future user group representatives. As part of this the design team will engage with users on the proposed building systems and their sustainable management and operation principles.

2.2.4 All key environmental building systems including indoor environmental quality, energy and water will follow Green Star best practice with regards to design, commissioning and testing, to ensure that the building is handed over to the end-users in line with design intent.

2.2.5 The commissioning process will be targeted to include air-pressure testing of typical floors of the building to target a minimum air-tightness target in line with Green Star standards to deliver improved energy efficiency and internal thermal comfort. High-quality building sealing will also contribute to improved acoustics and project wellness aspirations for achieving reduced infiltration of dust particles and air pollutants to the internal environment.

2.2.6 The project will employ submetering systems for each individual tenancy in line with NABERS Energy and Water reporting protocols so that tenants will be empowered with immediate information on energy and water consumption. Options for cost effective integration of smart energy management technologies for tenants will be explored in more detail in the design stages.

2.2.7 During the construction period the contractor will follow best practice and develop a site specific environmental management plan. Sufficient support will be given to the site team such that they are educated in sustainable construction methods and understand the performance quality aspects required for this project.

2.2.8 During building operation, waste-to-landfill will be minimised through the provision of recyclable waste, e-waste and non-recyclable waste storage, and exploring opportunities to separate organic waste streams. Space allocation for waste collection will be dependent upon the availability of consolidated precinct-wide waste management.

2.2.9 An initial Climate Change and Resilience Risk Review will be undertaken in the Design Development stage and this will be developed further through all design stages. The project team has already identified three key concerns: service apartment residents safely sheltering in place through extreme events, the effects of utility failure on basic operations of the service apartments, and the effects of heatwaves and droughts on pedestrian comfort and plant health in the public realm.

2.2.10 Carry out material life cycle analysis and report environmental impacts cross different categories to inform design.

Program Specific – *Strata Office:*

2.2.11 The strata offices component will be tracked against a NABERS Office Energy ratings, aiming for a minimum 5-star NABERS Energy rating through a Commitment Agreement. The building management system will provide a monitoring and reporting framework for the management of energy efficiency and reduced greenhouse gas emissions in keeping with NABERS protocols.

Program Specific – *Commercial Office:*

2.2.12 The commercial office component will be tracked against a NABERS Office Energy ratings, aiming for a minimum 5-star NABERS Energy rating through a Commitment Agreement. The building management system will provide a monitoring and reporting framework for the management of energy efficiency and reduced greenhouse gas emissions in keeping with NABERS protocols.

3.0 Health and Wellness

3.1 Health and Wellness Goals:

Objective:	Target:
Provide best practice Indoor Environmental Quality (IEQ)	• Achieve minimum 12/17 credits for Green Star IEQ section
Indoor Air Quality	• Indoor air quality to be provided at a best practice rate of 50% greater than required by AS1668 or CO_2 concentrations maintained below 800ppm
Visual Comfort	• Primary spaces that will receive high levels of daylight for at least 40% of the occupied office floor area and 50% of service apartment bedrooms • 80% of building areas will have views out
Thermal Comfort	• Mechanically ventilated spaces will be designed to achieve thermal comfort in line with ASHRAE best practice
Acoustic Comfort	• Achieve Green Star credits 10.1 Internal Noise Levels and 10.3 Acoustic Separation
Indoor Pollutants	• Occupant health will be safeguarded through specification of low VOC and low formaldehyde interior materials

3.2 Design Proposals:

Whole Development:

3.2.1 The building tower facades are going through an extensive design optimisation process to maximise their passive design benefits of good daylight provision, improved thermal comfort, reduced space conditioning energy use, and reduced peak power loads. Both building facades will incorporate external shading elements as a way to improve passive design performance and also create an elegant and appropriate architectural expression for this site.

3.2.2 In line with Green Star targets all regularly occupied spaces in the 2A tower and 80% of the tenancies in building 2B will aim to achieve a minimum of 2% daylight factor for a minimum of 40% of the primary occupied floor area. At least 60% of the primary occupied floor zones will achieve a high quality external view out.

3.2.3 Generally, outside air provision will be increased over the minimum requirement of AS 1668.4:2012, to ensure optimum indoor air quality in line with the best practices for indoor air quality. Subject to further cost review, internal CO_2 monitoring will be provided to all strata offices and service apartment rooms to ensure indoor CO_2 levels are maintained below a best practice threshold and allow for outside air reduction without compromising air quality during times of temperature extreme.

3.2.4 Artificial lighting design will complement natural daylight provision and will be designed to provide a high quality of general illuminance and be glare free in line with AS/NZS 1680.

3.2.5 In accordance with Green Star and NCC requirements, thermal comfort assessment will be carried during the design process and verified during commissioning to ensure that both buildings accord with best practice thermal comfort performance standards in regularly occupied zones.

3.2.6 In accordance with Green Star requirements, strata office spaces will achieve Green Star credits 10.1, for appropriate internal ambient noise levels, and 10.3 for minimal noise transfer between offices.

3.2.7 Internal fit-out materials specification will be reviewed in accordance with Green Star best practice to avoid internal off-gassing of pollutants, including volatile organic compounds (VOCs) and formaldehyde, that are detrimental to health and well-being.

4.0 Energy Efficiency and Operational Emissions Reductions

4.1 Energy Efficiency Key Goals:

Objective:	Target:
Building Fabric Performance	• Improve upon NCC building envelope performance requirements
NABERS Rating	• Minimum 5-star NABERS rating for strata offices & commercial office areas in the tower • Enable NABERS rating for the service apartments (serviced apartments rating)
Energy Efficient Operations	• Achieve a minimum of 3 points in Green Star for energy savings

4.2 Design Proposals:

Whole Development:

4.2.1 Reducing greenhouse gas emissions and on-going energy use are a key driver for this project. The approach is to firstly reduce energy demand through passive design measures wherever possible. The development is being designed using a “fabric first” approach that integrates passive design into the architecture – especially the in shading the building envelopes – to ensure that space conditioning and lighting energy needs are minimised.

4.2.2 Energy efficient building systems have been selected for both buildings, including:

- High efficiency fan coils with variable speed fans will provide space heating and cooling
- Tempered outdoor air will be provided mechanically to all spaces, with volume controlled by CO2 sensors to reduce fan energy and air conditioning energy
- High efficiency chillers and condensing boilers
- A heat reclaim chiller for the service apartments to provide domestic hot water preheating is being considered
- LED lighting with daylight and vacancy controls

4.2.3 Building services that minimise peak power loads on the electricity network are being considered, including:

- Thermal storage that allows generation of chilled water at night
- Integrated thermal mass through building structure or phase change materials in finishes to minimise peak loads

5.0 Sustainable Transport

5.1 Sustainable Transport Key Goals:

Objective:	Target:
Support active modes of transportation	• Bicycle storage racks for occupants and visitors, together with end-of-trip facilities, to be provided in line with Green Star requirements as a minimum
Prioritise low emissions vehicle spaces	• Parking spaces closest to building entrances will be reserved for low-emissions vehicles, increasing visibility and incentivisation.

