Winter Sports World: SSDA ESD Report

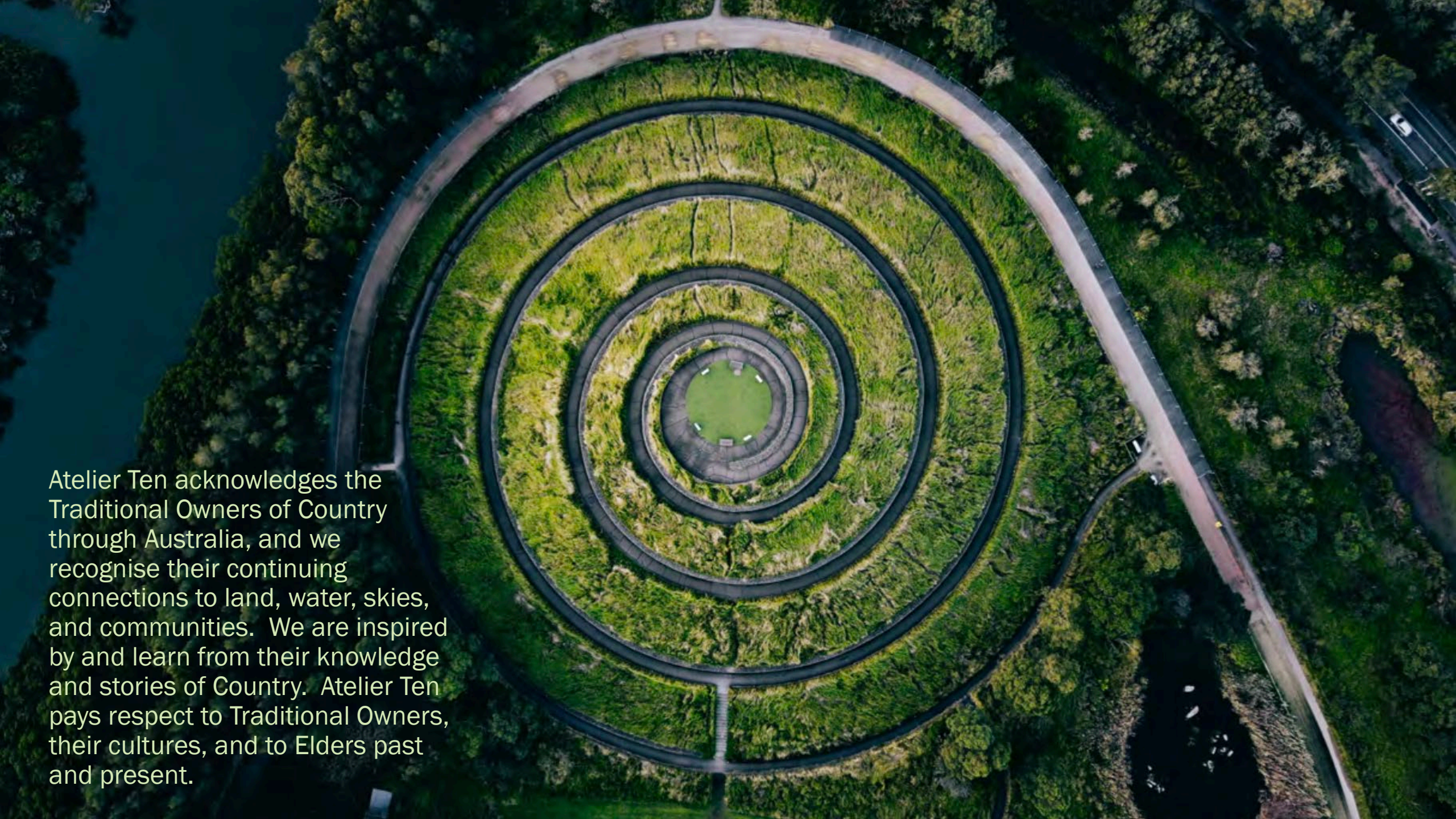
November 2022

atelier ten

Strategic Sustainability Advisors + Environmental Designers + ESD Consultants

London | Glasgow | Edinburgh | New York | New Haven | San Francisco | Bangkok | Singapore | **Melbourne** | **Sydney**

WINTER SPORTS WORLD



Atelier Ten acknowledges the Traditional Owners of Country through Australia, and we recognise their continuing connections to land, water, skies, and communities. We are inspired by and learn from their knowledge and stories of Country. Atelier Ten pays respect to Traditional Owners, their cultures, and to Elders past and present.

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Introduction

Purpose

Winter Sports World will meet and exceed the relevant industry recognised building sustainability and environmental performance standards with the implementation of a series of Sustainability Themes proposed to provide direction to specific targets and design initiatives.

This ESD Report has been prepared by Atelier Ten to accompany a detailed State Significant Development (SSD) Development Application (DA) for the mixed-use tourism and leisure development proposal for Winter Sports World, located at 2 Tench Avenue, Jamisontown, NSW (the site). The site is legally described as Lot 1 in DP 38950.

This report has been prepared to address the Penrith Development Control Plan (DCP) 2014 including E13 Riverlink Precinct and site specific 2 Tench Avenue Jamisontown and Secretary's Environmental Assessment Requirements (SEARs) issued on 21st July 2020 and reissued 13th May 2021 for the SSD DA (SSD-10475).

This report concludes that the proposed Winter Sports World development is suitable and warrants approval subject to the implementation of the following mitigation measures:

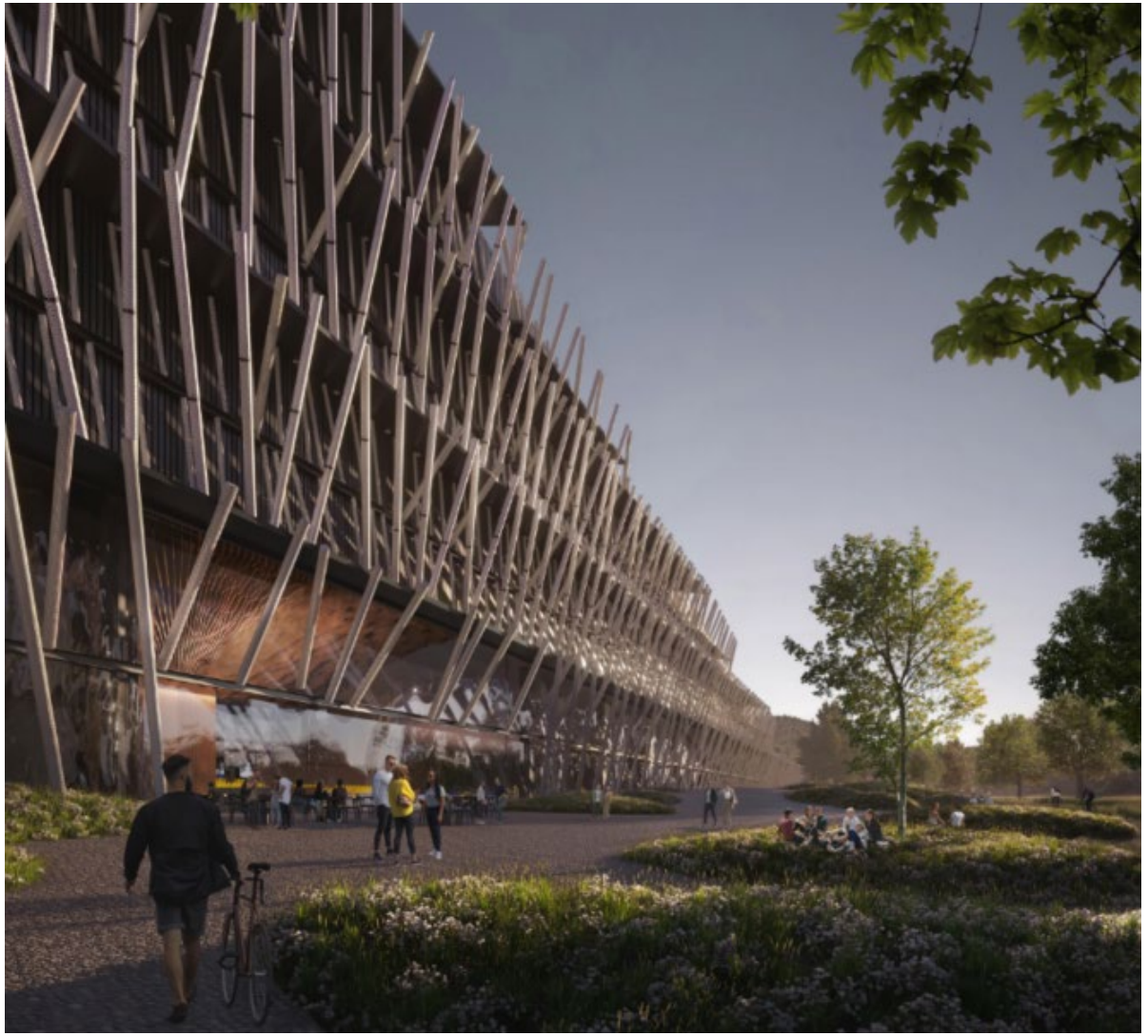
- Climate Action
- Water Conscious
- Biodiverse Habitat
- Resilient and Adaptable
- Circular Economy
- Connected with Country
- Welcoming and Inclusive
- Health and Wellness

Project Description

The SSDA seeks to facilitate the development of an indoor snow resort at the site. Using real snow, the proposed Winter Sporting Facility will include:

- A 300m advanced open run including learning to ski or snow board runs
- Snow play with various activities for people of all ages from children through to adults
- 4.5-star 170-room hotel with function & conference facilities
- Variety of Food & Beverage offerings throughout the facility.

The site is located on the south-east corner of the intersection of Jamison Road and Tench Avenue. It is an irregular shape, generally falls in an easterly direction and has an area of approximately 2.34 hectares. The site has a street frontage to Tench Avenue to the west and a frontage to Jamison Road to the north.



Approach

Winter Sports World will meet and exceed the relevant industry recognised building sustainability and environmental performance standards with the implementation of a series of Sustainability Themes proposed to provide direction to specific targets and design initiatives.

The report has been prepared to align with the Winter Sports World Vision Brief issued by Winter Sports World (September 2021) for the successful Design Competition. This document outlines the specific ESD initiatives that the project must achieve to address the DCP and SEARs requirements.

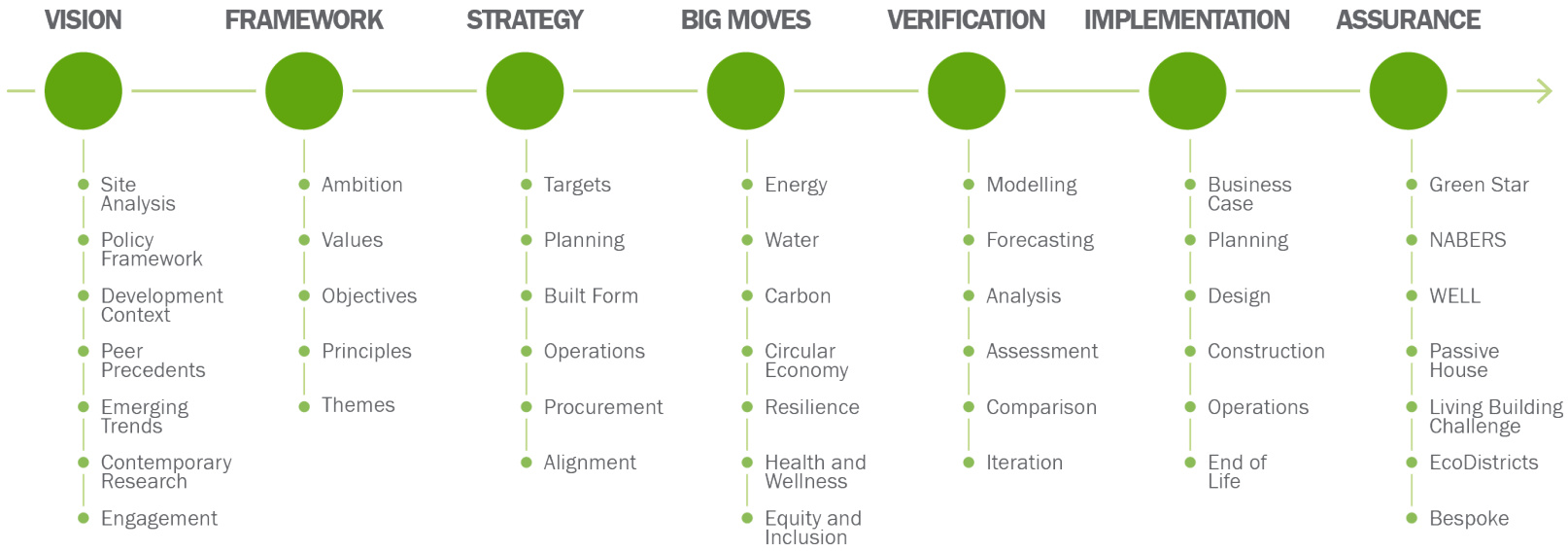
There are a number of national and local authorities that require compliance for planning approval. Some of these are compulsory, some are preferential, and some are design guidelines to facilitate approval.

The main material documents which refer to sustainability performance standards include:

- BCA 2022 National Construction Code (NCC) Section J
- Environmental Planning and Assessment (EP&A) Regulation Schedule 2 Clause 7(4) SEARs (SSD-10475)
- LEP 2010 through the SP3 Tourist zone objectives
- Penrith Economic Development Strategy (2017)
- Riverlink Precinct Plan (2008)
- Penrith Development Control Plan 2014 (DCP 2014).

The following guidelines will be referenced throughout the project for the purposes of targeting benchmarks from various building rating tools and achieving certification, where relevant:

- Green Star Buildings
- Western City District Plan
- Urban Green Cover in NSW Technical Guidelines (Office of Environment and Heritage, 2015)
- ND Greener Places (Government Architect NSW)
- Draft Greener Places Design Guide (Government Architect NSW)



Sustainability Requirements

SEARS – ESD Principles

The Planning Secretary's Environmental Assessment Requirements (SEARS) SSD-10475 issued 21st July 2020 and reissued 13th May 2022 (revised) requires the development to address the following principles of ecologically sustainable development.

SEARS Principles	Requirements	Design Response (Mitigation Measures)	Section Reference
ESD Principles	Identify how the development will incorporate ESD principles (as defined in Clause 193 of the Regulation) in the design, construction and ongoing operation phases of the development, and include innovative and best practice proposals for environmental building performance	Winter Sports World aims to be a facility where visitors come to play and staff come to work in a sustainably thriving environment, respecting the wellbeing of all people and the health of the whole planet. In support of this goal a series of Sustainability Themes are proposed to provide direction to specific targets and design initiatives.	Page 17 – 25
ESD Framework	Include a framework for how the development will be designed to consider and reflect best practice sustainable building principles to improve environmental performance and reduce ecological impact. This should be based on a materiality assessment and include waste reduction design measures, future proofing, use of sustainable and low-carbon materials, energy and water efficient design (including water sensitive urban design) and technology and use of renewable energy	In line with expectations from both the Australian market for premium hotel buildings and facilities, and meeting with the requirements of Planning Secretary's Environmental Assessment Requirements (dated May 2022), this project will achieve the following key goals and objectives: • Climate Action • Water Conscious • Biodiverse Habitat • Resilient and Adaptable • Circular Economy • Connected with Country • Welcoming and Inclusive • Health and Wellness	Pages 17 – 25
Climate Change Projections	Use the climate change projections developed for the Sydney Metropolitan area to inform the building design and asset life of the project and address impacts including: • Increased frequency of extreme heat days • Extended heatwave events • More extreme (intense) rainfall events.	The project will develop and incorporate measures of resilience to extreme events and climate change through the Sustainability Themes. The commitments will include: • Climate-related events such as bushfires, floods, temperature rise, solar radiation, etc. • Potential impacts, responses required, key criteria in accordance with AS5334 and assessed against NARCLiM climate change projections; • Flood Risks: The proposed habitable floor levels are above the floor planning level and mitigation strategies have been developed up to the PMF level.	Page 21

Penrith Development Control Plan

The Penrith Development Control Plan 2014 requires the development as part of the E13 Riverlink Precinct to address the following principles of ecologically sustainable development.

The Precinct has the broad goal of creating a living, entertainment and working hub to link the city centre to the Nepean River. It seeks to create a cohesive and well-connected precinct by:

- Creating a clear and legible public domain framework of streets and open space
- Incorporating sustainability best practice
- Encouraging design excellence
- Improving connectivity through the Precinct

DCP Principles	Sustainability Requirements	Design Response (Mitigation Measures)	Section Reference
Landscape	• Native or indigenous plants that have lower water requirements are to be incorporated. • Landscaping of balconies, walls or roofs (vertical gardens/pots) should be provided to help visually minimise building mass and help soften the building.	The design of the urban surroundings of the proposed development focuses on fundamental principles of biophilic design. By enabling individuals to re-connect with natural surroundings through imitating natural elements and processes, the design triggers ultimately a strong positive impact on health and wellbeing. Framed by notions of being 'guided by trees and light', the landscape reimagines a natural experience for individuals transitioning from a concrete and asphalt heavy environment into the foyer of the proposal.	Page 20
Tourism and Recreation Precinct	• Improvements to the public domain are to be implemented such as street lighting and continuous street planting. • Materials are to be selected for durability and quality. • Gardens on the top of setback areas of buildings are encouraged. • Environmental and sustainable initiatives are to be incorporated into new buildings.	Delivery of a revitalised public realm across the site, including an improved public domain. The proposal includes the delivery of a significant area of new publicly accessible open space, including the following proposed elements: • Introduction of an activity offering to the exterior, i.e., pools. • Proposed Café with outdoor seating on the Tench Avenue Western end and Jamison Road mid way along the property, views of the reserve and river, pedestrian linkage. • Deep soil landscaping to be maximised. • Landscaping along the neighbouring Nepean Shores neighbour is also to be maximised. • Carparking to be within the building envelope. No cars will be seen from the streets or public domain.	Pages 20

Winter Sports World Development Control Plan

The Winter Sports World Development Control Plan 2014 requires the development to address the following principles of ecologically sustainable development.

This DCP applies to development of Penrith LEP 2010 at 2 Tench Avenue, Jamisontown (Lot 1 DP 38950). It provides specific controls for a development on the site that incorporate an indoor ski slope, in addition to the general controls in the Penrith Development Control Plan 2014. Where there is an inconsistency between this specific DCP and the rest of the DCP, the requirements of this DCP prevail.

DCP Principles	Sustainability Requirements	Design Response (Mitigation Measures)	Section Reference
Thermal Efficiency	• The thermal performance of the building is to be optimised by using building materials and insulation that maximise the thermal efficiency of the building. • No direct external glazing to external walls to be provided from the snow and ice areas. • The areas of the building that accommodate uses reliant on snow and ice are to be sealed to reduce energy consumption in temperature regulation and to slow the decline of snow and ice quality.	The project is targeting integrate passive design principles: sufficient well-insulated external wall, to minimise architectural and mechanical system complexity. This will be optimised through coordination between the architect, ESD consultant and façade engineer to achieve the following outcomes: • Hotel and Food and Beverage façade and building openings designed to maximise natural ventilation and minimal mechanical HVAC use. • Horizontal and vertical passive solar shades to reduce heat loads. High performance envelope that maximises solar control while maintaining great daylight. • Glazing and structure materiality has been catered to ensure both high visual comfort and comfortable levels of solar gain for snow centre foyer and reception, hotel and all ancillary offerings. Minimises electrical lighting needs.	Page 18
Energy Efficiency	• Development is to be designed and constructed to reduce the need for active heating and cooling by incorporating passive design measures including design, location and thermal properties of glazing, natural ventilation, appropriate use of thermal mass and external shading. • A renewable energy source is to be provided for the building, such as a Photovoltaic Solar System, that contributes to making electricity for the uses of the building. • Where possible heat removed from the snow and ice areas is to be captured and re-used. • Car parking areas are to include electric vehicle charging points. • Where possible, the responsible sourcing of construction and fit out materials are to be used, including recycled content and recyclable materials.	The project intents to operate with minimal energy input to provide low-carbon, low energy cost design. • Future proofing to enable net-zero carbon through development of a net zero strategy plan during Detailed Design. The building will be designed to achieve net zero emissions in accordance with the Design Guide. • Further coordination between ESD consultant and Building Services during Detailed Design to ensure design meets the Green Star target for benchmarking assurance. • Renewable energy through on-site sources like rooftop PV, etc. • Parking to have charging capacity in line with best practice expectations (including number of spaces, charging speed, monitoring). • Heat recovery from snowmaking system. • Substations and infrastructure to enable transition to 100% renewables. • Maximise recycled/renewable construction materials and products • Heat recovery from snowmaking system to heat the hotel hot water and amenities such as heating the swimming pool and outdoor hot tubs.	Page 18

Winter Sports World Development Control Plan

DCP Principles	Sustainability Requirements	Design Response (Mitigation Measures)	Section Reference
Water Efficiency	• Where possible recycled or harvested rainwater is to be used for water use in the building and watering new gardens and landscape features. • Snow and ice scraped off for cleaning / re-topping is to be placed in a drainage holding area so the ice can be melted, filtered and stored in the main water tank. • Snow and ice melted from the bottom layer is to be drained and filtered into the main water tank. • All water fixtures (low flow shower heads and taps, dual flush toilets, low flush/waterless urinals, etc) are to be the highest Water Efficiency Labelling Scheme (WELS) star rating available at the time of development. • Stormwater capture and reuse, including water quality management is to be in accordance with Council's Policy Water Sensitive Urban Design Policy. • Water efficient plants and / or locally indigenous vegetation are to be used for landscaping	The project is optimising the use of water and minimising consumption of mains potable water. This will be optimised through coordination between the architect, ESD consultant and hydraulic engineer to achieve the following outcomes • Water conservation considerations include fixtures and fittings selected for high WELS ratings as appropriate to minimise water consumption, low water-use species for landscaping, rainwater harvesting and re-use. • Capture snow and ice melt from snow activities. Reused throughout building for grey water needs and for irrigation. • Roof water capture and capture within main water tank for snow and ice making, and topping up the spas or pools.	Page 19
Specific Uses	• 100% green energy sourced from the building, or other sources, such that the operations are energy carbon neutral for the making of snow, conditioning and lighting of the space and all internal power requirements. • 100% of all water required for snow and ice making shall be sourced from the roof and water tanks specially constructed for the purpose. • The snow centre foyer and reception, hotel and all ancillary offerings shall be designed to achieve the equivalent of a Green Building Council of Australia Green Star 5-star rating.	The project intents to operate with minimal energy input to provide low-carbon, low energy cost design • Minimise combustion in building systems to enable zero-carbon operations through renewable power purchase • Solar PV panels approximately 2 Megawatt (completely cover the roof including along the Northern facade) will be installed on the roof to provide renewable energy that further reduces GHG emissions. • Capture rainwater from non-trafficable roof surfaces. • Target a 5-star Green Star Buildings rating	Pages 18 and 19
Reflectivity	• To encourage the consideration of the use of sustainable materials and building components	The project will be pursuing credits in Green Star that relate to the minimisation of embodied carbon and water in materials and sourced from sustainability certified manufacturers/suppliers, where possible. This will also involve a robust Life Cycle Analysis of materials.	Page 22

Penrith Local Environmental Plan

The Penrith Local Environmental Plan 2010 requires the to address the following principles of ecologically sustainable development.

LEP Principles	Requirements	Design Response (Mitigation Measures)	Section Reference
Urban Heat	Planning and design measures are incorporated to reduce the urban heat island effect that— • Maximise green infrastructure, and • retain water in the landscape, and • use design measures to ensure the thermal performance of the development achieves a high degree of passive cooling, and • use building, paving and other materials that minimise heat impacts, and • reduce reliance on mechanical ventilation and cooling systems, to conserve energy and to minimise heat sources.	The proposal is committed to reducing and removing heat from the urban environment, including the following elements: • Minimise operational energy through climate responsive design. • Optimise all façades, where possible, to shade glazing to reduce cooling energy use yet provide high quality daylighting. • Continuous canopy coverage along street front, and pedestrian and bicycle routes where possible. • Create a net increase in biodiverse vegetation and useful habitat over existing development • Green roof on levels 2 – 4 • Extensive vegetation to mitigate urban heat island effects and protect against increasing peak temperatures. • Protect existing significant trees and remnant vegetation. • Utilise a climate responsive design approach, optimise building envelope for passive climate control. • Install roof top and Northern façade PV arrays for on-site renewable electricity generation. • Target the Heat Resilience credit in the Green Star Buildings rating.	Page 18, 19, 20 and 21
Sustainable Development	In deciding whether to grant development consent for development, the consent authority must have regard to the principles of sustainable development as they relate to the development based on a "whole of building" approach by considering each of the following:	The proposal is committed to ensuring a wholistic 'whole of building' approach to sustainable development through multiple design and planning principles:	• Pg18,19,22 and 25

Conserving energy and reducing carbon dioxide emissions	• Materially efficient structural design to reduce the volume of concrete and steel minimising total material volume (Embodied Carbon) in building
Embodied energy in materials and building processes	• Prioritised timber and other plant-based building materials, where possible, that sequester carbon
Building design and orientation	• Building Orientation designed to maximise PV efficiency on rooftop • Orientation and facades designed to passively maximise thermal comfort through designed shading, materiality and control of natural ventilation
Passive solar design and day lighting	• Optimised all façades to shade glazing to reduce cooling energy use and provide high quality daylighting • Adequate shading to limit sunlight direct sun in hotel and ancillary spaces
Natural ventilation	• Enable natural ventilation across significant portion of hotel and ancillary floorplates with façade design, openings and orientation • Building massing and form designed to optimise seasonal outdoor airflow – prioritise summer wind and block winter wind
Energy efficiency and conservation	• All purchased electricity 100% renewable • On-site generated renewable energy with extensive rooftop PV-Array
Water conservation and water reuse	• Water efficient design that captures and stores rainwater, reuses rainwater for irrigation, captures and stores greywater for non-potable uses, selectively uses available potable water, connect to existing recycled water networks where possible • Water sensitive urban design (WSUD) including permeable surfaces and swales to maximise local infiltration and reduce run off
Waste minimisation and recycling	• No nutrient waste: all non-edible organic waste is converted to compost or other higher value products through partnerships with off-site partners • No food waste: all edible food wastage is directed into existing charitable food distribution systems
Reduction of vehicle dependence	• Improving physical activity by encouraging active mobility and recreational exercise • Consideration for the integration of future forms of mobility (e.g. autonomous vehicles, shuttles and logistics pods, hydrogen-powered vehicles
Potential for adaptive reuse	• A procurement standard that includes the purchase of recycled content

Winter Sports World – Vision Brief

Winter Sports World Brief has been prepared for the purpose of outlining the WSW vision to guide the development of the indoor snow resort.

Vision:

- Sydney's Ultimate Year Round Snowcation Attraction

Mission:

- An authentic, memorable and engaging Winter experience like no other

Values:

- Excellence, Respect & Friendship (Olympism Values), Care for the Self, Each Other, The Community and The Environment Innovation, Collaboration & Education

The Winter Sports World Vision Brief requires the development to address the following principles of ecologically sustainable development.

Principles	Sustainability Requirements	Design Response (Mitigation Measures)	Section Reference
Climate Action	• Sustainability excellence, minimising energy consumption through design. • Adequate roof area for up to 2 Megawatt PV solar panels including the North façade of the advanced run. • Capturing and storing of all roof run off for use of WSW operations incl. water for snow & ice making including. • 2m void space within the roof of the advanced run for insulation, ventilation and maintenance access. • No exterior glazing within snow & ice areas. Other areas to "buffer" transition from outside to 23 degree to the -4 degrees within the snow. • Façade selection and consideration of green wall gardens.	See Winter Sports World DCP Energy Efficiency and Specific Uses commitments.	Page 18
Healthy and Inclusive	• Vibrant, active spaces suitable for all ages and groups. • Natural Light, maximising where appropriate F&B, Hotel, Conference. • Maximising views and vistas.	See Penrith DCP Tourism and Recreation Precinct commitments.	Page 18
Connected to Country	• Provision for public art that has links to the area's history.	See Penrith DCP Landscape commitments.	Page 20
Biodiverse Habitat	• Deep soil landscaping is to be maximised. • Connectivity with the River and Public domain is to be maximised.	See Penrith DCP Landscape and Tourism and Recreation Precinct commitments.	Page 20
Digital	• Flexibility for new future technologies through the life of the building.	See Winter Sports World DCP Energy Efficiency and Specific Uses commitments.	Page 18

Design Response (Mitigation Measures)

Sustainability Themes

Sustainability Vision

Winter Sports World aims to be a facility where visitors and staff come to play in a sustainably thriving environment, respecting the wellbeing of all people and the health of the whole planet. In support of this goal a series of Sustainability Themes are proposed to provide direction to specific targets and design initiatives.

CLIMATE ACTION

A place that contributes to reducing greenhouse gas emissions and on-going energy use reduction outcomes.

WATER CONSCIOUS

Preserve water and celebrate precious resources through a well-worn hierarchy of reduction, efficiency, capture and reuse.

BIODIVERSE HABITAT

A place of vibrant ecologies, where landscapes replenish nutrients, nurture watersheds, provide habitat for indigenous flora and fauna, and extend the urban Green Grid.

RESILIENT AND ADAPTABLE

The building thrives despite short term shocks from weather and acute events, and can adapt to longer term stresses like climate change.

CIRCULAR ECONOMY

Restorative and regenerative by design: achieving sustainability through minimal waste strategies, renewable energy use, and closing nutrient, material, and product cycles in the built environment.

CONNECTED WITH COUNTRY

A place that celebrates the enduring spirit of Country and the long-standing connections of Aboriginal peoples to this place, giving expression to their unique cultures.

WELCOMING AND INCLUSIVE

Equity, inclusion, diversity are embedded into the design and built form including ongoing operations.

HEALTH AND WELLNESS

Improve staff health outcomes and enhance visitor experience through implementation of wellness initiatives and a healthy building. Keeping kids engaged and healthy.

SUSTAINABILITY THEMES

Climate Action
Sustainability Vision

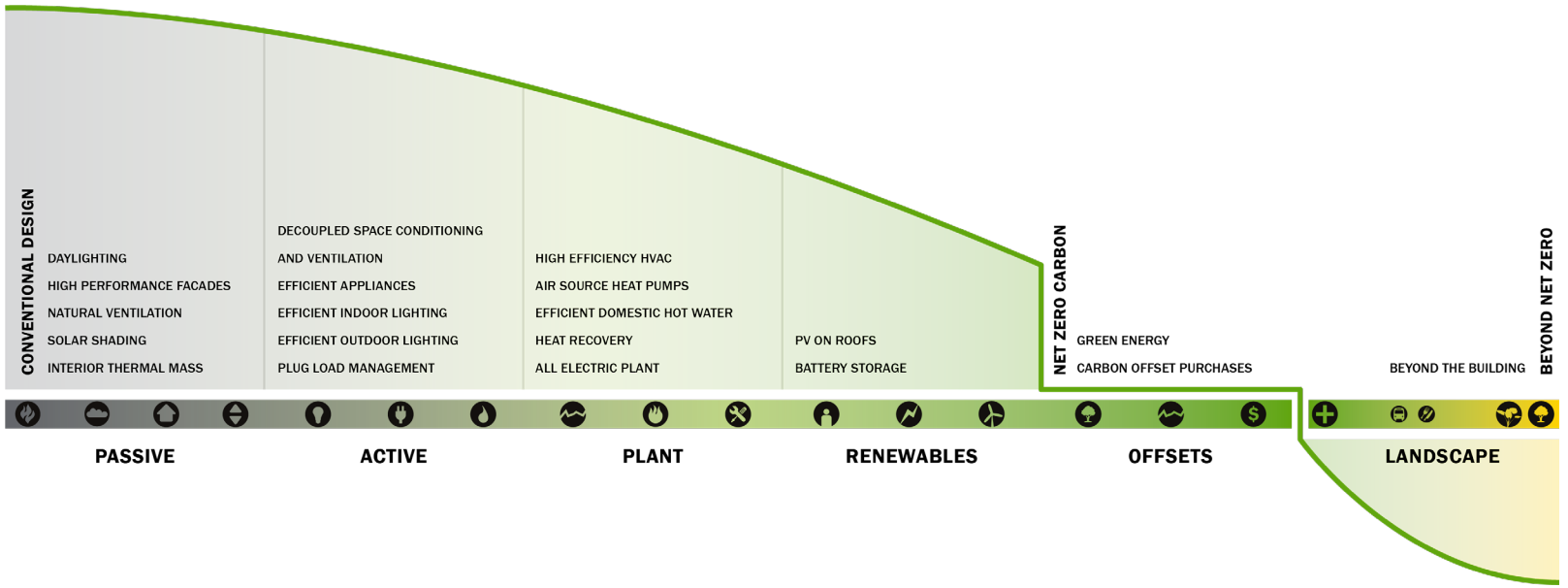
Winter Sports World will be built and operated in a way that contributes to reducing greenhouse gas emissions and on-going energy use reduction outcomes.