5.2 Design Proposals:

Whole Development:

5.2.1 Site location offers good public transport connections and is located in a walkable neighbourhood with good pedestrian and cycleway links to surrounding parks, the Parramatta River, and neighbouring communities.

5.2.2 The development will meet at a minimum the Green Star requirements for bicycle storage capacity, based on needs for office occupancy and staff of serviced apartments (not including guests).

5.2.3 The project will be designed to provide easy, safe linkage from the bicycle parking and end-of trip facilities to surrounding bicycle routes.

5.2.4 Designated car share spaces will be provided either in the parking garage or, subject to discussions with authorities, in more visible on-street parking spots.

5.2.5 Infrastructure for electric vehicle charging will explored for provision in select parking bays. Site electrical supply constraints may limit expansion of any electric vehicle infrastructure, though where viable it will be pursued.

6.0 Water Efficiency

6.1 Water Efficiency Key Goals:

Objective:	Target:
Reduce potable water consumption	• Implement a holistic water management strategy across all building programs to reduce potable water consumption in line with Green Star water efficiency targets
Future connection to recycled water provided for all non-potable needs	• Current WRAMS system is at maximum capacity, hence future recycled water connection is enabled when WRAMS capacity is upgraded.

6.2 Design Proposals:

Whole Development:

6.2.1 Generally, across the whole development, water conservation considerations include fixtures and fittings selected for high WELS ratings as appropriate to minimise water consumption

6.2.2 WCs throughout the development will be specified as dual flush type, with efficient average flush capacity

6.2.3 Sub-metering of water use will be provided to each strata or tenant, where the strata or tenant is provided water. Metering will be in accordance with relevant NABERS protocols for Office or Serviced Apartments to suit end use.

6.2.4 The development will be plumbed with a recycled water supply to the following SOPA approved end uses of recycled water:

- Cooling towers
- Irrigation
- Fire systems
- Site wash-down hose bibs

7.0 Materials and Embodied Carbon Reductions

7.1 Materials Key Goals:

Objective:	Target:
Reduced embodied carbon of building development	• Mass timber structure for Building 2B • Explore opportunities to use low carbon cements and pozzolans in concrete, specify low embodied carbon products for major trade packages
Responsibly and sustainably sourced building materials	• Major materials and products will be responsibly sourced for low environmental impact with third-party accreditation
Targeted reduction in construction materials waste sent to landfill	• Waste sent to landfill <10kg/m^2 in line with Green Star best practice
Enable comprehensive operational waste recycling, including composting of organic wastes	• Divert as much waste as possible from landfill, including organic waste diversion to composting programs run by partners

7.2 Design Proposals:

Whole Development:

7.2.1 Subject to confirmation in the next design stage, it is intended that the project will pursue a low embodied carbon development strategy.
7.2.2 Low embodied carbon materials will be used in Building 2B, displacing high carbon structural materials.
7.2.3 Subject to supply availability, concretes will be specified that incorporate alternative low-carbon cements and cementitious materials reclaimed from waste streams; these may include geopolymers, ground granulated blast furnace slag or fly ash. The team will also pursue recycled aggregates to minimise demand of virgin materials and reduce CO_2 emissions.
7.2.4 Preference will be given to other major products and materials with embodied carbon rates lower than industry standards.
7.2.5 All materials selection and sourcing within the development will be undertaken with the principles of sustainable development in mind. The two key principles will be for the selection of products and materials with lower life-cycle impact and to target a reduction in waste to landfill compared to typical practice.
7.2.6 As possible, water used in concrete will be from captured or reclaimed sources.
7.2.7 Opportunities for refinement of structural design to minimise concrete and steel usage will be explored in the next design stage.
7.2.8 Subject to supply availability, structural steel will be sourced from a certified Responsible Steel Maker with as high a recycled content as possible.
7.2.9 All timber products will be specified to come from certified sustainably managed sources.
7.2.10 Subject to product availability, products with chlorine-based materials (PVC, for example) will be avoided.

7.2.11 All timber products will be specified to be free of copper chrome and arsenic treatments, including timber used in formwork or other temporary applications.
7.2.12 Generally, where possible, materials will be selected to meet Green Star product transparency and sustainability requirements with third-party supply chain certification.
7.2.13 On-site construction waste minimisation will be targeted in line with Green Star best practice and where appropriate off-site pre-fabricated components will be considered.
7.2.14 Construction waste landfill diversion of a minimum of 90% will be specified for all construction stages.

8.0 Land Use & Ecology

8.1 Land Use & Ecology Key Goals:

Objective:	Target:
Improved Ecological Value	• Enhance ecological value of the site through increased greening over public realm and rooftop levels. Use appropriate native, drought tolerant species.
Mitigate Heat Island Effect	• Contribute to reduced urban heat island effect through increased tree canopy, soft landscaping and high SRI surfaces and finishes.

8.2 Design Proposals:

Whole Development:

8.2.1 Noting that the public realm needs to accommodate substantial pedestrian movements, the development will work to introduce planted landscapes into the public realm in front of both Building 2A and Building 2B, and along Murray Rose, Dawn Fraser, and Parkview Drive.
8.2.2 A vegetated sunken garden around the fig tree at the corner of Murray Rose and Australia Avenues will include substantial planted areas.
8.2.3 All species will be selected to be drought tolerant to minimise irrigation requirements. The team will aim to include a significant percentage of native species from SE Australia and ecologically appropriate planting to contribute towards creating a net increase of urban biodiversity.
8.2.4 Irrigation systems will be designed to incorporate monitoring devices to detect sub-soil moisture, weather and other environmental data to efficiently control irrigation regimes
8.2.5 Ground level public realm and roofscapes without vegetation will be designed to achieve a high solar reflective index (SRI) to minimise urban heat island effect where this aligns with SOP public realm plans and does not reduce visual comfort.

9.0 Pollution Emissions

9.1 Pollution Emissions Key Goals:

Objective:	Target:
Storm water retention and treatment	• Reduce peak outflows and meet all regional stormwater quality objectives
Microbial Control	• Best practice measures to reduce legionella risk in water cooling and domestic hot water systems throughout the development
Reduced refrigerant impacts	• Zero ozone depletion potential (ODP) and low global warning potential (GWP) refrigerants specified in line with Green Star best practice

9.2 Design Proposals:

Whole Development:

The development will make a significant improvement upon peak stormwater outflow and water quality compared to the current site condition

10.2.1 Generally, all heat rejection and domestic hot water systems will be designed to accord with best practice for the minimisation of microbial growth and associated risks to human health.

10.2.2 Chiller plant and all refrigeration systems in the base buildings will be selected on the basis of minimising environmental impacts through the selection of low ozone depletion potential (low ODP) and low global warming potential (low GWP) refrigerants and through implementing leak detection and management measures.

10.0 Connected Communities

10.1 Innovation Key Goals:

Objective:	Target:
Activated engagement with Jacaranda Square and rail station corridor	• Street level retail and public realm amenities
Extended hours activity	• Club events and amenities encourage extended daily life in the Precinct
Inclusive, Universal Design	• Provide Universal Access throughout development
Smart community	• Implement a Smart Community strategy for improved social cohesion, environmental and economic benefits

10.2 Design Proposals:

Whole Development:

10.2.1 The redevelopment aims to participate in a larger, more active, and better connected public realm along the Olympic Park Station and Jacaranda Square corridor.