Principles
- Minimise embedded (upfront) greenhouse gas emissions in construction materials and processes.
- Passive design and best practice systems design minimise operational energy use
- Enable building to operate without on-site fossil fuel combustion.
- Renewable energy through on-site sources like rooftop PV, etc.
- Buy renewable power
- Offset all marginal emissions
- Expand landscape to sequester carbon

Targets
- Reduce embedded (upfront) emissions based on Life Cycle impacts
- Zero fossil fuel use for regular building operations.
- Achieve a whole-building (including building systems) operational energy savings relative to NCC Section J performance baseline.
- Procure all remaining operating energy from renewable sources
- Target 6 Star Green Star Buildings rating for snow centre foyer and reception, hotel and all ancillary offering areas but achieve a minimum 5 Star Green Star Buildings rating.

Responds to
- SEARS – ESD Principles
- Penrith DCP
- Winter Sports World DCP
- Winter Sports World – Vision Brief

Project Commitments
- Materially efficient structural design to reduce the volume of concrete and steel minimising total material volume in building.
- Minimise operational energy through climate responsive design.
- Construct the building to exploit use of thermal mass to regulate internal temperature.



PATHWAY TO CLIMATE ACTION

- Optimise all façades, where possible, to shade glazing to reduce cooling energy use yet provide high quality daylighting.
- Include space for future energy storage (electrical or thermal batteries).
- Prioritise timber and other plant-based building materials, where possible, that sequester carbon in their growth.
- Install roof top and Northern façade PV arrays for on-site renewable electricity generation.
- Choose electric snow groomers (where possible).
- Prioritise vegetation and landscapes that actively sequester carbon.
- Heat recovery from snowmaking system to heat the hotel hot water and amenities such as heating the swimming pool and outdoor hot tubs.
- All electric building services and kitchens where possible.
- Purchased electricity 100% renewably generated for the making of snow.

Parking to have charging capacity in line with best practice expectations (including number of spaces, charging speed, monitoring).

Opportunities Under Consideration
- Choose low embodied carbon materials and products, where possible, for major building systems (structure, cladding, foundations, etc).
- LED lighting with daylight and vacancy controls.
- Maximise the free cooling provided by outdoor air through design for cross ventilation and night purging (where practical)
- Optimise envelope to mitigate thermal bridges.
- Guarantee and verify operational energy efficiency through building performance tuning.
- Consideration for the integration of future forms of mobility (e.g. autonomous vehicles, shuttles and logistics pods, hydrogen-powered vehicles

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Water Conscious
Sustainability Vision

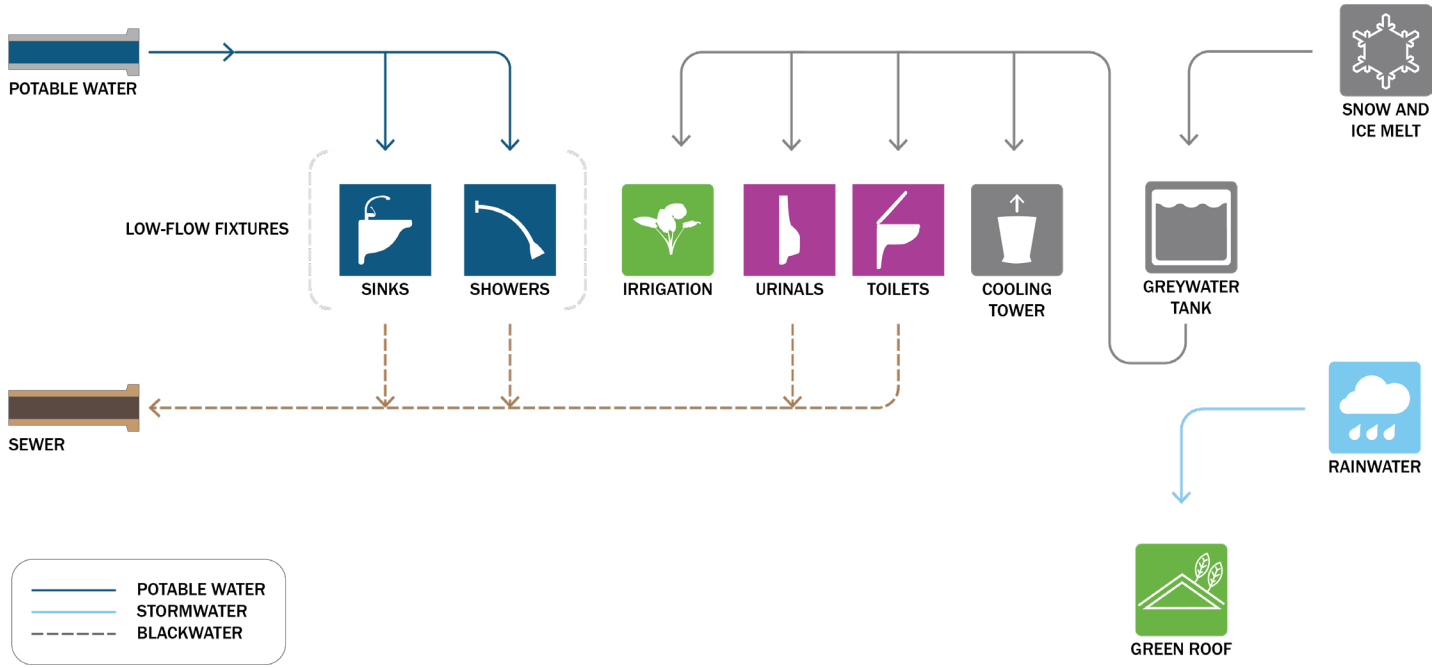
Winter Sports World will be infused with water and celebrate precious resources through a well-worn hierarchy of reduction, efficiency, capture and reuse.

Principles
- Contribute to the regeneration of the water shed.
- Celebrate water as a resource and defining element of Jamisontown.
- Use water to create a better and more natural experience.
- Use potable water only for potable needs.
- Capture and store rainwater on site.
- Reuse water where practical

Targets
- Create a sustainable and water efficient design
- Revitalise water as an amenity and experiential connector.
- Capture rainwater from non-trafficable roof surfaces.
- Capture snow and ice melt from snow activities.
- Reuse harvested rainwater for landscape irrigation and other non-potable uses.
- Reduce potable water demand
- Minimise nutrient discharge into the waterways from stormwater.

Responds to
- SEARS – ESD Principles
- Winter Sports World DCP

Project Commitments
- Install main water tank to capture all roof water for the use of snow and ice making, and topping up the spas and pools.
- Snow and ice melt to be filtered and captured into grey water tank for irrigation, toilet flushing and other non-potable uses.
- Water sensitive urban design (WSUD) including permeable surfaces and swales to maximise local infiltration and reduce run off.
- Green roof on levels 2 – 4 designed to reduce peak rainwater runoff.
- Connect to existing recycled water networks where possible.
- Separate purple pipe for non-potable utility connection.



WATER STORY

- **Opportunities Under Consideration**
- Conscious shaping of water as a dynamic landscape element.
- Water channels, swales, and other landscape features retain stormwater for infiltration.
- Irrometers and other soil monitoring control irrigation.
- Minimise potable water use through efficient fixtures and fittings.
- Efficient HVAC plant
- Provide water leak detection systems and report to BMS.
- Direct fire pump test water back to fire storage or rainwater tank.
- Universally accessible drinking water fountains, with water bottle filling, are available in all communal spaces.
- Monitoring of incoming and outgoing water quality and quantity.

Biodiverse and Regenerative
Sustainability Vision

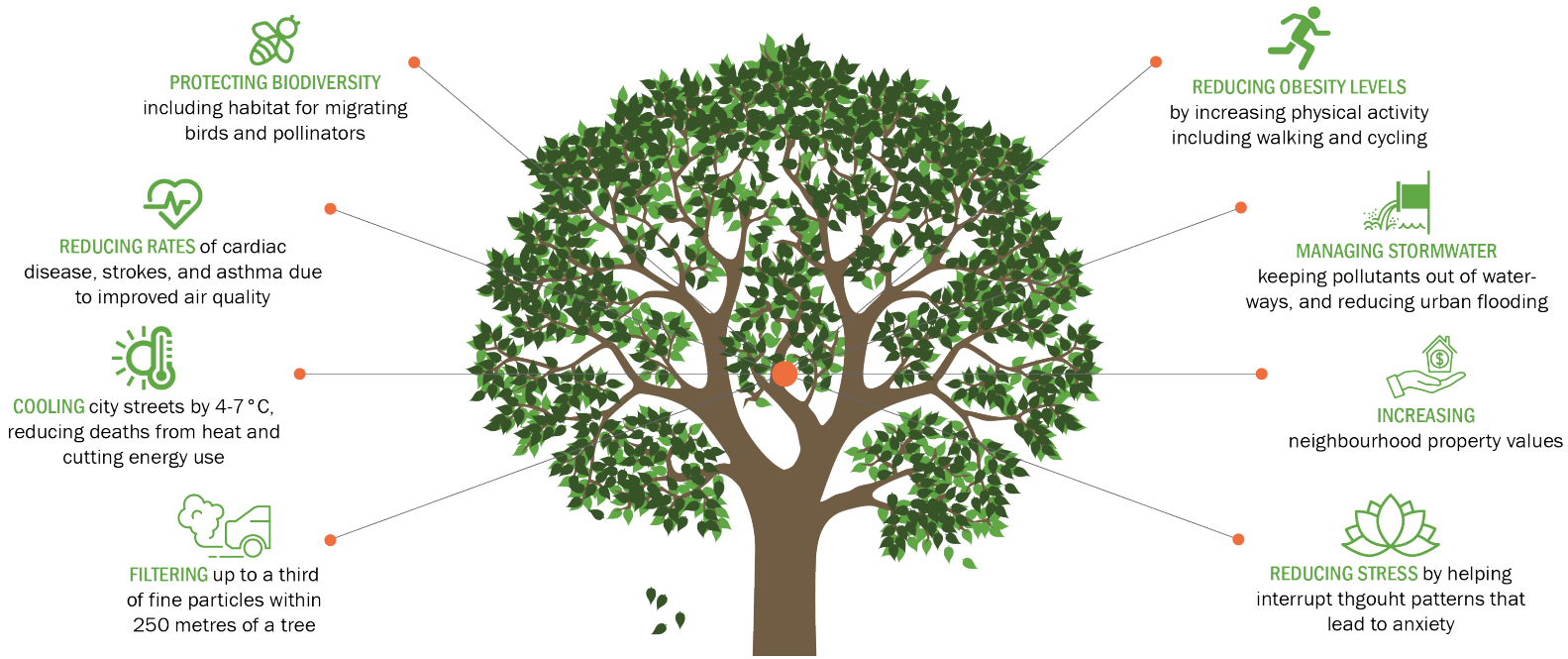
Winter Sports World will intensify the 'green zones' that extend up the building and into the rooms. It will enhance the indoor and outdoor spaces by the inclusion of indigenous ecologies and provide respite for staff, visitors and wildlife alike.

Principles
- Enhance urban ecology.
- Establish a biophilic environment that provides regular immersion in and contact with nature and natural systems.
- Maximise future mature tree canopy and vegetation coverage.
- Prioritise nature-based solutions wherever possible.
- Eliminate pollutant discharge into the waterways from wastewater and stormwater.

Targets
- Continuous canopy coverage along street front, and pedestrian and bicycle routes where possible.
- Create a net increase in biodiverse vegetation and useful habitat over existing development.
- Create habitat for flora and fauna indigenous to Jamisontown or otherwise targeted by Council as ecologically significant.
- Zero habitat for pest fauna species.
- Mitigate light and noise pollution impacts on nature.

Responds to
- SEARS – ESD Principles
- Penrith DCP
- Winter Sports World – Vision Brief

Project Commitments
- Vehicle egress and ingress located so as to not interrupt the walk-able nature of the development.
- Surface runoff from hardscapes filtered through landscape treatment before discharging to waterways.



BENEFITS OF URBAN BIODIVERSITY

- Protect existing significant trees and remnant vegetation.
- Encourage ground water recharge through permeable ground cover.

Opportunities Under Consideration
- Pollinator habitat, including flower garden
- Use plant species native to the Plant Community Type (PCT) which improves chances of attracting local birds and insects to help with the local ecosystem.
- Incorporate locally-sensitive drought tolerant plant species which require little irrigation and maintenance.
- Mimic vertical structure in vegetation layers (stratification) to increase diversity of faunal habitat opportunities.
- Purchase biodiversity offsets equivalent to the ecological footprint of the development's entire life cycle to deliver No Net Loss in habitat, species, ecological status, and ecosystem services.
- Wayfinding and signage strategy providing information about flora and fauna species, remnant and constructed ecologies, and environmental management efforts.
- Foster environmental stewardship programs with building users and surrounding community.

Resilient and Adaptable
Sustainability Vision

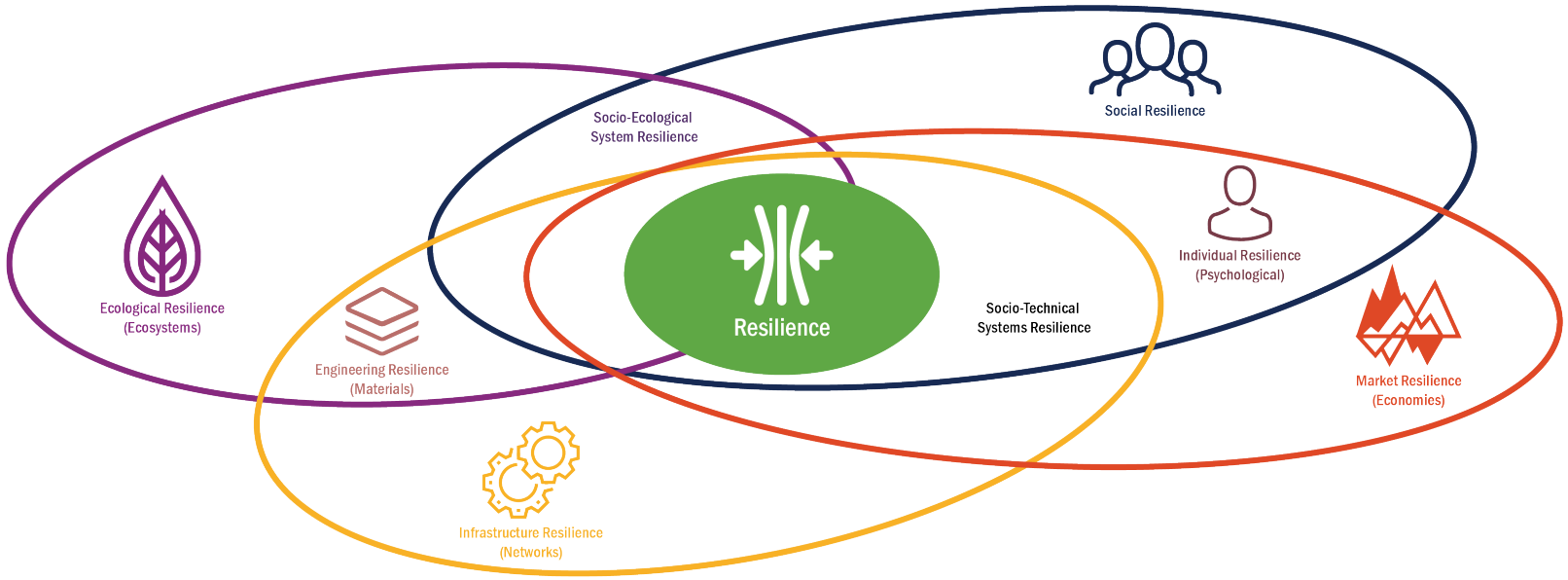
Winter Sports World will exemplify forward looking development by mitigating exposure to foreseen risks, being resilient to disruption, recovering rapidly, and being adaptable to societal advancement.

Principles
- Resilient to short term shocks (extreme weather, utility failures).
- Adaptable to long term stresses (climate change, increasing energy costs).
- Flexible to changing market conditions and environmental performance expectations.

Targets
- Design to Representative Concentration Pathway (RCP) 8.5 climate scenarios to align with UNFCC recommendations
- Demonstrate best practice access to daylight and internal visual comfort.
- Demonstrate ability to maintain indoor environments under future climate scenarios.
- Provide clean fresh air when ambient pollution levels are high (bushfire smoke).
- Designed for easy, centralised building services upgrades or supplementing of energy systems to cope with future temperature increases.
- Support development of community and community resilience.

Responds to
- SEARS – ESD Principles

Project Commitments
- Support diversity in programmatic choices, mechanical systems, and ecosystems, and redundancy in electricity and transportation.
- Extensive vegetation to mitigate urban heat island effects and protect against increasing peak temperatures.