10.2.2 A mix of registered club, retail, and food and beverage outlets will extend the hours of activation of this Site and this end of the central Station and Park corridor.

10.2.3 The project will be designed for all ages and abilities, aiming to meet best practice Universal Access principles.

10.2.4 The project is considering implementing inclusive, non-gendered toilet facilities for Building 2B.

11.0 Innovation

11.1 Innovation Key Goals:

Objective:	Target:
Innovation in sustainable design	• Target at least 7 Green Star innovation credits
Living Lab enabling	• Include systems that enable the development to host in situ research and continuous learning

11.2 Design Proposals:

Whole Development:

11.2.1 As part of the Green Star 5 Star accreditation pathways at least 8 sustainable design and construction innovation measures will be pursued. These potential innovation areas are focused on bringing improvements upon standard Green Star benchmarks, innovation based on implementing measures from other leading global sustainability benchmarks such as the WELL Building Standard and meeting a number of the pre-defined Innovation Challenges or potentially defining some bespoke innovation measures for this project.

11.2.2 Since health and wellness is a core project value, the project will target enhancements to indoor and outdoor spaces that bring health, comfort and wellness benefits to occupants. The project will innovate through targeting a number of key value-add measures from the WELL Building Standard v2.0.

12.0 References

This report has been compiled based on discussion with the client and design team and through the review of the following information:

1. Sydney Olympic Park Master Plan 2030 (2018 Review)
2. SEARS for Site 2A and 2B, Sydney Olympic Park (SSD 9383)
3. NSW Environmental Planning and Assessment Regulation 2000, Schedule 2, Clause 7(4)
4. Green Star Design & As-Built v1.2
5. WELL Building Standard v2.0

13.0 Appendix – Evidence of Green Star Application

Green Star project profiles have been established with the GBCA and the below reference numbers have been provided:

1. SOPA Site 2 Building 2A - GS-4605DA.
2. SOPA Site 2 Building 2B - GS-4643DA.

14.0 Appendix B –Green Star Pathways

Appended to this report are pathways to 5 Star Green Star Design & As Built ratings for the two separate Green Star projects:

1. SOPA Site 2 Building 2A
2. SOPA Site 2 Building 2B

Pathways at this stage of design development are indicative and subject to change as detailed design is progressed with the design team. Accordingly, Atelier Ten have ensured to communicate cost of pursuing certain credits and also include a reasonable buffer to ensure the project achieves 5 star rating.

		Green Star Design & As					**1.3**			**CONCEPT APPRAISAL_v01.2**	
		1180.3 - COMBINED RATING								**Monday, 29 August 2022**	
		Achievability					**Four Star** 45 to 59 points **Five Star** 60 to 74 points **Six Star** 75 or more points				
		Yes	Med	Low	No	Total	Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.				
11	$ 390,000	52	5	2	0	60.4	**Projected Points**				
100%	$ 1	90%	60%	10%	0%		% prob				
11	$ 390,000	58	9	17	25	108	Subtotals				
Stretch	Cost	Yes	Med	Low	No	Poss-ible					
0	$ -	13	0	0	1	14	**Management**			**Explanation**	**Comments**
		1				1	Green Star Accredited Professional	1.1	Accredited Professional	Green Star Accredited Professional active in all stages of project.	Achieved
		Y	-	-	-	-	Commissioning and Tuning	2.0	Environmental Performance Targets	Establish and documented project evironmental performance targets	This is to be set out in the Owners Project Requirements. Target Energy and Water consumption. Monitoring of Enery, Water, IEQ. NABERS Targets to be established. In DD
		1				1		2.1	Services and Maintainability Review	Perform comprehensive design review of services, maintainability, etc	Contractors may engage a specialist consultant to lead this.
		1				1		2.2	Building Commissioning	Comprehensively pre-commission and commission nominated building systems	Best Practice, requires a building air tightness blower door test
		1				1		2.3	Building Systems Tuning	Commit to perform building systems tuning for no less than one year after occupancy	12 month tuning period. Insert in contract
					1	1		2.4	Independent Commissioning Agent	Engage independent Commissioning Agent to oversee commissioning process	Engage Specialist ICA. Added Cost.
		2				2	Adaptation and Resilience	3.0	Climate Adaptation Plan	A project specific climate adaptation plan has been developed in accordance with a recognized standard	Engage Consultant. Added Cost.
		1				1	Building Information	4.1	Building Information	Make current building user information is available to all relevant stakeholders	Best Practice
		1				1	Commitment to Performance	5.1	Environmental Building Reporting	Commit to reporting building environmental performance metrics over two years;	A10 issued excerpt Requires participation of Hotel & Club
		1				1		5.2	End of Life Waste Management	Commit to measurably reducing construction waste building upgrades and tenant end of Building	A10 issued excerpt Requires participation of Hotel & Club What will GBCA accept for 99yr leasehold on club, operators. Single commitment to first fitout? Letter from ultimate owners would be acceptable to dooleys
		Y	-	-	-	-	Metering and Monitoring	6.0	Metering Strategy	Provide water and energy meters for all major end users or uses	Each tenant shall be seperately submetered for energy and water.
		1				1		6.1	Monitoring Strategy	Provide monitoring strategy to capture and process metered energy and water use	BMS or other central monitoring system.
		Y	-	-	-	-	Construction Environmental Management	7.0	Environmental Management Plan	Comprehensive Environmental Management Plan in place for construction	Contractor Best Practice
		1				1		7.1	Formalised Environmental Management System	Environmental Management System from EMP used through all stages of design and construction	Contractor Best Practice
		1				1		7.2	High Quality Staff Support	Staff support practices are in place that; promote positive mental and phyisical health and knowledge of sustainable practices	Contractor Best Practice
		1				1	Operational Waste	8.1	Waste in Operations	Provide facilities to collect, process, and store multiple waste streams	OWMP provided by Elephants Foot demonstrates compliance. Ensure design meets this OWMP
Hi	Hi	Hi	Med	Low	No	Poss-ible					
1	$ 40,000	14	1	1	1	17	**Indoor Environment Quality**			**Explanation**	**Comments**
		1				1	Quality of Indoor Air	9.1	Ventilation System Attributes	Outdoor pollutants mitigated; ventilation system designed for cleaning + maintenance; ventilation system cleaned prior to use	Best Practice.
		1		1		2		9.2	Provision of Outside Air	Provide 50-100% additional outdoor air, or maintain CO2 levels at 800-700 PPM. Natural ventilation spaces must comply with AS1668.2 for 2 pts	Check with Mechanical 30L/s per hotel room incumbent Ilina to confirm can we get two points across building
		1				1		9.3	Exhaust or Elimination of Pollutants	Direct exhaust kitchens, photocopier areas, other pollution point source zones	Comply with 3.3.1(b) of As 1668.2:2012 for residential cooktops: Electric cooktops exceeding 8kW must be exhausted, or filtered in rangehood. Filtration is Carbon Filter or other proven method
		1				1	Acoustic Comfort	10.0	Internal Noise Levels	Internal ambient noise levels, including outside and building systems sources, are suitable for activities	
		1				1		10.1	Reverberation	Reverberation levels meet AS/NZ 2107:200 Reverberation Time tables	Achievable in rooms and workspaces. Club and restaurant unlikely to comply, but we can apply for exemption to spaces that are not acoustically sensitive (i.e. hospitality spaces)
		1				1		10.2	Acoustic Separation	Reduce crosstalk between nominated spaces to weighted sound reduction index (Rw) of 45	Rooms are isolated, club can approach suitably for meeting and office spaces
		Y	-	-	-	-	Lighting Comfort	11.0	Minimum Lighting Comfort	Flicker free and high color rendition lighting	Technically flicker free is difficult or impossible for LEDs which are being dimmed, but likely this just relates to perception of flicker
		1				1		11.1	General Illuminance and Glare Reduction	Lighting levels and quality comply with best practice; glare is eliminated. 'Illuminance levels per AS 1660.1 Table 3.1 - HR to describe appropriate levels Lighting designer to ensure compliance with AS 1680.1 Part 8.3 (proscriptive glare requirements)	Requires input of lighting designer, detailed calculations for glare