MULTIDISCIPLINARY OVERVIEW OF URBAN RESILIENCE

- Design all structures below PMF to survive flooding.
- Include space for future energy storage (electrical or thermal batteries).
- Integrate community facilities that can serve as gathering places during emergencies and interruptions in services
- Utilise a climate responsive design approach, optimise building envelope for passive climate control.
- Provide areas of operable facade to allow fresh air during power outages.
- All electric building services and kitchens.
- Install roof top and Northern façade PV arrays to run basic systems during the day to maintain minimum systems when there is a utility failure.

Opportunities Under Consideration
- Allow islanding of any on-site generation and standby power circuit to enable limited building operations without utility power.
- Develop Climate Adaptation and Community Resilience Plans.
- Use locally available products and skill-sets.

Circular Economy
Sustainability Vision

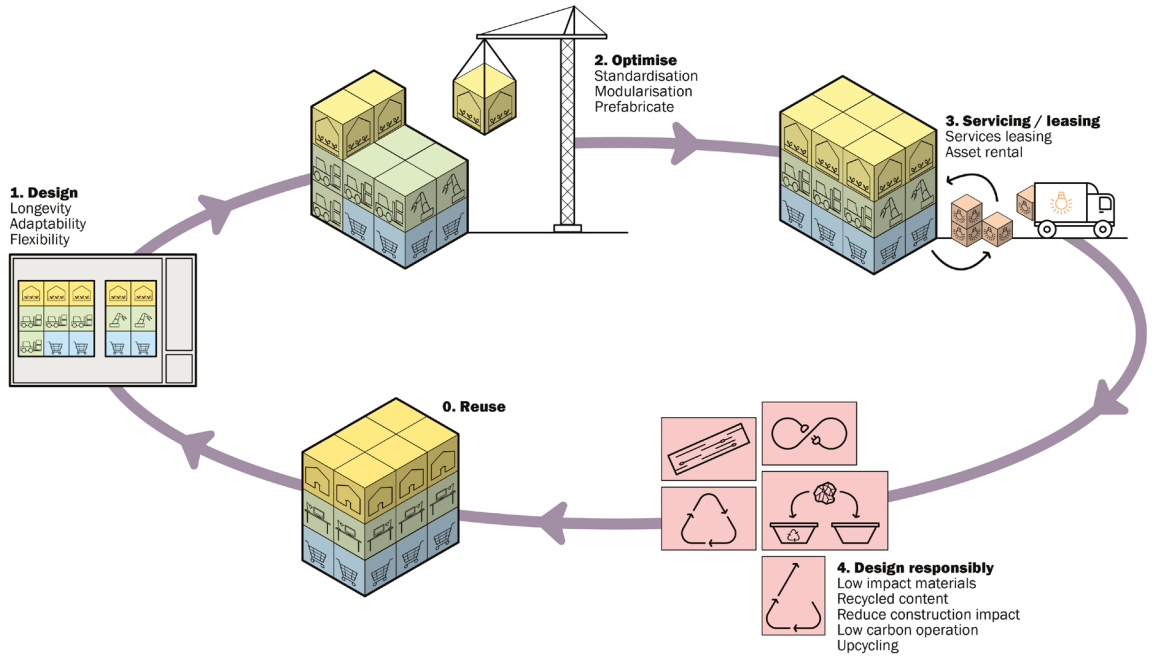
The mixed-use activities combined with the large-scale development of new infrastructure and building construction in the area provide an opportunity to design an industrial ecosystem that cycles resources at high value internally.

Principles
- Built environment accommodates sharing economy practices.
- Built environment enables alternative future uses buildings and landscapes.
- Buildings are designed for disassembly and reuse of components.
- Buildings incorporate high percentage of recycled/renewable construction materials and products.
- Construction waste practically eliminated.
- Operational waste separated for recovery and recycling.
- Zero organic waste to landfill.

Targets
- Divert construction and demolition waste from landfill
- No nutrient waste: all non-edible organic waste is converted to compost or other higher value products through partnerships with off-site partners
- No food waste: all edible food wastage is directed into existing charitable food distribution systems
- Maximise recycled/renewable construction materials and products.

Responds to
- SEARS – ESD Principles
- Penrith DCP
- Winter Sports World DCP

Project Commitments
- Flexible structural system that can be amplified to permit increased floor weight.
- Allocate space to support sharing economy practices like shared bicycles.
- Allocate space for on site waste management and processing.
- Prefabrication or Kit-of-Parts building components, where possible.



CIRCULAR ECONOMY PROCESS IN THE BUILT ENIVRONMENT

Opportunities Under Consideration
- Allocate space for private growing of food and/or edible landscapes.
- Building products and components are passported to facilitate future reuse.
- Buildings designed for disassembly.
- Buildings designed for alternative second- and third-life uses.
- Modular construction of buildings and spatial plan that allows for modification, replacement or exchange of different functions over time.
- Implement a procurement standard that includes the purchase of recycled content.

Connected with Country
Sustainability Vision

A strong understanding of and connection to Country will produce a school environment that has a distinct identity, shaping a unique sense of place that is necessary to attract investment and ensure longevity, social justice and inclusion.

Principles

- Acknowledge Traditional Owners (Dharug People) and other Aboriginal peoples in the local and regional communities.
- Cultural heritage sites are protected and accessible to local Aboriginal communities for ongoing cultural practices.
- Indigenous ecosystems endemic to the local area have been regenerated.
- Indigenous culture, heritage, and knowledge of local country is embedded and evident in the built and cultivated environments of the development.
- Opportunities for Indigenous communities are regularly created through ongoing development.

Targets

- Include Indigenous designers and decision makers, especially ones with Ancestral connections to these lands, throughout the project.
- Develop project specific indicators to measure impact to Country and culture.

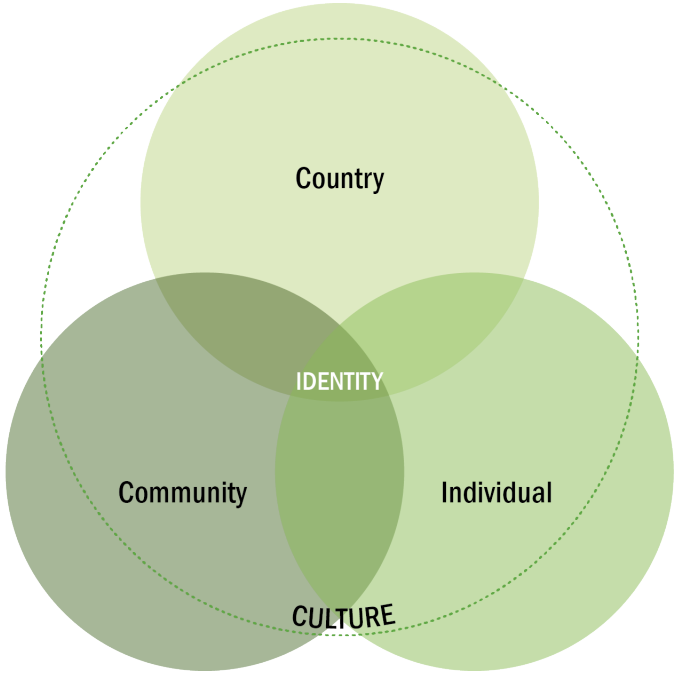
Responds to

- Winter Sports World – Vision Brief

Project Commitments

- Plan with topography, and protect watersheds.
- Create communal spaces that utilise traditional language, cultural stories and locally native ecologies.
- Identify key aspects of Country that inform a wider Songline or journey across the site.

Reciprocal relationships with Country and community form cultural practices, which in turn shape individual identities. All are also influenced by external factors including environment, politics, and wider society.



INTER-RELATIONSHIPS BETWEEN COUNTRY, COMMUNITY AND INDIVIDUALS.

- Promote the protection and restoration of local Indigenous historical and cultural sites through education.
- Educate on Aboriginal names for adjacent places and streets, and help stakeholders understand, pronounce and value these names.
- Replace offensive place names with culturally inclusive and appropriate ones.
- Multi-lingual signage incorporating local Aboriginal dialects.
- Art integrating Aboriginal and Torres Strait Islander artists.
- Educational programmes sharing the stories of Country to connect a diverse community and local industry to deep sense of knowledge about this place.

Opportunities Under Consideration

- Set up an Aboriginal Advisory Panel that includes local on-Country custodians and other Aboriginal and Torres Strait Islanders living and working in the community.
- Develop a Reconciliation Action Plan.
- Develop a cultural competency framework to remain aware of Indigenous cultural realities.
- Ensure project procurement processes respond to cultural considerations of local Aboriginal and Torres Strait Islander communities
- Support employment opportunities for Aboriginal people within Aboriginal owned businesses
- Support sustainable growth of Aboriginal owned businesses by driving demand via government procurement of goods and services

Welcoming and Inclusive
Sustainability Vision

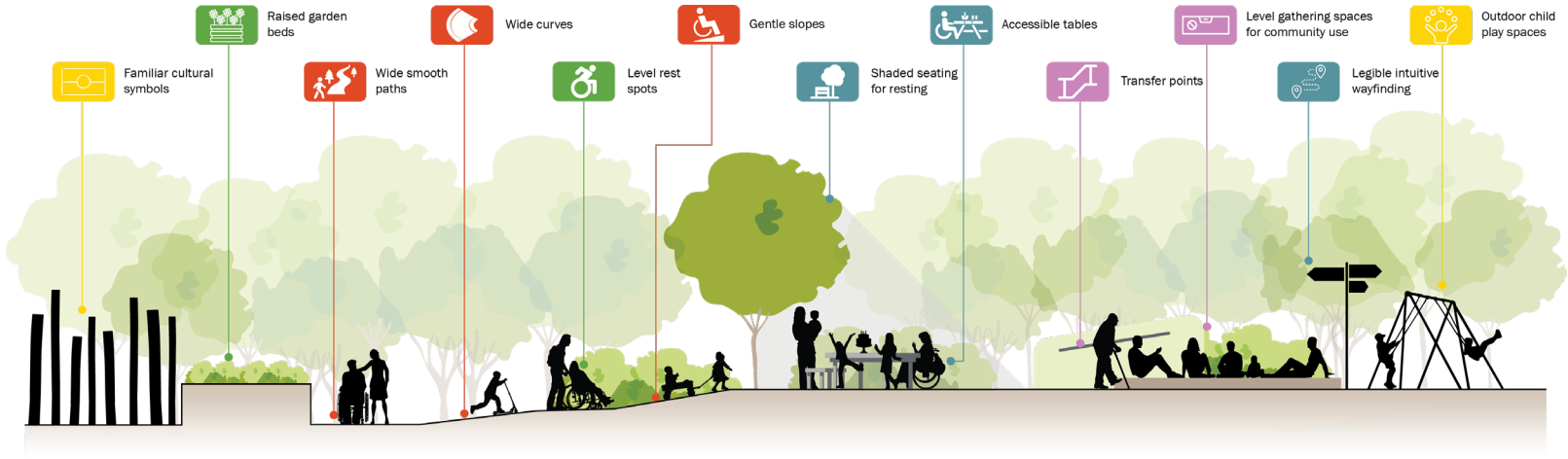
Winter Sports World will create an environment that is welcoming to all people, regardless of their age, size, gender, culture, disability or ability, so they become part of the community.

Principles
- Built environment is welcoming to diverse users communities.
- All built environment is fully physically accessible and inclusive.
- Public spaces and amenities support gathering, socialising and collaboration.
- Provide spaces that can be used for community activities and services.
- Facility development and operations promote responsible labour practices and support human rights throughout supply chains.
- Foster a vibrant, cohesive social environment that is reflective of community history and identity.
- Inclusive design process with diverse participants.

Targets
- Clear sharp profile and positioning to attract mutually reinforcing partners and stakeholders, and catalyse collective ambition.
- Curated and cohesive visual narrative recognising local history and community.
- Diversity of commercial program types to ensure habitation by a diverse community around the clock.
- Diverse public space programming to ensure equity of access regardless of socio-economic background.

Responds to
- Winter Sports World – Vision Brief

Project Commitments
- Encouraging visitors to use public transport such as train or bus.
- Support schools with child ski and snowboard lessons.
- Embed art of varying forms and scales into the fabric of the development.
- Generous footpath or corridor widths to support mobility aids and social activity.
- Multiple diverse clear entrance and exit paths.



PHYSICAL ELEMENTS OF AN INCLUSIVE COMMUNAL SPACE

- Extensive accessible street furniture and physical artefacts (e.g. ledges,
- planters) to allow visitors to stop and rest.
- Legible wayfinding system suitable for all abilities.
- Unobstructed lines of sight and visual connection to create a sense of openness.
- Areas of refuge from environmental conditions or the main flow of activity.
- Exterior power points to support informal gatherings.
- Support local artists and activate sites with temporary art projects.
- Distinct and memorable architecture and landscape features.
- Substantial and creative lighting to enforce safety, orientation, drama, and accessibility.

Opportunities Under Consideration
- Proactively engage with diverse backgrounds, empowering teachers and students to have a say on the future of Winter Sports World.
- Implement sustainable procurement models focused on social justice, equity and access to opportunity.
- Opening hours of public spaces and businesses.
- Ensure ancillary services offer fresh and health food options.
- Initiate and implement programs to communicate, educate and engage the public.
- Facilitate and enable free community programming and events (e.g. markets, concerts, street fairs).

Health and Wellness
Sustainability Vision

Winter Sports World will support initiatives that provide an exceptional environment which enriches the health and wellness of staff and visitors.

Principles
- Improving physical activity by encouraging active mobility and recreational exercise.
- Improving local air quality by through electrification, increased greenery and eliminating on-site combustion.
- Improving mental health through connection to nature, biophilia, safety, sense of belonging and enhancing social engagement.
- Passively designed building envelope to deliver thermal comfort which offers comfort and wellness with minimal energy and user input.

Targets
- Enable natural ventilation across significant portion of hotel and ancillary offering floorplates.
- Enable potential future WELL Building certification.
- Provide ventilation at rates aligned with PCA A Grade required by CO_2 responsive control.
- Maintain indoor CO_2 levels at no greater than 200 ppm higher than coincident outdoor air conditions.
- Maintain indoor particulate count at safe levels even at bushfire events.
- Achieve an appropriate Daylight Factor (DF) in hotel and ancillary offering spaces.
- Achieve indoor thermal comfort aligned with the Green Star standards with reasonable PMV levels.

Responds to
- Winter Sports World – Vision Brief

Project Commitments
- Building massing and form designed to optimise seasonal outdoor airflow.
- Building massing and form designed to maximise daylight on the ground plane.
- Significant vegetation to capture airborne pollution and particulate matter.
- Provide adequate shading to limit sunlight direct sun in hotel and ancillary spaces.

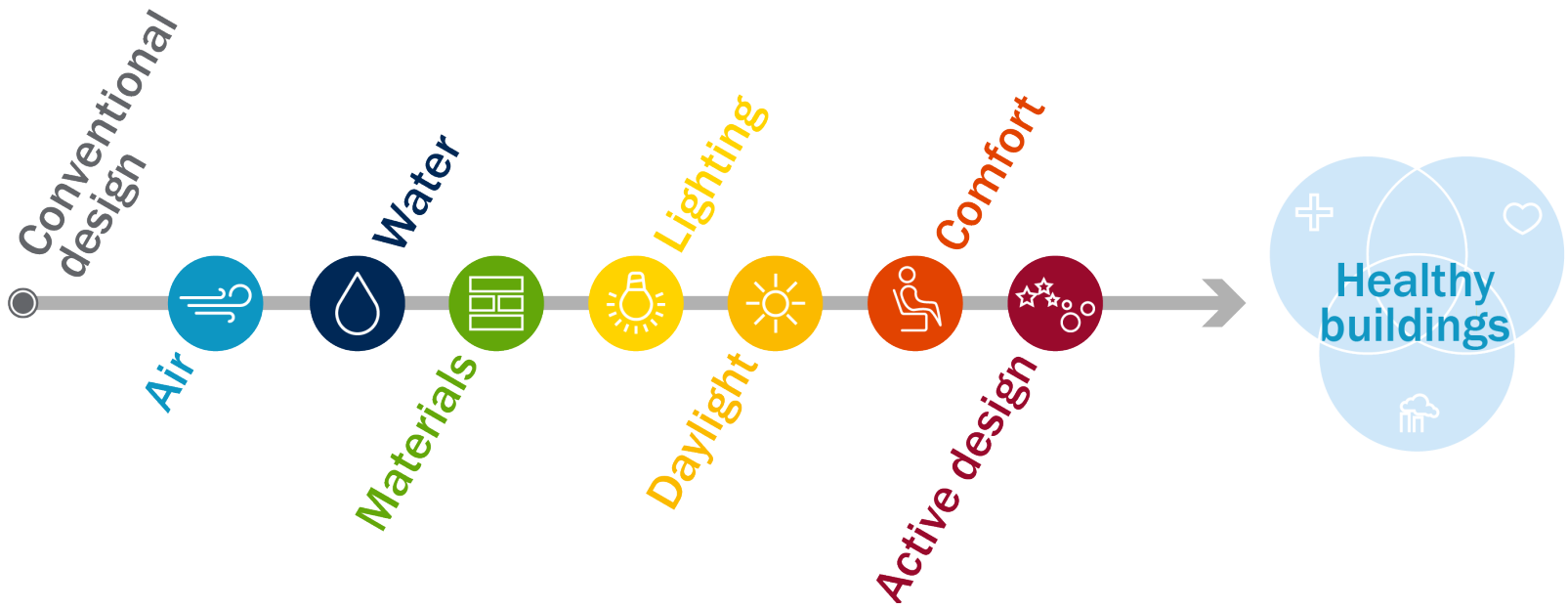


FIGURE 4 – PATHWAY FROM CONVENTIONAL DESIGN TO HEALTHY BUILDINGS

- Locate mechanical system fresh air intake locations away from pollution sources and provide best practice filtration.
- Site is walkable, permeable and people-focused.

Opportunities Under Consideration
- Select thermally improved, air-tight glazing systems and ensure installation achieves required U-value.
- Mechanical ventilation systems supply with mixed mode
- Air handlers equipped with capacity for additional filtration to be installed as needed to exclude pollutants.
- Prevent moisture build up / transfer through building envelope through elimination of thermal bridges and specification of intelligent vapour permeable membranes
- Specify low or no VOC emitting finish materials and products.
- Celebrate natural materials through biophilic design.
- Improve dietary health by eliminating fast food or junk food from canteen and providing healthy and affordable food options.
- Eliminate pesticide use from landscape maintenance
- High quality cleaning practices, including the elimination of hazardous or harmful ingredients in cleaning, disinfection and sanitisation.

Assurance

Rating Tools
Assurance

It is imperative that sustainability objectives are backed up by an approach to assurance that gives absolute confidence that the claimed outcomes will be achieved. This requires a framework for assurance that covers the sustainability objectives and provides:

- independent review
- transparency of methodology
- accountability at each phase of the lifecycle

The benefits of using existing tools are the capacity to benchmark the project against national and global peers, and also provide certainty for industry participants through the planning, procurement and delivery processes.

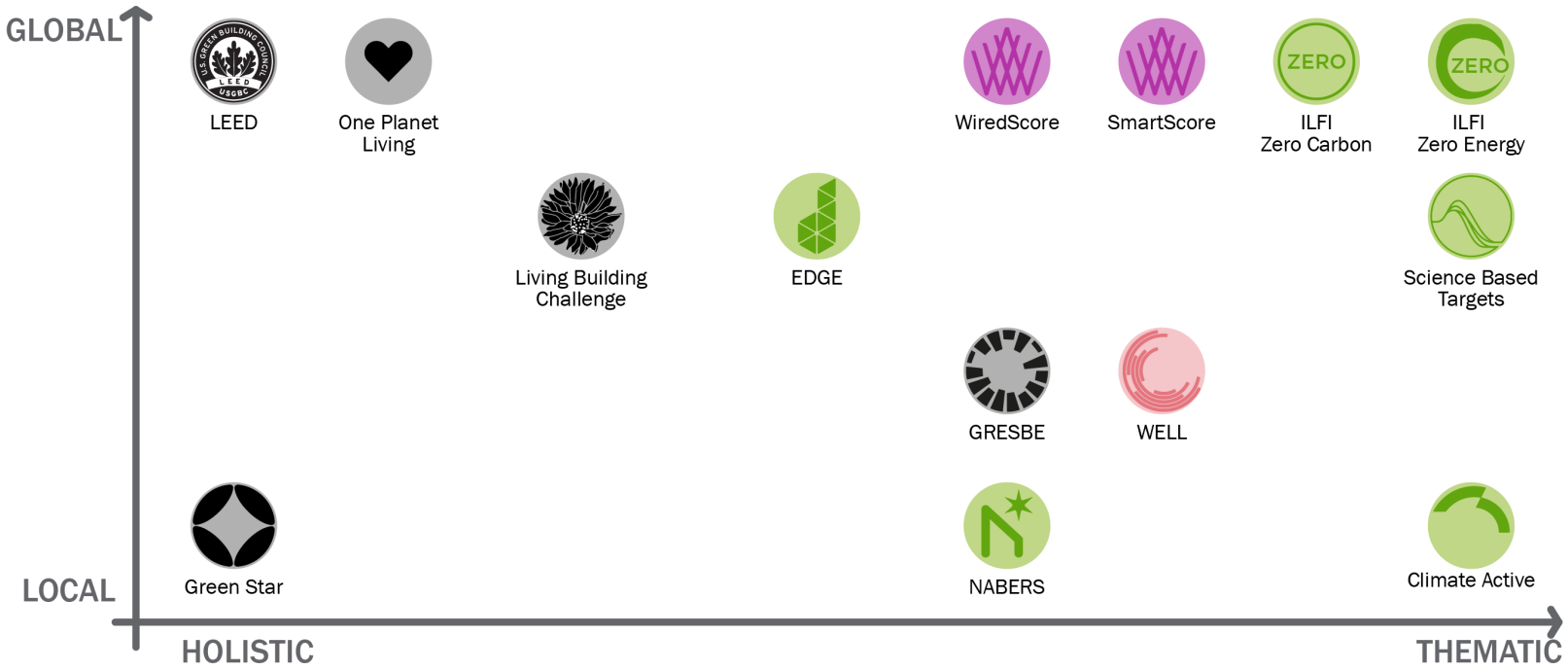
The type, or suite, rating tools and associated ratings targeted by any development will be a product of its organisational and stakeholder ambitions, strategic and planning context, geographic location, and target market. Rating tools typically fall into one of two categories:

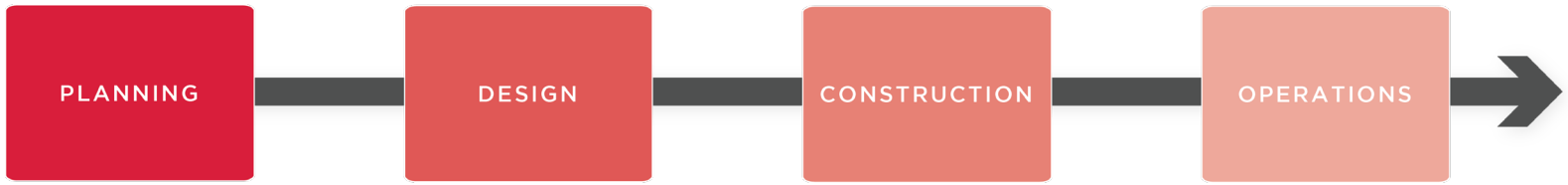
- holistic sustainability tools addressing several themes
- thematic tools focusing on just one them

As such, Winter Sports World is targeting a 5-star Green Star Buildings rating as it is the most appropriate tool for the project. See attached Green Star Buildings appraisal.

The Green Star Buildings appraisal is a meaningful way in demonstrating how WSW will achieve 5-star rating as part of DA stage and shows more commitment than just registering.

WSW will target the rating for the whole building, however spaces will be excluded for specific credits if the use of the space justifies specific conditions. A Technical Question will be submitted to the GBCA for confirmation after registration.





ASSURANCE CONSIDERATIONS

Green Star Buildings Appraisal

atelier ten

Strategic Sustainability Advisors
Environmental Designers
ESD Consultants

Level 1
79 Myrtle Street
Chippendale NSW 2000

London | Glasgow | Edinburgh
New York | New Haven | San Francisco
Bangkok | Singapore | Melbourne | **Sydney**

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5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

Achievability risk: **Low** = 90%, **Med** = 60%, High = 10%, **NP** = not possible.

Lo	Med	Hi	NP	Total
38	9	5	0	51
90%	50%	10%	0%	% risk
42	18	45	10	113
Lo	Med	Hi	NP	Possible

Projected Points

Subtotals

14	0	5	0	17	Responsible		Explanation		Responsible Party	Alignments	Comments	Evidence	Achievability (Technical)	Documentation Difficulty	Added Cost Risk
1				1	Industry Development	1.1	Credit Achievement: meet all three of the following criteria.						high	low	low
							Green Star Accredited Professional	A green Star AP must be contractually engaged as part of the core project team for the duration of the project.	A10	Aligned with 1.1 Accredited professional		Letters, minutes			
							Financial Transparency	The project team discloses the cost of sustainable building practices of the project, including design, construction and documentation to the GBCA.	Developer	Aligned with 30D Innovation Challenge - Financial Transparency		Template, reports			
							Marketing Sustainability Achievements	Information on the sustainability initiatives that the building targeted must be provided to enable it being featured on the GBCA's website. The project team must outline how the building will detail its sustainability achievements to its stakeholders (typical building occupants and visitors). the Green Star Certification achieved for the project must be prominently displayed in a location that is visible to the public.	Developer	Aligned with 30D Innovation Challenge - Marketing Excellence		Photos, samples, plans			
Y	-	-	-	-	Responsible Construction	2.0	Minimum Expectation: meet all four of the following criteria.						high	med	low
							Environmental Management System	Builder must have an Environmental Management System (EMS) certified to a recognised standard, such as AS/NZS ISO 14001, BS 7750 or the European Community's EMAS.	Developer	Aligned with 7.1 Environmental Management System		Reports			
							Environmental Management Plan	The Environmental Management Plan (EMP) must be project specific and cover the scope of construction activities. It must be implemented from the start of construction and include all works within the project scope.	Developer	Aligned with 7.0 Environmental Management Plan		Drawings			
							Construction and Demolition Waste	Project must divert at least 80% of construction and demolition waste from landfill. A disclosure Statement is required from waste contractors and processing facilities outlining how the company and their reporting aligns with the Green Star Construction and Demolition Waste Reporting Criteria.	Developer	Aligned with 22.0 Reporting Accuracy		Reports			
							Sustainability Training	The builder must provider the following training to 95% of all contractors and subcontractors present on site for at least three (3) days: Information on the sustainable building certification(s) sought, including: - the sustainability attributes of the building and their benefits; - the value of certification; and - the role site worker(s) play in delivering a sustainable building.	Developer	Aligned with 7.2 High Quality Staff Support		Presentation, attendance			
1				1		2.1	Credit Achievement: in addition to the Minimum Expectation, meet the following criteria.						high	low	low
							Construction and Demolition Waste Diversion	Project must divert at least 90% of construction and demolition waste from landfill. A disclosure Statement is required from waste contractors and processing facilities outlining how the company and their reporting aligns with the Green Star Construction and Demolition Waste Reporting Criteria.	Developer	Aligned with 22B Percentage Benchmark		Verification, drawings, reports			

5 Star Achievability

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90%	50%	10%	0%		% risk
42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

Lo	Med	Hi	NP	Possible											
Y	-	-	-	-	**Verification and Handover**	3.0	Minimum Expectation: meet all three of the following criteria.							high	med	low
							Metering and Monitoring	The building must have accessible energy and water metering for all common uses, major uses, and major sources. The meters must be connected to a monitoring system capable of capturing and processing the data produced by the meters. The meters and monitoring systems must: - Provide continual information (up to 1-hour interval readings); - Be commissioned and validated per the most current 'Validating Non-Utility Meters for NABERS Ratings' protocol, or National Measurement Institute (NMI) standards; - Be capable of identifying inaccuracies in the meter network and producing alerts. Inaccuracies are defined as those over meter tolerances based on their metering accuracy class (e.g. 'Class 1' meters shall not have inaccuracies of more the 1% due to metering accuracy class); and - Be sufficient to support future achievement of a NABERS rating.	Mechanical / Electrical / Hydraulic	Aligned with 6.0 Metering Aligned with 6.1 Monitoring Systems	Can be achieved within current design.	Drawings, letters, reports, strategy, certificates, validation			
							Commissioning and Tuning	The project team must perform the following prior to construction: - Set environmental performance targets; and - Perform a services and maintainability review; During construction and practical completion; - Commission the building; and - Engage building tuning service provider; After practical completion; - Tune the building over the next 12 months.	All	Aligned with 2.0 Environmental Performance Targets Aligned with 2.1 Services and maintainability review Aligned with 2.2 Building Commissioning Aligned with 2.3 Building Systems Tuning Aligned with 5.1 Environmental Building Performance	Can be achieved within current design. Will require additional documentation energy and water metering and consumption.	Reports, commitment, testing			
							Building Information	The project team must provide the following to the building owner: - Operations and maintenance information for all nominated building systems; - A building log book developed in line with CIBSE TM31: Building Log Book Toolkit before practical completion of the project; and - Building user information.	All	Aligned with 4.1 Building Information	This credit requires O&Ms, building logbook and building user information provided to building owner and FM at the time of PC by services contractors.	Reports, O&M, logbook			
1				1		3.1	Credit Achievement: in addition to the Minimum Expectation, meet one or both (Building Services Value >$20) of the following criteria.							high	high	low
							Soft Landings Approach	Implement Stages 1 - 4 of the Soft Landing Framework Australia and New Zealand.	All	30B Market Transformation - Soft Landings Approach	No impact on design. Evidence of implementation of BSRIA framework required.	Reports			
							Independent Commissioning Agent	An ICA must be appointed to advise, monitor, and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning and turning phases.	ICA	2.4 Independent Commissioning Agent		CV, letters, reports			

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Lo	Med	Hi	NP	Possible	

1					Collaborative Leasing		Credit Achievement: meet all three of the following criteria.				high	high	low
							High Quality Leasing	The building owner or managing entity develops lease agreements that address all the below (in line with the BBP's Green Leasing Guide): Co-operation & works Management & consumption Reporting & standards - Environmental Initiatives - Enabling Upgrade Works - Premises Design for Performance - Managing Waste from Works Management and Consumption - Energy Management - Water Management - Waste Management - IEQ Management - Sustainable Cleaning Reporting and Standards - Information Sharing - Performance Rating - Performance Standards - Metering - Comfort	Developer					
							Building Owner Contributions	The building owner provides a platform or mechanism to tenants with the following information related to their tenancy on a regular basis: - Breakdown of waste stream collection data (monthly) - Water consumption (quarterly) - Energy use (quarterly) The building owner provides a platform for tenants and occupants to provide feedback and discuss with building owners' opportunities for improvement in building operations, for example a committee that meets on a regular basis throughout the year.	Developer					
							Tenant Agreement	The minimum number of tenants that are engaged and have signed leases in line with the 'High Quality Leasing' requirement is by sector as follows: - 10% of all commercial office tenants - 5% of all food and beverage tenants The percentage is calculated by the number of tenants not percentage of area leased. Where there are less than 10 tenants, only one tenant is required to be engaged and signed to relevant lease agreements.	Developer					
1							Exceptional Performance					high	high	low
							Tenant Agreement	The minimum number of tenants that are engaged and have signed leases in line with the 'High Quality Leasing' requirement is by sector as follows: - 80% of all commercial office tenants - 55% of all food and beverage tenants The percentage is calculated by the number of tenants not percentage of area leased.	Developer					