atelier ten

		Green Star Design & As				
		1180.3 - COMBINED RATING				
		Achievability				
		Yes	Med	Low	No	Total
11	$ 390,000	52	5	2	0	60.4
1	$ 40,000		1			1
		1				1
		Y	-	-	-	-
		2				2
		1				1
		1				1
		1				1
		1				1
					1	1
Hi	Hi	Hi	Med	Low	No	Possible
2	$ 200,000	7	2	7	6	22
						-
						-
						-
						-
						-
			-	-		-
						-
		Y	-	-		-
2	$ 200,000	6		4	1	20
					5.0	9
				1		1
			2			2
				1		1
						-
		1		1		2
Hi	Hi	Hi	Med	Low	No	Poss-ible
0	$ -	5	1	1	3	10
					3	10
		1	1	1		3
		1				1
		1				1

1.3	CONCEPT APPRAISAL_v01.2
	Monday, 29 August 2022

Four Star 45 to 59 points Five Star 60 to 74 points Six Star 75 or more points
Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Projected Points

Lighting Comfort	11.2	Surface Illuminance	Improve lighting uniformity through fixture type and surface properties. Residential - Include ONE wall-washing fitting per room. ELSE. Ceiling surface reflectance minimum 75%, with 30% of light projected upward.	One wall washing fitting per living room, kitchen and bedroom - review for cost impact. 1x gimble fitting per space, @ +$10-20 / fitting
	11.3	Localised control	Occupants provided individual control of lighting	Achievable in rooms, more difficult in office areas. Fitout. activity based working, or task lighting
Visual Comfort	12.0	Glare Reduction	Fixed shades or blinds minimize direct sunlight into building	Fixed shades need to prevent direct sun from entering space more than 1.5m for more than 80% of nominated hours. This is unlikely, as nominated hours include early mornings and late afternoons. Argue this is to be exempted for residential type uses. Residential types are exempt where occupants are expected to install their own blinds
	12.1	Daylight	40% / 60% of nominated area receives high daylight levels during 80% of day	Achievable to all spaces, except for serviced apartment wintergarden bedrooms (exempt) and possibly central club areas.
	12.2	Views	Direct line of sight to high quality internal or external views	
Reduced Exposure to Pollutants	13.1	Paints, adhesives, sealants and carpets	Internally applied products meet stipulated VOC limits	Best Practice
	13.2	Engineered wood products	95% of products meet stipulated formaldehyde limits	joinery, fitout products may be challenging.
Thermal Comfort	14.1.2B	Thermal Comfort - Mechanical Performance	For 95% of nominated space, 98% of year, achieve 80% Acceptability in ASHRAE 55, OR PMV between +1 and -1; OR NatHERS 7 Star	A10 early modelling suggests not available.
	14.2	Advanced Thermal Comfort	For 95% of nominated space, 98% of year, achieve 90% Acceptability in ASHRAE 55, OR PMV between +0.5 and -0.5; OR NatHERS 8 Star	Humidity control required on outside air, possibly solar control blinds on some facades.

Energy

			Explanation	Comments
Greenhouse Gas Emissions	15A.1	Domestic Hot Water	DHW provided by low emissions or renewable energy sources (inc. gas, solar hot water)	
	15A.2	Lighting	Lighting more than 15% under BCA (4.5W/m2)	
	15A.3	Equipment		
	15A.4	Air Conditinoing		
	15A.5	Green Power		
	15D.0	Conditional Requirement: NABERS Pathway	Meet DTS energy efficiency requirements -- OR -- NABERS Energy Commitment Agreement for a minimum of 4.5 Stars.	
	15D.1	NABERS Energy Commitment Agreement Pathway	Reduction of greenhouse gas emissions compared to NABERS 4.5-star baseline Building. 2pts = 10% ghg reduction. 'Use Green Star - Interiors Greenhouse Gas Emissions Calculator	
	15E.0	Conditional Requirement: Reference Building Pathway		
	15E.1	Comparison to a Reference Building Pathway	Net zero emissions for 20pts	
	15E.2	Off site renewables	Procure 100% offsite renewable energy for 10 years from PC. 1.5pts for every 1pt achieved in 15D.1 up to 20 pts.	
	15E.3	Transition plan	Public commitment to a transition away from fossil fuels by 2030. Transition plan is integrated into building O&Ms and replacement schedules.	Requires public commitment to 100% renewable energy purchase from 2030 onwards.
	15E.4	Fuel Switching	No fossil fuels are burned on site to generate electricity, heating or cooling. Cooking and emergency generators can be offset with RECs for 10 years.	
	15E.5	On site storage	Battery storage is provided, sized to add value and store surplus of onsite renewable energy. Stored energy is used to reduce peak electricity demand.	A substantial battery would be required - minimum 100kWh. (7 new Tesla Powerwalls!) Given the scale of the buildings, the credit requirements would drive a battery more like 1000kWh
Peak Electricity Demand Reduction	16E.0	Prescriptive Pathway - On-site Energy Generation		
	16E.1	Performance Pathway - Reference Building		

Transport

			Explanation	Comments
	17A.0	Travel Emissions Calculator	Reduce parking, make walkable, support transit, support active modes of transportation	If GBCA does not consider the metro (likely) this pathway can be used to model emissions reduction through transport initiatives, including future public transport.
Sustainable Transport	17B.1	Access by Public Transport	Accessibility of the site by public transport. The points score is determined by completing the *Access by Public Transport Calculator*	Does GBCA consider the Metro? Calculator is performed by GBCA, registration and a query required
	17B.2	Reduced Car Parking Provision	Reducing number of car parks from allowable in planning provision	Parking rate table required as documentary evidence
	17B.3	Low Emission Vehicle Infrastructure	Parking spaces and/or dedicated infrastructure is provided to support the uptake of low-emission vehicles	For discussion. 5% of parks are for Evs with Chargers. (4x) OR, 15% parks dedicated to hybrids/Evs (no chargers)

11	$ 390,000

Green Star Design & As

1180.3 - COMBINED RATING

Achievability				
Yes	Med	Low	No	Total
52	5	2	0	60.4
1				1
1				1

1.3

CONCEPT APPRAISAL_v01.2

Monday, 29 August 2022

Four Star 45 to 59 points **Five Star** 60 to 74 points **Six Star** 75 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Projected Points

17B.4	Active Transport Facilities	Bicycle parking and associated facilities are provided to a proportion of regular occupants and visitors	EOTs not required for serviced apartment or hotel guests.
17B.5	Walkable Neighbourhoods	Walk Score of at least 80 as determined by the website www.walkscore.com. OR the project is located so that at least eight (8) amenities are within 400m of the project.	Accurate walkscore is not available for this site. Manual method for 8 amenities within 400m to be used

		Green Star Design & As					1.3			CONCEPT APPRAISAL_v01.2	
		1180.3 - COMBINED RATING								Monday, 29 August 2022	
		Achievability					Four Star 45 to 59 points Five Star 60 to 74 points Six Star 75 or more points				
		Yes	Med	Low	No	Total	Achievability rating: Hi = 90%, Med = 60%, Low = 10%, NP = not possible.				
11	$ 390,000	52	5	2	0	60.4					

Projected Points

Hi	Hi	Hi	Med	Low	No	Poss-ible					
2	$ -	0.2	1.6	2.6	7.6	12	**Water**			**Explanation**	**Comments**
2	$ -	0.2	1.6	2.6	7.6	12	**Potable Water**	18A	Reference Building Model	12pts requires 100% potable water produced on site	A10 to provide water modelling
			X			1		18B.1	Sanitary Fixture Efficiency	Taps, Urinals, Toilets and Showers are within 1 star of WELS rated 6, 6, 5 and 3 stars respectively	Toilets using recycled water
					X	1		18B.2	Rainwater Reuse	Rainwater tank is installed to collect and reuse rainwater at a ratio of 10 L/m2	No tanks required as WRAMS water is used
X	X	X				2		18B.3	Heat Rejection	2pts where no potable water is used for heat rejection	Uses recycled water
X	X	X				1		18B.4	Landscape Irrigation	Drip irrigation with moisture sensor override is installed, or where no potable water is used for irrigation	Uses recycled water
			X			1		18B.5	Fire System Test Water	Test system does not expell water, or stores 80% of routine test water for reuse onsite	TANKS ARE SUFFICIENT. Brigade being approached to use WRAMS

Hi	Hi	Hi	Med	Low	No	Poss-ible					
5	$ 140,000	6	1	1	6	14	**Materials**			**Explanation**	**Comments**
2	$ 100,000					4	**Life Cycle Impacts**	19.A.1	Comparative Life Cycle Assessment	Reduce building material and product environmental impacts across a range of categories through LCA or prescriptive pathways	Additional consultant required for this pathway, more points available, 4-6 points, consultant fee ~$25k per site
3	$ 40,000					3		19.A.2	Additional Life Cycle Impact Reporting	Report environmental impacts across five additional categories	
		1	1		1	3		19B.1	Concrete	Portland cement content is reduced by 20% 1pt, or 40% 2pts. Water reduction 0.5pts, Aggregates reduction 0.5pts	Recycled water + recycled aggregate
		1				1		19B.2	Steel	5% reduction in steel use compared to reference building	PT used
						4		19B.3	Building Reuse	2pts Façade reuse - 80% by area 2pts Structure reuse - 60% by mass	
					3	3		19B.4	Structural Timber	3pts for 90% of building structure is timber	Achievable for 2B
		1				1	**Responsible Building Materials**	20.1	Structural and Reinforcing Steel	60% of steel (by mass) from responsible manufacturers	Achievable with Australian steel suppliers and manufacturers
		1				1		20.2	Timber	95% of timber (by cost) from sustainable sources	Best Practice - generally formwork all plantation
		1				1		20.3	Cables, pipes, floors and blinds	90% (by cost) of cables, pipes, floors, blinds either PVC free or meet Best Practice Guidelines	Best Practice - INTRAX TO PROVIDE COST RISK INFO
				1	2	3	**Sustainable Products**	21.1	Sustainable Products	3, 6, 9% products are recycled, reused, third-party certified, come with EPDs, or through stewardship programs	
						-	**Construction and Demolition Waste**	22A	Fixed Benchmark	<2.5 kg/m2 = 3pts, <3.5 kg/m2 = 1.5pts,	
		1				1		22B	Percentage Benchmark	at least 90% of the waste generated during construction and demolition has been diverted from landfill	Best practice contractor

Hi	Hi	Hi	Med	Low	No	Poss-ible					
0	$ -	2	1	2	0	6	**Land Use & Ecology**			**Explanation**	**Comments**
		Yes				-	**Ecological Value**	23.0	Endangered, Threatened or Vulnerable Species	demonstrate that no endangered or vulnerable species, or ecological communities were present on the site	
		1		2		3		23.1	Ecological Value	the ecological value of the site is improved by the project	high scores required considerable revegetation, limited landscaping proposed ARCADIA
		Yes				-	**Sustainable Sites**	24.0	Conditional Requirement **Mandatory Requirement**	project site did not contain prime agricultural land, wetland, or impact 'Matters of National Significance'	
		1				1		24.1	Reuse of Land	75% of the site was previously developed land at the date of site purchase or, for previously owned land	
						N/A		24.2	Contamination and Hazardous Materials	the site, or an existing building, was previously contaminated and the site has been remediated	Asphault is a hydrocarbon - needs to be correctly remediated.
			1			1	**Heat Island Effect**	25.0	Heat Island Effect Reduction	75% of the total project site area comprises elements that reduce the impact of the heat island effect	dependent on roofing and hardscape finish. Glare control issues, add shade don't make surfaces white. Important for summer quality of outdoor space. Exclude the roads running across site ARCADIA's PROVIDER FOLLOWING UP

[redacted]	**Green Star Design & As** **1180.3 - COMBINED RATING**	**1.3**	**CONCEPT APPRAISAL_v01.2** **Monday, 29 August 2022**

Achievability

Four Star 45 to 59 points **Five Star** 60 to 74 points **Six Star** 75 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