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Lo	Med	Hi	NP	Possible	

Lo	Med	Hi	NP	Total											
Y	-	-	-	-	**Operational Waste**	4.0	Minimum Expectation: meet all three of the following criteria.							high	low	low
							Collection of Waste Streams	The building must provide bins or storage containers to building occupants to enable them to separate their waste. These bins must be labelled and easy to access, and evenly distributed throughout the building. They must also allow for segregating the following, as a minimum: - General waste going to landfill; - Recycling streams to be collected by the building's waste collection service, including paper and cardboard, glass, and plastic; and - One other waste stream representing at least 1% of the total annual operational waste (by volume) of the building. This may include collecting any of the following waste types: organics, e-waste, batteries, etc. Any other single waste stream (except food waste) that represents more than 5% of the total annual operational waste (by volume) must also be accounted for.	Developer	Aligned with 8B Prescriptive Pathway: Facilities		Plans, calculations, details			
							Dedicated Waste Storage Area	A dedicated area(s) for the storage and collection of the applicable waste streams must be provided. The storage area must be sized to accommodate all bins or containers, for all applicable waste streams, for at least one collection cycle. The storage areas(s) must have easy and safe access by collection vehicles.	Developer	Aligned with 8B Prescriptive Pathway: Facilities	Refrigerated storage space for organics collection and disposal.			
							Signoff by Waste Specialist and/or Contractor	A waste specialist and/or contractor must sign-off on the designs to confirm they are adequately sized and located for the safe and convenient storage and collection of the waste streams identified.	Developer					
1				1	**Responsible Procurement**	5.1	Credit Achievement: meet both of the following criteria.							high	low	low
							Risk and Opportunity Assessment	The project team must undertake a risk and opportunities assessment of its supply chain to identify environmental and social risks and opportunities. The project must provide a narrative on how it has actively addressed one risk and one opportunity.	Developer			Extracts, plans, minutes, data		
							Responsible Procurement Plan	The project must develop and implement a plan to mitigate and mange identified risks and drive implementation of identified opportunities. This can be art of an organisational plan or standalone.	Developer					
3				3	**Responsible Structure**	6.1	Credit Achievement							high	med	med
							Good Practice Products	50% of all structural components (by cost) meet a Responsible Products Value score of at least 10.	Structural			Receipts, certificates		
		2		2		6.2	Exceptional Performance: meet one of the following criteria.							low	med	med
							Best Practice Products	10% of all products in the structure (by cost) meet a Responsible Products Value score of at least 15.	Structural	Concrete and steel suppliers are already offering responsible products and will be able to meet specifications when we go to market		Receipts, certificates		
							Good Practice Products	80% of all products in the structure (by cost) meet a Responsible Products Value score of at least 10.	Structural					
2				2	**Responsible Envelope**	7.1	Credit Achievement							high	med	med
							Good Practice Products	30% of all building envelope components (by cost) meet a Responsible Products Value score of at least 10.	Façade	Challenging to achieve, will depend on supply chain availability. Suppliers will respond when we go to market.		Receipts, certificates		
		2		2		7.2	Exceptional Performance: meet one of the following criteria.							low	med	med
							Best Practice Products	10% of all products in building envelope(by cost) meet a Responsible Products Value score of at least 15.	Façade	Uncertain about this level of detail Challenging to achieve, will depend on supply chain availability.		Receipts,		

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42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

							Good Practice Products	60% of all products in building envelope(by cost) meet a Responsible Products Value score of at least 10.	Façade	Challenging to achieve, will depend on supply chain availability. Suppliers will respond when we go to market.	certificates			
1				1	**Responsible Systems**	8.1	Credit Achievement							
							Good Practice Products	20% of all active building systems (by cost) meet a Responsible Products Value score of at least 6.	Mechanical	Modification to material/equipment selections for services may be required which may limit equipment selections and/or impact cost. Examples of RPV recognised initiatives are: EPD, ISO14001 certification, Climate Active Carbon Neutral Certification, Chain of custody certification, Third-party product certification scheme.	Receipts, certificates	high	med	med
		1		1		8.2	Exceptional Performance: meet one of the following criteria.							
							Best Practice Products	5% of all active building systems (by cost) meet a Responsible Products Value score of at least 11.	Mechanical	Uncertain about this level of detail	Receipts, certificates	low	med	med
							Good Practice Products	35% of all active building systems (by cost) meet a Responsible Products Value score of at least 6.	Mechanical					
1				1	**Responsible Finishes**	9.1	Credit Achievement							
							Good Practice Products	40% of all internal building finishes (by area) meet a Responsible Products Value score of at least 7.	Architectural	Examples of RPV recognised initiatives are: EPD, ISO14001 certification, Climate Active Carbon Neutral Certification, Chain of custody certification, Third-party product certification scheme.	Receipts, certificates	high	med	med
1				1		9.2	Exceptional Performance: meet one of the following criteria.							
							Best Practice Products	10% of all internal building finishes (by area) meet a Responsible Products Value score of at least 12.	Architectural	Examples of RPV recognised initiatives are: EPD, ISO14001 certification, Climate Active Carbon Neutral Certification, Chain of custody certification, Third-party product certification scheme.	Receipts, certificates	high	med	med
							Good Practice Products	60% of all internal building finishes (by area) meet a Responsible Products Value score of at least 7.	Architectural	Examples of RPV recognised initiatives are: EPD, ISO14001 certification, Climate Active Carbon Neutral Certification, Chain of custody certification, Third-party product certification scheme.				

4	7	2	1	14	Healthy		Explanation	Responsible Party	Alignments	Comments	Action by	Achievability (Technical)	Documentation Difficulty	Added Cost Risk
Y	-	-	-	-		10.0	Minimum Expectation: meet all three of the following criteria.							
							Ventilation System Attributes	- Separation from pollutants: the building ventilation systems must be designed to comply with ASHRAE Standard 62.1:2013 or AS 1668:2012 (whichever is greater) regarding minimum separation distances between pollution sources and outdoor air intakes; and - Cleaning ductwork that serves the building must be cleaned prior to occupation in accordance with a recognised standard.	Mechanical	Aligned with 9.1 Ventilation System Attributes	Can be achieved. Requires coordination of outside air and exhaust/relief air locations with façade/architect.	Drawings, specifications, EMP, reports	high	med	low
							Provision of Outdoor Air	Outdoor air is provided at a rate 50% greater than the minimum required by AS 1668.2-2012, or CO2 concentrations are maintained below 800ppm at all times during the occupancy period.	Mechanical	Aligned with 9.2 Provision of Outdoor Air	50% outside air increase can be accommodated in current design. This will: - increase chiller capacities and air handling unit capacities, - increase electrical power requirements - increase plant space required - increase cost of mechanical plant. Performance based approach (CO2 monitoring) can be used alternatively. If adopted this would require additional wiring and controls for CO2 sensors. This will be dependant on room layouts/AC zoning.				

5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

Achievability risk: **Low** = 90%, **Med** = 60%, High = 10%, **NP** = not possible.

Lo	Med	Hi	NP	Total	
38	9	5	0	51	**Projected Points**
90%	50%	10%	0%		% risk
42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

					Clean Air		Exhaust or Elimination of Pollutants	It must be demonstrated that pollutants from printing and photocopying equipment, cooking processes and equipment are limited from the nominated area by either: - Removing the source of pollutants; or - Exhausting the pollutants directly to the outside.	Mechanical	Aligned with 9.3 Exhaust or Elimination of Pollutants					
	2			2		10.1	Credit Achievement: in addition to the Minimum Expectation, meet both of the following criteria.								
							Ventilation System Attributes	Any mechanical ventilation system within the building must provide adequate access to both sides of all moisture and debris-catching components for maintenance within the air disruption system.	Mechanical	Aligned with 9.1 Ventilation System Attributes	Requires bigger air system which requires additional costs but will be valued by some tenants. Can be achieved without design modification. May impact equipment selections.				
							Provision of Outdoor Air	For mechanically ventilated or mix mode spaces, outdoor air is provided at a rate 100% greater than the minimum required by AS 1668.2-2012, or CO2 concentrations are maintained below 700ppm at all times during the occupancy period.	Mechanical	Aligned with 9.2 Provision of Outdoor Air	Performance based approach (CO2 monitoring) can be used alternatively. If adopted this would require additional wiring and controls for CO2 sensors. This will be dependant on room layouts/AC zoning. A 100% increase in outside air for regularly occupied areas needs to be provided. This will - increase chiller capacities and air handling unit capacities, - increase electrical power requirements - increase plant space required - increase cost of mechanical plant For Class 3 parts of the building (hotel) a 50% increase in natural ventilation opening area requirements must be provided. I.e. for each hotel room natural ventilation free area must increase from 5% of room floor area to 7.5% of room floor area. Potential energy penalties.				

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90%	50%	10%	0%		% risk
42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

Lo	Med	Hi	NP	Possible											
Y	-	-	-	-	**Light Quality**	11.0	Minimum Expectation: meet all three of the following criteria.						high	med	low
							Lighting Comfort	Lighting within the building must meet the following criteria: - All lighting must be flicker-free; - Light sources must have a minimum Colour Rendering Index (CRI) average R1 to R8 of 85 or higher, and have a CRI R9 of 50 or higher; - Light sources must meet best practice illuminance levels for each task within each space type with a maintained illuminance that meets the levels recommended in AS/NZS 1680.1:2006 series applicable to the project type and including maintenance; - The maintained illuminance values must achieve a uniformity of no less than that specified in Table 3.2 of AS/NZS 1680.1:2006, with a maintenance factor method as defined in AS/NZS 1680.4; and - All light sources must have a minimum of 3 MacAdam Ellipses.	Electrical	Aligned with 11.0 Minimum Lighting Comfort	Hotel spaces outcomes will be difficult.				
							Glare from Light Sources	Bare light sources must be fitted with baffles, louvers, translucent diffusers, ceiling design, or other means that obscures the direct light source from all viewing angles of occupants, including occupants looking directly upwards. Refer the Submission guidelines for more prescriptive pathways.	Electrical	Aligned with 11.1 General Illuminance and 12.0 Glare Reduction	This outcome can be achieved on commercial spaces, Food and Beverage & Hotel spaces will be difficult.	Reports, calculations, drawings, specifications, schedules, data sheets			
							Daylight	The project team is required to show how the building's design: - Maximises the number of occupants that are in or near daylit areas during their daily activities for all building types; - Ensures regularly occupied spaces are in reasonable proximity to glazed facades, windows or skylights; - Controls or mitigates glare in the daylit spaces; - For schools, how all classrooms have access to a view and daylight; - For hospitals, how all patient areas have access to a view and daylight; and - For apartments, how in 95% of all apartments, the living rooms and all bedrooms have access to a view and daylight; and - Provides building occupants with unrestricted access to daylit indoor common spaces.	A10	Aligned with 12.1 Daylight	Included in A10 scope				
	2			2		11.1	Credit Achievement: in addition to the Minimum Expectation, meet one of the following criteria.						med	low	low
							Artificial Lighting	- The walls within the field of view of occupants in regularly occupied spaces must have an average surface reflectance value of 0.70 and an average surface illuminance of at least 50% of the horizontal illuminance level required for task. This requirement does not apply to green walls or to coloured/patterned/biophilic feature walls that make up less than 20% of the field of view of the occupants; and - Vertical illuminance in workspaces: ensure that 50% of the horizontal task illuminance reaches the average eye height for 90% of primary spaces using a vertical illuminance calculation grid. The illuminance values must be calculated in accordance with AS/NZS 1680 series for the relevant task. Where unknown a conservative estimate can be used.	Electrical	Aligned with 11.2 Surface Illuminance	Default pathway is to provide best practice artificial lighting. Hotel spaces will be a difficult outcome.				

5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

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90%	50%	10%	0%		% risk
42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

							12.0	Daylight	For non-residential buildings, at least 40% of the nominated area averaged across the building must receive high levels of daylight with no less than 20% on any floor or tenancy (whichever is smaller). For residential buildings, 60% of the combined living and bedroom area of each apartment unit must comply with the daylight requirements. Kitchens are not included in the calculations. The daylight levels must also be present in at least 20% of the area of each bedroom and living area.	A10	Aligned with 12.1 Daylight	Included in A10 scope. A10 to check daylight level, however office floorplate depth may not achieve requirements. Recommend targeting artificial lighting pathway				
		2		2			11.2	Exceptional Performance: in addition to the Minimum Expectation and Credit Achievement, meet both of the following criteria.						low	low	low
								Artificial Lighting	- The walls within the field of view of occupants in regularly occupied spaces must have an average surface reflectance value of 0.70 and an average surface illuminance of at least 50% of the horizontal illuminance level required for task. This requirement does not apply to green walls or to coloured/patterned/biophilic feature walls that make up less than 20% of the field of view of the occupants; and - Vertical illuminance in workspaces: ensure that 50% of the horizontal task illuminance reaches the average eye height for 90% of primary spaces using a vertical illuminance calculation grid. The illuminance values must be calculated in accordance with AS/NZS 1680 series for the relevant task. Where unknown a conservative estimate can be used.	Electrical	Aligned with 11.2 Surface Illuminance	Default pathway is to provide best practice artificial lighting. Hotel spaces will be a difficult outcome.				
								Daylight	For non-residential buildings, at least 40% of the nominated area averaged across the building must receive high levels of daylight with no less than 20% on any floor or tenancy (whichever is smaller). For residential buildings, 60% of the combined living and bedroom area of each apartment unit must comply with the daylight requirements. Kitchens are not included in the calculations. The daylight levels must also be present in at least 20% of the area of each bedroom and living area.	A10	Aligned with 12.1 Daylight	Included in A10 scope. A10 to check daylight level, however office floorplate depth may not achieve requirements. Uncertainty with retail.				
Y	-	-	-	-	**Acoustic Comfort**		12.0	Minimum Expectation						high	low	low
								Acoustic Comfort Strategy	An Acoustic Comfort Strategy must be prepared describing how the building design will deliver acoustic comfort to the building occupants. It must address: - Quiet enjoyment to space; - Functional use of space; - Control of intrusive or high levels of noise; - Privacy; - Noise transfer; and - Speech intelligibility.	Acoustic		Impact from acoustic requirements may impact mechanical systems.	Strategy, drawings, reports			
2				2			12.1	Credit Achievement: in addition to the Minimum Expectation, meet all of the following criteria.						high	med	med
								Maximum Internal Noise Levels	Internal ambient noise levels in the nominated areas must be no greater than the upper range value relevant to the activity type in each space as recommended in the current AS/NZS 2107:2016.	Acoustic	Aligned with 10.1 Internal Noise Levels					
								Acoustic Separation	The project must address noise transmission between enclosed spaces within the nominated area demonstrated through privacy or sound insulation.	Acoustic	Aligned with 10.3 Acoustic Separation		Strategy, drawings			

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42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

						12.1	Impact Noise Transfer	Impact noise transfer measured in accordance with ISO 16283-2 through a floor where: - Floors are located above regularly occupied areas - Adjacent spaces belonging to different tenancies which share a floor must not exceed dB L'nT,w: - 55 for floors above Class 2 and Class 3 buildings accommodation spaces - 60 for all other spaces.	Acoustic		Only applicable to the hotel.	Strategy, drawings, reports	high	med	med
Y	-	-	-	-	**Exposure to Toxins**	13.0	Minimum Expectation: meet all three of the following criteria.							
							Paints, Adhesives, Sealants, and Carpets	At least 95% of internally applied paints, adhesives, sealants (by volume) and carpets (by area) must meet stipulated 'Total Volatile Organic Compounds (TVOC) Limits'.	Architectural	Aligned with 13.1 Paints, Adhesives, Sealants and Carpets	This should be pretty standard now and is reflected in the standard specification. No major issues.	Specifications, data sheets, certificates, invoices, receipts, quantities, survey, testing, drawings	high	low	med
							Engineered Wood Products	Either no new engineered wood products are used in the building, or at least 95% (by area) of all engineered wood products meet specified formaldehyde emission limits.	Architectural	Aligned with 13.2 Engineered Wood Products	This should be pretty standard now and is reflected in the standard specification. No major issues.				
							Banned or Highly Toxic Materials	A comprehensive hazardous materials survey must be carried out. Asbestos, lead or PCBs have been stabilised or removed and disposed in accordance with best practice guidelines; or the survey concluded that no hazardous materials were found in any existing buildings or structures on the project site.	Architectural		This should be pretty standard now and is reflected in the standard specification. No major issues.				
2				2		13.1	Credit Achievement: in addition to the Minimum Expectation, meet the following criteria.							
							TVOC and Formaldehyde Levels	In addition to the Minimum Expectation, on-site testing must be undertaken to verify the following limits: - TVOC = 0.27 ppm; - Formaldehyde = 0.02 ppm; and - At least three samples are to be taken per floor and at least six (6) floors must be sampled. These must be representative of where the occupants are likely to spend a majority of their time.	Architectural		Cost for post completion air quality testing, estimation 10k - 20k. Risk is with the trade contractors, in case they have used products against the specification.	Specifications, data sheets, certificates, invoices, receipts, quantities, survey, testing, drawings	high	low	med
	2			2	**Amenity and Comfort**	14.1	Credit Achievement							
							Amenity Rooms	The building includes one or several rooms designed to promote either inclusivity, mindfulness or exercise for staff or occupants. For a room(s) to qualify, it must be classified as per below: - Parent room - Relaxation, meditation, or prayer room - Exercise room The room size to be provided must be as follows: - The size of the room is calculated at a ratio of 1m^2 per every 10 staff or occupants - The room must be no smaller than 10m2.	Architectural		May be expected by tenants of a contemporary workplace, need to understand value. Requires 1,500m2 space (according to NCC Table D1.13 number of persons) for access for all building users (permanent staff, regular building occupants). Hotel gym and spa/sauna areas is approximately 800m2.	Narratives, drawings	med	low	low
							Credit Achievement: Views and either Plants & Natures-inspired Design or Interaction with Nature							
							Views	At least 60% of regularly occupied areas must have a clear line of sight to a high quality internal or external view. All floor areas within 8m from a compliant view meet this credit criterion.	Architectural	Aligned with 12.2 Views	60% of regularly occupied areas must have a clear line of sight to a high quality internal or external view. All floor areas within 8m from a compliant view meet this credit criteria.				