		Yes	Med	Low	No	Total	
11	$ 390,000	52	5	2	0	60.4	**Projected Points**

Hi	Hi	Hi	Med	Low	No	Poss-ible					
1	$ 10,000	2	1	1	0	4	**Emissions**			**Explanation**	**Comments**
				1		1	Stormwater	26.0	Stormwater Peak Discharge	Post-development peak ARI event discharge does not exceed the pre-development peak ARI event discharge.	
						N/A		26.1	Stormwater Pollution Targets	All stormwater discharged from site meets specified pollution reduction targets	PRECINCT OSD. Approach BDM for both of these credits.
		Y	-	-	-	-	Light Pollution	27.0	Light Pollution to Neighbouring Properties	Outdoor lighting complies with AS 4282:1997	Comply with new standard 2019 for 3% ULOR.
		1				1		27.1	Light Pollution to Night Sky	Minmize upward light OR Minimize light tresspass skyward and across project boundary	The hotel has façade lighting, but will be downlighting. It also has an illuminated sign. It also lights the crown of the building, but through downlights Signage around site will be most difficult
		1				1	Microbial Control	28.1	Microbial Control	Building is naturally ventilated OR use waterless heat re-jection OR building heat rejection systems include control measures for Legionella	Dry cooler for hotel. Watercooled for SA Club watercooled separate
1	$ 10,000		1			1	Refrigerant Impacts	29.1	Refrigerant Impacts	Minimize environmental impacts of refrigerants by chosing low ODP and GWP refrgerants and implementing leak detection measures	Watercooled FCUs, incumbent chillers generally use R-124a (1300 GWP). VRFs to the Pavillion Illina investigating HFO R-1233zdE (4.5 GWP)

Hi	Hi	Hi	Med	Low	No	Poss-ible					
0	$ -	9	0	1	0	10	**Innovation**			**Explanation**	**Comments**
						2	Innovative Technology or Process	30.A	Onsite Renewable Energy	Renewable Energy Contribution from onsite energy generation (including shared renewable services): 15% 1pt. 30% 2pts.	
						1	Market Transformation	30.B	Soft Landings Framework	Building is designed, built, commissioned and tuned by adopting a 'Soft Landings' approach	
						1		30.B	Sustainable Sourcing of Aggregates	All concrete aggregates used have a chain of custody, or come from a responsible source	
		1				1		30.B	Warm Shell to Cold Shell	A specific Cold Shell strategy has been implemented or scope has changed from Warm Shell to Cold Shell following tenant engagement	CLUB being a cold shell rather than warm
						2	Improving on Green Star Benchmarks	30.C	Building Airtightness	1pt - Achieve 'normal' practice outcome of 7m3/(hr.m2) at 50Pa 2pts - Achieve a best practice airtightness outcome of	Suggest this is achievable by the contractor, but remediation risk is very high if relied on.
		1				1		30.C	Ultra Low VOCs	Ultra-low VOC paints are to be used for over 50% of paint products (by volume) having a maximum TVOC content of 5g/L	Coverage issues? Check in on product
				X		1		30.C	Discharge to sewer	One (1) Innovation category point can be claimed for a 90% or greater reduction in flow to sewer as determined by the Potable Water Calculator.	STORMWATER TO WRAMS ONLY?
				X		2		30.C	Stormwater Pollution Reduction	Demonstrate pollution reduction to column B for 1 point, Column C for 2 points. Column C generally requires extensive biofiltration - few	PRECINCT SYSTEM Purchasing agreement
						2	Innovation Challenge	30.D	Powered by Renewables	100% Green Power	Requires that the three Carbon Positive energy items are achieved: Onsite renewables, Fuel Switching, Onsite Storage
						2		30.D	Local Procurement	Procure local labour, or materials, or both (2pts) with a strategy that increases rates of local procurement. Project team must set a benchmark 'business as usual' reference	
		1				1		30.D	Community Benefits	Provide publicly accessible amenities such as: Open space, roof terrace, wifi, workspace.	Open space on both sites
						1		30.D	Culture, Heritage, and Identity	Demonstrate best practice conservation refurbishment and public access to buildings listed on the Burra Charter	Heritage Tree retention does not apply in pre-approved form
		1				1		30.D	Financial Transparency	Anonymously disclose material and consulting costs of pursuing Green Star certification for GBCA annual reporting	
				1		1		30.D	High Performance Site Offices	Site sheds meet 75% of the Green Star criteria on the checklist, including for responsible materials, indoor air quality, comfort, and energy performance	
						1		30.D	Occupant Engagement		
		1				1		30.D	Reconciliation Action Plan	Contractor must use this project in a central role for their new or ongoing/current RAP outcomes.	Most sophisticated large contractors have a RAP. The project will exercise a number of their RAP outcomes
		2				2	Global Sustainability	30.E	Global Sustainability	Public WiFi DGNB - Public Art.	Provide WiFi Façade lighting with Artist
		1				1		30.E	WELL - Implement Particle Filtration	Use particulate filters as a drop-in protection from bushfire smoke. Do not use at all times due to large impact on fan energy.	Proposal to drop-in high filtration smoke filters for bushfire seasons
		1				1		30.E	LBC - Habitat Offset	Purchase a biological offset equivalent to the project site area, or 1acre (4000m2, whichever is greater) of land in perpetuity with a registered land trust.	SouthPole quotes 1 acre biodiversity offsets at around $11,500

Green Star Design & As Built v1.3

1180.3 - SOP OFFICE

TENDER APPRAISAL_v00

Friday, 28 May 2021

Achievability

Yes	No	Total
63	0	66
100%	0%	
63	52	115
Yes	No	Poss-ible

Four Star 45 to 59 points **Five Star** 60 to 74 points **Six Star** 75 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Projected Points

% prob

Subtotals

Yes	No	Poss-ible	Management			Explanation
13	1	14				
1		1	**Green Star Accredited Professional**	1.1	Accredited Professional	Green Star Accredited Professional active in all stages of project.
Y	-	-	**Commissioning and Tuning**	2.0	Environmental Performance Targets	Establish and documented project evironmental performance targets
1		1		2.1	Services and Maintainability Review	Perform comprehensive design review of services, maintainability, etc
1		1		2.2	Building Commissioning	Comprehensively pre-commission and commission nominated building systems
1		1		2.3	Building Systems Tuning	Commit to perform building systems tuning for no less than one year after occupancy
	1	1		2.4	Independent Commissioning Agent	Engage independent Commissioning Agent to oversee commissioning process
2		2	**Adaptation and Resilience**	3.0	Climate Adaptation Plan	A project specific climate adaptation plan has been developed in accordance with a recognized standard
1		1	**Building Information**	4.1	Building Information	Make current building user information is available to all relevant stakeholders
1		1	**Commitment to Performance**	5.1	Environmental Building Reporting	Commit to reporting building environmental performance metrics over two years;
1		1		5.2	End of Life Waste Management	Commit to measurably reducing construction waste building upgrades and tenant end of Building
Y	-	-	**Metering and Monitoring**	6.0	Metering Strategy	Provide water and energy meters for all major end users or uses
1		1		6.1	Monitoring Strategy	Provide monitoring strategy to capture and process metered energy and water use
Y	-	-	**Construction Environmental Management**	7.0	Environmental Management Plan	Comprehensive Environmental Management Plan in place for construction
1		1		7.1	Formalised Environmental Management System	Environmental Management System from EMP used through all stages of design and construction
1		1		7.2	High Quality Staff Support	Staff support practices are in place that; promote positive mental and phyisical health and knowledge of sustainable practices
1		1	**Operational Waste**	8.1	Waste in Operations	Provide facilities to collect, process, and store multiple waste streams

Hi	No	Poss-ible	Indoor Environment Quality	Explanation
11	3	14		

Achievability

Four Star 45 to 59 points **Five Star** 60 to 74 points **Six Star** 75 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Yes	No	Total	Projected Points			
63	0	66				
	1	1	Quality of Indoor Air	9.1	Ventilation System Attributes	Outdoor pollutants mitigated; ventilation system designed for cleaning + maintenance; ventilation system cleaned prior to use
2		2		9.2	Provision of Outside Air	Provide 50-100% additional outdoor air, or maintain CO2 levels at 800-700 PPM. Natural ventilation spaces must comply with AS1668.2 for 2 pts
1		1		9.3	Exhaust or Elimination of Pollutants	Direct exhaust kitchens, photocopier areas, other pollution point source zones
1		1	Acoustic Comfort	10.0	Internal Noise Levels	Internal ambient noise levels, including outside and building systems sources, are suitable for activities
1		1		10.1	Reverberation	Reverberation levels meet AS/NZ 2107:200 Reverberation Time tables
1		1		10.2	Acoustic Separation	Reduce crosstalk between nominated spaces to weighted sound reduction index (Rw) of 45
Y	-	-	Lighting Comfort	11.0	Minimum Lighting Comfort	Flicker free and high color rendition lighting
		NA		11.1	General Illuminance and Glare Reduction	Lighting levels and quality comply with best practice; glare is eliminated. 'Illuminance levels per AS 1660.1 Table 3.1 - HR to describe appropriate levels Lighting designer to ensure compliance with AS 1680.1 Part 8.3 (proscriptive glare requirements)
		NA		11.2	Surface Illuminance	Improve lighting uniformity through fixture type and surface properties.
		NA		11.3	Localised control	Occupants provided individual control of lighting
Y	-	-	Visual Comfort	12.0	Glare Reduction	Fixed shades or blinds minimize direct sunlight into building
1	1	2		12.1	Daylight	40% / 60% of nominated area receives high daylight levels during 80% of day
1		1		12.2	Views	Direct line of sight to high quality internal or external views
1		1	Reduced Exposure to Pollutants	13.1	Paints, adhesives, sealants and carpets	Internally applied products meet stipulated VOC limits
1		1		13.2	Engineered wood products	95% of products meet stipulated formaldehyde limits
1		1	Thermal Comfort	14.1.2B	Thermal Comfort - Mechanical Performance	For 95% of nominated space, 98% of year, achieve 80% Acceptability in ASHRAE 55, OR PMV between +1 and -1; OR NatHERS 7 Star
	1	1		14.2	Advanced Thermal Comfort	For 95% of nominated space, 98% of year, achieve 90% Acceptability in ASHRAE 55, OR PMV between +0.5 and -0.5; OR NatHERS 8 Star

Hi	No	Possible	Energy			Explanation
7	24	22				
		-		15A.1	Domestic Hot Water	DHW provided by low emissions or renewable energy sources (inc. gas, solar hot water)

Achievability

Four Star 45 to 59 points Five Star 60 to 74 points Six Star 75 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Yes	No	Total
63	0	66

Projected Points

Yes	No	Total				
		-	Greenhouse Gas Emissions	15A.2	Lighting	Lighting more than 15% under BCA (4.5W/m2)
		-		15A.3	Equipment	
		-		15A.4	Air Conditinoing	
		-		15A.5	Green Power	
		-		15D.0	Conditional Requirement: NABERS Pathway	Meet DTS energy efficiency requirements -- OR -- NABERS Energy Commitment Agreement for a minimum of 4.5 Stars.
		-		15D.1	NABERS Energy Commitment Agreement Pathway	Reduction of greenhouse gas emissions compared to NABERS 4.5-star baseline Building. 2pts = 10% ghg reduction. 'Use Green Star - Interiors Greenhouse Gas Emissions Calculator
Y		-		15E.0	Conditional Requirement: Reference Building Pathway	
6	14	20		15E.1	Comparison to a Reference Building Pathway	Net zero emissions for 20pts
	5.0	9		15E.2	Off site renewables	Procure 100% offsite renewable energy for 10 years from PC. 1.5pts for every 1pt achieved in 15D.1 up to 20 pts.
	1	1		15E.3	Transition plan	Public commitment to a transition away from fossil fuels by 2030. Transition plan is integrated into building O&Ms and replacement schedules.
	2	2		15E.4	Fuel Switching	No fossil fuels are burned on site to generate electricity, heating or cooling. Cooking and emergency generators can be offset with RECs for 10 years.
	1	1		15E.5	On site storage	Battery storage is provided, sized to add value and store surplus of onsite renewable energy. Stored energy is used to reduce peak electricity demand.
		-	Peak Electricity Demand Reduction	16E.0	Prescriptive Pathway - On-site Energy Generation	
1	1	2		16E.1	Performance Pathway - Reference Building	

Hi	No	Poss-ible
6	4	10

Transport

Hi	No	Poss-ible				Explanation
	3	10		17A.0	Travel Emissions Calculator	Reduce parking, make walkable, support transit, support active modes of transportation
2	1	3	Sustainable Transport	17B.1	Access by Public Transport	Accessibility of the site by public transport. The points score is determined by completing the *Access by Public Transport Calculator*
1		1		17B.2	Reduced Car Parking Provision	Reducing number of car parks from allowable in planning provision
1		1		17B.3	Low Emission Vehicle Infrastructure	Parking spaces and/or dedicated infrastructure is provided to support the uptake of low-emission vehicles

Achievability

Yes	No	Total
63	0	66

Four Star 45 to 59 points **Five Star** 60 to 74 points **Six Star** 75 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Projected Points

1		1	17B.4 Active Transport Facilities — Bicycle parking and associated facilities are provided to a proportion of regular occupants and visitors
1		1	17B.5 Walkable Neighbourhoods — Walk Score of at least 80 as determined by the website www.walkscore.com. OR the project is located so that at least eight (8) amenities are within 400m of the project.

Achievability

Yes	No	Total
63	0	66

Four Star 45 to 59 points Five Star 60 to 74 points Six Star 75 or more points
Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Projected Points

Hi	No	Poss-ible				Explanation
6	6	12	**Water**			
6	6	12	Potable Water	18A	Reference Building Model	12pts requires 100% potable water produced on site
X		1		18B.1	Sanitary Fixture Efficiency	Taps, Urinals, Toilets and Showers are within 1 star of WELS rated 6, 6, 5 and 3 stars respectively
	X	1		18B.2	Rainwater Reuse	Rainwater tank is installed to collect and reuse rainwater at a ratio of 10 L/m2
X		2		18B.3	Heat Rejection	2pts where no potable water is used for heat rejection
X		1		18B.4	Landscape Irrigation	Drip irrigation with moisture sensor override is installed, or where no potable water is used for irrigation
		1		18B.5	Fire System Test Water	Test system does not expell water, or stores 80% of routine test water for reuse onsite