5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

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90%	50%	10%	0%		% risk
42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

	1			1	Connection to Nature	15.1	Plants & Nature-inspired Design	Plants are provided in primary occupied spaces at a rate of one (1) or more plants, in pots with a soil surface area totalling at least 500cm2, every 10m2 of the nominated area. An ongoing maintenance plan must be established to ensure plant health is maintained. Five nature inspired design interventions must be provided in alignment with the following principles: - Elements that provide differing natural sensory experiences; - Elements that reflect natural and cultural patterns and forms; - Using natural materials; and - Large scale and holistically incorporated natural motifs and art.	Architectural		Some of this may be subject to tenant fit-out. Indoor plants must be provided in regularly occupied areas. One or more plants in pots with soil surface area totalling at least 500cm2 for every 15m2 of the regularly occupied spaces is required. For further investigation - potential buffer points, but may be difficult to achieve. Potential maintenance issues.	Drawings, policies, narratives	med	med	med
							Interaction with Nature	Occupants can interact with nature either inside the building, or externally through a green façade (or wall) or garden. At least 5% of the building's regularly occupied areas or land within the site boundary (whichever is greater) must be planted area (either vertical or horizontal). The allocated area must be accessible and have the necessary infrastructure to allow the activity to occur (for example water source/taps for irrigation, storage area for tools and equipment).	Architectural		At least 5% of the building's regularly occupied areas or land within the site boundary (whichever is greater) must be planted area (either vertical or horizontal). Terrace areas need to be assessed.				
			1	1		15.2	Exceptional Performance: in addition to the Credit Achievement, meet all three of the following criteria.							
							Views	At least 60% of regularly occupied areas must have a clear line of sight to a high quality internal or external view. All floor areas within 8m from a compliant view meet this credit criterion.	Architectural	Aligned with 12.2 Views				
							Plants & Nature-inspired Design	Plants are provided in primary occupied spaces at a rate of one (1) or more plants, in pots with a soil surface area totalling at least 500cm2, every 10m2 of the nominated area. An ongoing maintenance plan must be established to ensure plant health is maintained. Five nature inspired design interventions must be provided in alignment with the following principles: - Elements that provide differing natural sensory experiences; - Elements that reflect natural and cultural patterns and forms; - Using natural materials; and - Large scale and holistically incorporated natural motifs and art.	Architectural			Drawings, policies, narratives	NP	med	med
							Interaction with Nature	Occupants can interact with nature either inside the building, or externally through a green façade (or wall) or garden. At least 5% of the building's regularly occupied areas or land within the site boundary (whichever is greater) must be planted area (either vertical or horizontal). The allocated area must be accessible and have the necessary infrastructure to allow the activity to occur (for example water source/taps for irrigation, storage area for tools and equipment).	Architectural						

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5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

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38	9	5	0	51
90%	50%	10%	0%	% risk
42	18	45	10	113
Lo	Med	Hi	NP	Possible

Projected Points

Subtotals

1	4	3	0	8	Resilient			Explanation	Responsible Party	Alignments	Comments	Action by	Achievability (Technical)	Documentation Difficulty	Added Cost Risk
Y	-	-	-	-	**Climate Change Resilience**	16.0	Minimum Expectation								
							Climate Change Pre-screening Checklist	Project team members must consider potential impacts from climate change when completing the checklist in the submission form including, but not limited to: - Direct damage or failure of project components - Accelerated deterioration of project components or reduced design life - Reduced operating capacity - Climate hazard impacts to surrounding areas (e.g., impacting access and egress) - Impacts to the health and wellbeing of building occupants and other relevant stakeholders - Indirect risks from impacts to other interdependent systems and services (e.g., transport networks, power, water, telecommunications)	A10	Aligned with 3.1 Implementation of a Climate Adaptation Plan		Assessments, responses, communications, registers	high	med	low
	1			1		16.1	Credit Achievement: in addition to the Minimum Expectation, meet both the following criteria.								
							Climate Change Risk and Adaptation Assessment	A suitably qualified professional must undertake a climate change risk and adaptation assessment and author a report.	A10	Aligned with 3.1 Implementation of a Climate Adaptation Plan			med	med	low
							Managing Risks	The project team must ensure risks are addressed as follows: - All risks rated as 'Extreme' must be addressed through specific design responses - All risks rated as 'High' must be addressed through design or future operational responses - Regardless of risk rating, at least two risks identified in the assessment must be addressed by specific design responses.	All		Project team to advise risks to determine modifications/future provisions which can be made in services designs. E.g. design for higher ambient temperatures in future. Modifications may impact services designs and cost.	Assessments, responses, communications, registers			
	2			2	**Operations Resilience**	17.1	Credit Achievement: meet all three of the following criteria.								
							Comprehensive Risk Assessment	The suitably qualified professional authoring the operations resilience assessment must: - Identify a set of clear resilience objectives and performance goals for the building - Collaborate with key internal and external project stakeholders, including community representatives, to identify and confirm the relevant acute shocks and chronic stresses likely to impact the functionality of the building and its ability to meet performance goals - Identify and confirm the interdependent infrastructure systems, networks, services, and assets the building relies on - Identify key areas of system vulnerability, specifically how these may be affected by the identified shocks and stresses that may impact the building through reduced capacity and/or functionality - Outline response procedures in the event of an identified shock event impacting the building and the local community - Consult with relevant authorities with regards to evacuation procedures and emergency actions	A10			Assessments, criteria, responses	med	med	low
							Managing Risks	- All risks rated as 'Extreme' must be addressed through specific design responses - All risks rated as 'High' must be addressed through design or future operational responses - Regardless of risk rating, at least two risks identified in the assessment must be addressed by specific design responses	All		Project team to advise risks to determine modifications/future provisions which can be made in services designs.				

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42	18	45	10	113	Subtotals
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							Addressing Power Loss	Project team must assess building's survivability in the case of a blackout, then designed to account for its design purpose and provide a measure of survivability.	Electrical		Project team to determine power loss requirements to confirm what modifications to the electrical design are required (if any).				
	1			1	**Community Resilience**	18.1	Credit Achievement									
							Community Resilience Plan	The project team must develop a community resilience plan that: - Defines its surrounding local community, and the groups which rely on or interact directly or indirectly with the building. In addition to considering tenants and visitors, this must identify key vulnerable communities - Identifies resilience objectives and goals associated with servicing the community - Identifies social considerations affecting the community - Identifies acute shocks and chronic stresses that impact the project's function and ability to service the community (including climate-related shocks and stresses if the Climate Change Resilience credit is not targeted) - Demonstrates how the development of actions (physical and non-physical responses) to manage the impact from shocks and stresses is in response to the outcomes of community engagement - Shows how the two most significant impacts identified are dealt with specifically through the building's design - Identifies how material shocks and stresses identified for the building may impact on these stakeholders by considering a clear set of social indicators	A10		Developer to provide social sustainability consulting and needs assessment 10k -20k	Plans	med	med	low
1				1	**Heat Resilience**	19.1	Credit Achievement									
							Heat Island Reduction	Design responses to mitigate urban heat island. 75% of the site area to be one or a combination of: - vegetation; - Green roofs; - Roofing materials, including shading structures, having the following: - For roof pitched <15° - a three-year SRI of minimum 64; or - For roof pitched >15° - a three-year SRI of minimum 34. - Unshaded hard-scaping elements with a three-year SRI of minimum 34 or an initial SRI of minimum 39; - Hardscaping elements shaded by overhanging vegetation; and - Water bodies and/or water courses. The area of site that is shaded by permanent structures at noon local time at the summer solstice are also deemed compliant.	Architectural	Aligned with 25.1 Heat Island Effect Reduction	Tree Canopy/Lighter pavements/Evaporative effects of plants etc. The landscape design will be aligned to this. The proposed building massing will provide shade to the majority of the property's public domain. Landscaping on roof to achieve 4,000m2 for biodiversity and mitigation of heat island effect. A total of 4,654 PV panels have been estimated which are excluded from the calculation of site area percentages for both compliant and non-compliant areas. Terrace pavers may not achieve SRI minimum to reduce glare.	Plans, schedules, data sheets	high	med	low

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Projected Points

Lo	Med	Hi	NP	Possible	Positive			Explanation	Responsible Party	Alignments	Comments	Action by	Achievability (Technical)	Documentation Difficulty	Added Cost Risk
		3		3	**Grid Resilience**	20.1	Credit Achievement: meet one of the following criteria.						low	med	high
							Active Generation and Storage Systems	The building has the capacity to reduce its electricity peak demand by 10% of the building's annual peak electricity demand for at least a one-hour period. The peak demand reduction can occur through: - Thermal storage solutions (such as chilled water storage systems); - Electricity storage solutions (batteries); or - renewable on-site generation. Building management system (BMS) must include a demand management dashboard that shows the peak demand target, current, historical demand, alongside the critical performance characteristics. The BMS must also have the capacity to accept external control signals to enable signing up to current or future demand response programs.	Electrical	Aligned with 16B Modelled Performance Pathway: Reference Building	Value of PV to be determined, value of electric batteries to be evaluated based on potential operating saving. Facade PV - mounted as horizontal shade. Building energy infrastructure is yet to be finalised. Options such as battery and thermal storage have been considered - Number of points achievable dependant on client's decision.	Model, overview, approvals			
							Demand Response	The demand response strategy must show how at least 10% of the building's annual peak electricity demand is being shed without affecting occupant amenity (comfort, lighting, movement) as outlined in credits Light Quality and Amenity and Comfort for at least 4 hours.	Electrical	Aligned with 16B Modelled Performance Pathway: Reference Building	This is to substantially reduce operating costs. Building energy infrastructure is yet to be finalised.	Plans, testing			
							Passive Design Solutions	- The building's facade demonstrates a 10% improvement over a reference building modelled to Section J requirements of the National Construction Code 2019, or the version of the code applicable to the building's construction, whichever is later. The calculation must follow either Method 2 in the wall/glazing calculator or use a JV3 model; - The building is mostly naturally ventilated (that is, the building has no mechanical cooling or heating for 80% of the building's occupiable area); and - The building's occupiable area is less than 3,000sqm.	Electrical	Aligned with 16B Modelled Performance Pathway: Reference Building					
16	3	10	9	38	**Upfront Carbon Emissions**										
Y	-	-	-	-		21.0	Minimum Expectation						high	med	low
							Reducing Upfront Carbon Emissions	Emits 10% less upfront carbon emissions compared to a reference building.	A10			Bill of quantities, declarations, reports, statements, certificates			
3				3		21.1	Credit Achievement: in addition to the Minimum Expectation, meet both the following criteria.						high	med	med
							Reducing Upfront Carbon Emissions	Emits 20% less upfront carbon emissions compared to a reference building.	A10		Concrete and steel suppliers are already offering responsible products and will be able to meet specifications when we go to market. Green Star Buildings requires 5 Star Green Star rated buildings to be net zero carbon in operations and sets the path for every building to follow.	Bill of quantities, declarations, reports, statements, certificates			
							Offsetting Demolition Works	Demolition works are offset.	Developer						
			3	3		21.2	Exceptional Performance: in addition to the Minimum Expectation and Credit Achievement, meet the following criteria.						NP	med	high
							Reducing Upfront Carbon Emissions	Emits 40% less upfront carbon emissions compared to a reference building.	A10			Bill of quantities, declarations, reports, statements, certificates			

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90%	50%	10%	0%	% risk
42	18	45	10	113
Lo	Med	Hi	NP	Possible

Projected Points

Lo	Med	Hi	NP	Possible												
		1		1	**Upfront Fitout Emissions**		Credit Achievement: meet one of the following criteria.							low	med	high
							Upfront Carbon	The building owner provides a mechanism for tenants to address their upfront carbon emissions by recognising and reducing emissions and compensating remaining emissions through the purchase of appropriate offsets. The mechanism used must also allow the building owner to collect information from the tenant related to their upfront emissions.	Developer				Contracts, incentive documents, portal screenshots, communication material, agreements, confirmation, lease clauses			
							Refrigerants	The building owner must address all tenant refrigerant emissions by either: - eliminating high-GWP refrigerants. The use of refrigerants with a GWP of 10 or less is considered to comply with the credit. Natural refrigerants in most cases comply with this criterion; or - 100% of carbon emissions from high GWP refrigerants (GWP > 10) must be offset. A combination of these two options may be used.	Developer							
		2		2			Exceptional Performance							low	med	high
							Tenant Engagement	Fitout upfront carbon emissions for 40% of tenanted space by NLA has been measured and fully offset. Requirements for Quantifying Emissions and Offsets as per Upfront Carbon in the Credit Achievement.	Developer				Contracts, incentive documents, portal screenshots, communication material, agreements, confirmation, lease clauses			
Y	-	-	-	-	**Energy Use**	22.0	Minimum Expectation							high	med	low
							Reducing Energy Use	The building uses 10% less energy compared to a reference building, excluding on-site renewable energy generation systems connected behind the meter.	A10	Aligned with 15E Reference Building Pathway			Agreements, reports, contracts			
3				3		22.1	Credit Achievement							high	med	med
							Reducing Energy Use	The building uses 20% less energy compared to a reference building, excluding on-site renewable energy generation systems connected behind the meter.	A10	Aligned with 15E Reference Building Pathway	Pathway for hospitality and hotel. Green Star Buildings requires 5 Star Green Star rated buildings to be net zero carbon in operations and sets the path for every building to follow.		Agreements, reports, contracts			
			3	3		22.2	Exceptional Performance							NP	med	high
							Reducing Energy Use	The building uses 30% less energy compared to a reference building, excluding on-site renewable energy generation systems connected behind the meter.	A10	Aligned with 15E Reference Building Pathway	Pathway for hospitality and hotel.		Agreements, reports, contracts			
Y	-	-	-	-	**Energy Source**	23.0	Minimum Expectation							high	med	low
							Zero Carbon Action Plan	The project team must develop a Zero Carbon Action Plan for the building. The plan must be signed off by the building owner or developer and included in any operational documents for the building. The Zero Carbon Action Plan must include a target date by when the building is expected to operate as fossil fuel free. The Zero Carbon Action Plan must cover all energy consumption, procurement, and generation and cannot rely on procuring renewable fuels as its only solution. It must also include infrastructure provided for tenants or future occupants such as gas installations for cooking.	A10				Plans, contracts, commitments			
3				3		23.1	Credit Achievement							high	med	med
							Renewable Electricity	All electricity under the control of the building owner or operator must be accounted for and sourced from renewables.	A10		Green Star Buildings requires 5 Star Green Star rated buildings to be net zero carbon in operations and sets the path for every building to follow.		Plans, contracts, commitments			
							Exceptional Performance									

5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

Achievability risk: **Low** = 90%, **Med** = 60%, High = 10%, **NP** = not possible.