Hi	No	Poss-ible				Explanation
6	9	14	**Materials**			
		4	Life Cycle Impacts	19.A.1	Comparative Life Cycle Assessment	Reduce building material and product environmental impacts across a range of categories through LCA or proscriptive pathways
		3		19.A.2	Additional Life Cycle Impact Reporting	Report environmental impacts across five additional categories
	2	3		19B.1	Concrete	Portland cement content is reduced by 20% 1pt, or 40% 2pts. Water reduction 0.5pts, Aggregates reduction 0.5pts
	1	1		19B.2	Steel	5% reduction in steel use compared to reference building
	2	4		19B.3	Building Reuse	2pts Façade reuse - 80% by area 2pts Structure reuse - 60% by mass
1	2	3		19B.4	Structural Timber	3pts for 90% of building structure is timber
1		1	Responsible Building Materials	20.1	Structural and Reinforcing Steel	60% of steel (by mass) from responsible manufacturers
1		1		20.2	Timber	95% of timber (by cost) from sustainable sources
1		1		20.3	Cables, pipes, floors and blinds	90% (by cost) of cables, pipes, floors, blinds either PVC free or meet Best Practice Guidelines
1	2	3	Sustainable Products	21.1	Sustainable Products	3, 6, 9% products are recycled, reused, third-party certified, come with EPDs, or through stewardship programs
		-	Construction and Demolition Waste	22A	Fixed Benchmark	<2.5 kg/m2 = 3pts, <3.5 kg/m2 = 1.5pts,
1		1		22B	Percentage Benchmark	at least 90% of the waste generated during construction and demolition has been diverted from landfill

Hi No Poss-ible

Achievability

Four Star 45 to 59 points **Five Star** 60 to 74 points **Six Star** 75 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Yes	No	Total
63	0	66
2	3	5

Projected Points

Yes	No	Total	Land Use & Ecology			Explanation
Yes		-	Ecological Value	23.0	Endangered, Threatened or Vulnerable Species	demonstrate that no endangered or vulnerable species, or ecological communities were present on the site
1	2	3		23.1	Ecological Value	the ecological value of the site is improved by the project
Yes		-	Sustainable Sites	24.0	Conditional Requirement **Mandatory Requirement**	project site did not contain prime agricultural land, wetland, or impact 'Matters of National Significance'
1		1		24.1	Reuse of Land	75% of the site was previously developed land at the date of site purchase or, for previously owned land
		N/A		24.2	Contamination and Hazardous Materials	the site, or an existing building, was previously contaminated and the site has been remediated
	1	1	Heat Island Effect	25.0	Heat Island Effect Reduction	75% of the total project site area comprises elements that reduce the impact of the heat island effect

Achievability

Yes	No	Total
63	0	66

Four Star 45 to 59 points Five Star 60 to 74 points Six Star 75 or more points
Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Projected Points

Hi	No	Poss-ible	Emissions			Explanation
2	2	4				
	1	1	**Stormwater**	26.0	Stormwater Peak Discharge	Post-development peak ARI event discharge does not exceed the pre-development peak ARI event discharge.
		N/A		26.1	Stormwater Pollution Targets	All stormwater discharged from site meets specified pollution reduction targets
Y	-	-	**Light Pollution**	27.0	Light Pollution to Neighbouring Properties	Outdoor lighting complies with AS 4282:1997
	1	1		27.1	Light Pollution to Night Sky	Minmize upward light OR Minimize light tresspass skyward and across project boundary
1		1	**Microbial Control**	28.1	Microbial Control	Building is naturally ventilated OR use waterless heat re-jection OR building heat rejection systems include control measures for Legionella
1		1	**Refrigerant Impacts**	29.1	Refrigerant Impacts	Minimize environmental impacts of refrigerants by chosing low ODP and GWP refrgerants and implementing leak detection measures

Hi	No	Poss-ible	Innovation			Explanation
10	1	10				
		2	**Innovative Technology or Process**	30.A	Onsite Renewable Energy	Renewable Energy Contribution from onsite energy generation (including shared renewable services): 15% 1pt. 30% 2pts.
		1	**Market Transformation**	30.B	Soft Landings Framework	Building is designed, built, commissioned and tuned by adopting a 'Soft Landings' approach
		1		30.B	Sustainable Sourcing of Aggregates	All concrete aggregates used have a chain of custody, or come from a responsible source
		1		30.B	Warm Shell to Cold Shell	A specific Cold Shell strategy has been implemented or scope has changed from Warm Shell to Cold Shell following tenant engagement
		2	**Improving on Green Star Benchmarks**	30.C	Building Airtightness	1pt - Achieve 'normal' practice outcome of 7m3/(hr.m2) at 50Pa 2pts - Achieve a best practice airtightness outcome of
1		1		30.C	Ultra Low VOCs	Ultra-low VOC paints are to be used for over 50% of paint products (by volume) having a maximum TVOC content of 5g/L
		1		30.C	Discharge to sewer	One (1) Innovation category point can be claimed for a 90% or greater reduction in flow to sewer as determined by the Potable Water Calculator.
		2		30.C	Stormwater Pollution Reduction	Demonstrate pollution reduction to column B for 1 point, Column C for 2 points. Column C generally requires extensive biofiltration - few
		2		30.D	Powered by Renewables	100% Green Power
		2		30.D	Local Procurement	Procure local labour, or materials, or both (2pts) with a strategy that increases rates of local procurement. Project team must set a benchmark 'business as usual' reference

Achievability

Four Star 45 to 59 points **Five Star** 60 to 74 points **Six Star** 75 or more points

Achievability rating: **Hi** = 90%, **Med** = 60%, **Low** = 10%, **NP** = not possible.

Yes	No	Total
63	0	66

Projected Points

Yes	No	Total				
1		1	Innovation Challenge	30.D	Community Benefits	Provide publicly accessible amenities such as: Open space, roof terrace, wifi, workspace.
		1		30.D	Culture, Heritage, and Identity	Demonstrate best practice conservation refurbishment and public access to buildings listed on the Burra Charter
1		1		30.D	Financial Transparency	Anonymously disclose material and consulting costs of pursuing Green Star certification for GBCA annual reporting
1		1		30.D	High Performance Site Offices	Site sheds meet 75% of the Green Star criteria on the checklist, including for responsible materials, indoor air quality, comfort, and energy performance
	1	1		30.D	Occupant Engagement	
1		1		30.D	Reconciliation Action Plan	Contractor must use this project in a central role for their new or ongoing/current RAP outcomes.
1		2	Global Sustainability	30.E	Global Sustainability	Public WiFi
1		1		30.E	WELL - Physical Acitivity Spaces and Equipment	Outdoor physical activity spaces (Green space, Blue space, Recreational field or court, fitness zone, playground etc) is within 400 m walking distance to the project.
1		1		30.E	WELL- Enhanced Water Quality	Water delivered to the project for human consumption meets the thresholds defined and is verified by performance test.
1		1		30.E	WELL - Local Eood Environment	Project is loacted within a 400m walk distance of a supermarket or a farmer's market open atleast once a week
1		1		30.E	LBC - Habitat Offset	Purchase a biological offset equivalent to the project site area, or 1acre (4000m2, whichever is greater) of land in perpetuity with a registered land trust.