Lo	Med	Hi	NP	Total	
38	9	5	0	51	**Projected Points**
90%	50%	10%	0%		% risk
42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

3				3		23.2	Renewable Energy	All energy under the control of the building owner/operator and all non-electricity energy provided for uses that are not under the building owner's control must be sourced from renewables.	A10		Green Star Buildings requires 5 Star Green Star rated buildings to be net zero carbon in operations and sets the path for every building to follow. Hospitality and hotel gas cooking creates a risk to project non-compliance.	Plans, contracts, commitments	high	med	high
		2		2	**Tenant Energy Source**		Credit Achievement: meet all three of the following criteria.							
							Renewable Electricity Mechanism	The building owner must provide and actively promote a mechanism for all tenants to be able to procure renewable electricity. Renewable electricity purchased must be in line with Appendix A of GBCA's 'Climate Positive Buildings and our Net Zero Ambitions'. The mechanism used must also allow the building owner to collect information from the tenant related to their energy consumption on an annual basis.	Developer			Contracts, incentive documents, portal screenshots, communication material, agreements, confirmation, lease clauses	low	med	high
							Engagement Activities	The building owner actively encourages tenants to address their energy emissions through an engagement campaign with tenants. This can be via programs related to the building (websites, brochures, emails, meetings, etc). The engagement should cover reducing energy consumption, eliminating fossil fuels, and procuring renewable electricity.	Developer						
							Engaged Tenant	At least 40% of tenant space (NLA) has, or will be required to, contractually commit to procuring 100% renewable electricity for the duration of the lease.	Developer						
		3		3			Exceptional Performance: meet both of the following criteria.							
							Renewable Electricity	At least 80% of tenant space (NLA) has, or will be required to, contractually commit to procuring 100% renewable electricity for the duration of the lease. The building owner and the tenant must agree to share data regarding the base building energy consumption and tenant energy consumption. Where less than 30% of remaining tenanted space has not been leased (to achieve the 80% threshold), the building owner can procure Large Generation Certificates (LGCs) for an equivalent modelled consumption of three years and surrender them to the regulator.	Developer			Contracts, incentive documents, portal screenshots, communication material, agreements, confirmation, lease clauses	low	med	high
							Fossil Fuel Use	In at least 80% of the tenant space (by NLA) fossil fuels cannot be used for tenant supplied domestic hot water, space heating or cooking. Base building domestic hot water or space heating cannot use fossil fuels.	Developer						
2				2	**Other Carbon Emissions**	24.1	Credit Achievement: meet one of the following criteria.							
							Eliminating Refrigerants	All refrigerants from building systems or domestic appliances provided by the building must be captured in the credit. This includes where fridges or freezers are provided as part of a fitout package in a residential setting. Eliminates high-GWP refrigerants from the building.	Mechanical	Aligned with 29.1 Refrigerants Impacts	Limited selection of low GWP refrigerants for heat pumps. Challenging to achieve subject to product suitability/availability. Discussion with product suppliers required to determine if feasible to select refrigerants with less the 10 GWP for all mechanical systems, otherwise Offsetting Refrigerants strategy must be pursued. Default strategy should priorities eliminating refrigerants before considering offsetting refrigerants which is required for net zero carbon.	Drawings, calculations, contracts	high	med	med
							Offsetting Refrigerants	All refrigerants from building systems or domestic appliances provided by the building must be captured in the credit. This includes where fridges or freezers are provided as part of a fitout package in a residential setting. Offsets 100% of carbon emissions from refrigerants.	Mechanical	Aligned with 29.1 Refrigerants Impacts	Default strategy should priorities eliminating refrigerants before considering offsetting refrigerants which is required for net zero carbon. To be pursued if Eliminating Refrigerants may not be possible based on available equipment or spatial constraints.				
							Exceptional Performance							

5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

Achievability risk: **Low** = 90%, **Med** = 60%, High = 10%, **NP** = not possible.

Lo	Med	Hi	NP	Total	
38	9	5	0	51	**Projected Points**
90%	50%	10%	0%		% risk
42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

		2		2		24.2	Other Emissions	The project team must calculate and offset: - Emissions for refrigerants; - Emissions from the building's electricity use (as determined in the Energy Use credit) multiplied by the grid emissions factor (unless the Energy Source Credit Achievement is met, in which case these emissions are zero); - Emissions from the building's energy use as determined in the Energy Use credit (unless the Energy Source Exceptional Performance is met, in which case these emissions are zero); - Upfront carbon emissions as determined in the Upfront carbon emissions credit; - Emissions from module A5 construction equipment use, and utilities during construction on site (unless the Life Cycle Impacts calculator was used for the Upfront Carbon Emissions credit:; - Life cycle emissions from modules B and C as calculated in Life Cycle Impacts; - Construction waste emissions; and - Any other carbon emissions over 1% of the total carbon emissions profile for the building (significant emissions).	All		Required for net zero carbon. Substantial cost for offsetting upfront carbon. All building emissions (electricity use, energy use, upfront carbon emissions, construction equipment use emissions, life cycle emissions and construction waste emissions) must be calculated and offset.	Drawings, calculations, contracts	low	low	med
Y	-	-	-	-	**Water Use**	25.0	Minimum Expectation: meet one of the following criteria.							
							Sanitary Fixture and Appliance Efficiency	All fixtures and water-using appliances installed within the project's scope must, at a minimum, meet the prescribed WELS ratings.	Hydraulic	Aligned with 18B.1 Sanitary Fixture Efficiency		Certificates, data sheets, drawings, specifications	high	med	low
							Reducing Water Use	Uses 15% less potable water compared to a reference building through the GBCA's Water Use Calculator.	Hydraulic	Aligned with 18A Potable Water - Performance Pathway				
	3			3		25.1	Credit Achievement: in addition to the Minimum Expectation, meet both the following criteria.						med	med	med
							Reducing Water Use	Uses 45% less potable water compared to a reference building through the GBCA's Water Use Calculator.	Hydraulic	Aligned with 18A Potable Water - Performance Pathway				
							Recycled Water Infrastructure	Building must have infrastructure for recycled water in a district or location where local council or water authorities (or similar) have planned for installation of recycled water infrastructure.	Hydraulic	Aligned with 18A Potable Water - Performance Pathway	Default pathway is to install infrastructure for recycled water. Fire test water re-use tank. Rainwater tank for use primarily as CW make up and irrigation. Maximum sizing to meet large portion of heat rejection, irrigation and toilet water consumption. Purple pipe within building for recycled water connection to infrastructure - toilets, cooling towers, irrigation at minimum.	Certificates, data sheets, drawings, specifications			
			3	3		25.2	Exceptional Performance: in addition to the Minimum Expectation and Credit Achievement, meet the following criteria.						NP	med	high
							Reducing Water Use	Uses 75% less potable water compared to a reference building through the GBCA's Water Use Calculator.	Hydraulic	Aligned with 18A Potable Water - Performance Pathway		Certificates, data sheets, drawings, specifications			

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5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

Achievability risk: **Low** = 90%, **Med** = 60%, High = 10%, **NP** = not possible.

Lo	Med	Hi	NP	Total
38	9	5	0	51
90%	50%	10%	0%	% risk
42	18	45	10	113
Lo	Med	Hi	NP	Possible

Projected Points

Lo	Med	Hi	NP	Subtotals
2				2
3	0	5	0	8
Y	-	-	-	-
3				3
		2		2

Places			Explanation	Responsible Party	Alignments	Comments	Action by	Achievability (Technical)	Documentation Difficulty	Added Cost Risk
Life Cycle Impacts	26.1	Credit Achievement								
		Life Cycle Assessment	The project demonstrates a 30% reduction in life cycle impacts when compared to standard practice.	A10	Aligned with 19A.1 Comparative Life Cycle Assessment and 19A.2 Additional Reporting	Concrete and steel suppliers are already offering responsible products and will be able to meet specifications when we go to market.	Reports, statements, certificates	high	high	low
Movement and Place	27.0	Minimum Expectation: meet both of the following criteria.								
		Changing Facilities	The project must provide adequate facilities for regular occupants (not for visitors), including: - Showers; and - Lockers.	Architectural	Aligned with 17B.4 Active Transport Facilities		Drawings, plans, calculations	high	low	low
		Accessible, Inclusive, and Located in a Safe and Protected Place	Upon accessing, pedestrians and cyclists must be protected from the elements and other vehicles. Access must be safe, with consideration given to avoiding steep gradients, surface grip levels, and visibility around tight corners.	Architectural		Cyclist protection from elements and vehicles, avoid steep gradients, surface grip levels, and visibility around tight corners, well lit, easy access and clear signage.				
	27.1	Credit Achievement: in addition to the Minimum Expectation, meet all four of the following criteria.								
		Bicycle Parking Facilities	The building's access must prioritise walking and cycling options. This means the building's access must be well lit, weather protected, and separated from vehicles	Architectural	Aligned with 17B.4 Active Transport Facilities	Requirements to meet minimum requirements estimated as follows: - 10 showers - 180 lockers - 150 bike parks (for 10% of regular building occupants) (according to NCC Table D1.13 number of persons).				
		Sustainable Transport	- The project team must prepare and implement a Sustainable Transport Plan. The requirements or recommendations made in the Sustainable Transport Plan must then be reflected in the design of the building's facilities and ongoing operational processes; and - Provide EV charging point to at least 5% of all car parking spaces, all car sharing parking spaces, infrastructure and load management plan for future 25% of all car parking spaces, and dedicated routes for future provision of electrical cabling.	A10	Aligned with 17A Performance Pathway and 17B.3 Low Emission Vehicle Infrastructure	Space allocation to implement sharing economy principles. For example, shared micromobility (bikes, e-scooters, etc) and other.	Drawings, plans, calculations	high	low	med
		Reducing Private Vehicle Use	Complete the Movement and Place Calculator and demonstrate at least: - Emission reduction: 40% - Active mode encouragement: 90% - VKT reduction: 20%	Developer	Aligned with 17A Performance Pathway	Provision for charging to all parking spaces. Emission reduction 40%, active mode encouragement 90%, and vehicle kilometres travelled (VKT) reduction 20%.				
		Encouraging Walkability	Building's design and location must encourage walking to and from a number of amenities. This means designing roads within the site boundary to prioritise pedestrians, and either providing within, or being located close to, a number of amenities.	A10	Aligned with 17A Performance Pathway	Prepared by a suitably qualified Transport Planner or Engineer				
Enjoyable Places	28.1	Credit Achievement: meet both of the following criteria.								
		Publicly Accessible Spaces	The project provides new, publicly accessible spaces that are enjoyable and support community activity and interaction - 0.25m2/occupant or 2.5% of GFA, whichever is greater.	Architectural		The public domain and precinct design will ensure places are memorable, beautiful, vibrant communal or public places. 0.25m2/occupant or 2.5% of GFA, whichever is greater. Credit requires approximately 3,500m2 publicly accessible spaces.	Plans, letters, narratives, strategies	low	low	low
		Activation Strategy	An activation strategy must be provided to ensure placemaking continues after practical completion. The strategy must demonstrate how the future occupants and the wider community can contribute to the place activation.	Architectural		Confirm 2.5% GFA minimum public space requirements. The public domain and precinct design will ensure spaces are inclusive, safe, flexible, and enjoyable. Strategy must demonstrate how the future occupant and the wider community can contribute to the place activation.				
		Credit Achievement: meet one of the following criteria.								
		Urban Context Report	Provide and urban context report and demonstrate how building's design responds to it.	Architectural			Analysis, reports, drawings			

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5 Star Achievability						Four Star 15 to 34 points Five Star 35 to 69 points Six Star 70 or more points								
Lo	Med	Hi	NP	Total		Achievability risk: Low = 90%, Med = 60%, High = 10%, NP = not possible.								
38	9	5	0	51	**Projected Points**									
90%	50%	10%	0%		% risk									
42	18	45	10	113	Subtotals									
Lo	Med	Hi	NP	Possible										
		2		2	**Contribution to Place**	29.1	Independent Design Review	Design reviews are held at key points in the development of the design. At a minimum, these must occur as follows: - Design Review during concept/schematic design stage, to ensure that proponents can take advantage of the advice offered at a time where the design is flexible enough to accommodate change without impacting on time and cost constraints - A subsequent review when the design has been further progressed. This review session will typically occur during design development - At building permit stage (after development approval) a further check must take place by the Design Review Panel Chair or delegate, to ensure that the final design reflects approved development application and any relevant conditions related to design quality	Developer		Reports, declarations	low	low	low
		1		1	**Culture, Heritage, and Identity**	29.1	Credit Achievement: meet one of the following criteria.							
							Community Led Design Response	The project team must show that they have undertaken local analysis to identify culture, heritage, and identity unique to the project site and area. The project team must undertake community engagement as part of this local analysis. As a result of community engagement, the project must reflect local identity, culture, and heritage in the design of the building in a publicly demonstrable way. This can be achieved through: - Community art or placemaking projects - Selection of suppliers/designers of artwork or cultural elements - Building elements that tell stories of the past and heritage - Spaces and uses that reflect the local identities	Developer		Reports, drawings, declarations	low	low	low
							Independent Design Review	Design reviews are held at key points in the development of the design. At a minimum, these must occur as follows: - Design Review during concept/schematic design stage, to ensure that proponents can take advantage of the advice offered at a time where the design is flexible enough to accommodate change without impacting on time and cost constraints - A subsequent review when the design has been further progressed. This review session will typically occur during design development - At building permit stage (after development approval) a further check must take place by the Design Review Panel Chair or delegate, to ensure that the final design reflects approved development application and any relevant conditions related to design quality	Developer					
2	0	7	0	9										
					People		Minimum Expectation	Explanation	Responsible Party	Alignments	Comments	Action by	Achievability (Technical)	Documentation Difficulty	Added Cost Risk

5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

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Lo	Med	Hi	NP	Total	
38	9	5	0	51	**Projected Points**
90%	50%	10%	0%		% risk
42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

Y	-	-	-	-			31.0	On-site Facilities, Policies, and Training	The head contractor must ensure the following is provided or available on-site: - Separate gender inclusive bathroom facilities and changing amenities with a high degree of privacy; and - Diverse gender-specific fit-for-purpose personal protective equipment (PPE) for diverse body sizes and types. The head contractor must: - Implement policies to address issues of discrimination, racism, and bullying on-site; - Introduce on-site redress procedures for any relevant breaches and corrective measures to be put in place should any incident be identified; - Empower a diverse lead team to manage these policies on-site; and - Provide training to all contractors and subcontractors on these policies (as per below). The head contractor must provide the following training to 95% of all contractors and subcontractors present on site for a least three days for: - Information on drug and alcohol awareness and mental health; and - Information on policies implemented on discrimination, racism, bullying on site, and safe ways to report poor behaviour.	Developer			Invoices, policies, drawings	high	low	low
					Inclusive Construction Practices			Credit Achievement: in addition to the Minimum Expectation, meet all three of the following criteria.							
								Needs Analysis	The responsible party should carry out a needs analysis of potential site workers and sub-contractors at tender (or similar early stage) to determine appropriate actions. The policies and programs should be relevant to all construction workers on site for the full duration of construction.	Developer		Review achievability with the Developer	Reports			

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Achievability risk: **Low** = 90%, **Med** = 60%, High = 10%, **NP** = not possible.

Lo	Med	Hi	NP	Total
38	9	5	0	51
90%	50%	10%	0%	% risk
42	18	45	10	113
Lo	Med	Hi	NP	Possible

Projected Points

Subtotals

Lo	Med	Hi	NP	Possible											
		1		1		31.1	Physical and Mental Health Programs	The head contractor must show that they have introduced programs and solutions to address at least five of the following: - Suicide prevention; - Healthy eating and active living; - Reduce harmful alcohol and tobacco consumption and avoid drug use; - Increased social cohesion, community, and cultural participation; - Understanding depression; - Preventing violence and injury; - Decreased psychological stress; - Finding fulfilment at work or mindful meditation; and - Other issues identified in the Needs Analysis. A mix of programs is acceptable. The programs must cover at least 80% of the workforce that have attended the site for more than three days from commencement on site to practical completion. The programs or solutions can be implemented directly by the head contractor or through partnerships with mental and physical health organisations.	Developer	Aligned with 7.2 High Quality Staff Support	Review achievability with the Developer	Policies, reports, presentations	low	low	low
							Evaluating the Program's Effectiveness	The project must provide an evaluation report to the client and sub-contractors with the following information: - Information on the programs or initiatives that were delivered, including information on dates, attendance, and available languages; and - A review on whether the programs delivered the intended outcomes including recommendations for improving future delivery of these programs.	Developer		Review achievability with the Developer	Reports			
		2		2	**Indigenous Inclusion**	32.1	Credit Achievement: meet one of the following criteria.						low	low	low
							Reconciliation Action Plan	The project team must demonstrate that: - A key member of the Project Team is part of the organisational RAP Working Group; - At least 90% of the RAP targets have been met on the project; and - All implemented actions related to the RAP are publicly reported on the project's website.	Developer		Does WSW have a RAP? Potential risk for a key member being part of the organisational RAP Working Group.	Websites, reports			
							Inclusion of Indigenous Design	The project team must demonstrate that the Australian Indigenous Design Charter guiding principles are incorporated in the design of the building including: - How local Aboriginal and Torres Strait Islander communities have been engaged throughout the design development; - How the project has been designed to acknowledge and recognise the Indigenous culture of the site; and - How information on the reconciliation and cultural values of the project will be made available to the public, visitors, and building tenants in the operational phase of the project's life.	Developer			Strategies, drawings, photographs, websites			
		2		2		32.1	Credit Achievement: meet both of the following criteria.						low	low	low
							Social Procurement Strategy	The project team must develop and implement a social procurement strategy or plan (this can be part of an overall project procurement plan/strategy) that directs at least 2% of the building's total contract value to generate employment opportunities for disadvantaged and under-represented groups.	Developer		Review achievability with the Developer 0.5% contract value attributable to indigenous art.				

5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

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Lo	Med	Hi	NP	Total	
38	9	5	0	51	**Projected Points**
90%	50%	10%	0%		% risk
42	18	45	10	113	Subtotals
Lo	Med	Hi	NP	Possible	

		2		2	**Procurement and Workforce Inclusion**	33.1	Employment Opportunities	Generate employment opportunities for disadvantaged and under-represented groups can be achieved either: - Directly, through workforce targets; or - Indirectly, through social procurement. A combination of these strategies can be used to achieve the credit, as long as the total dollar spend on the above activities is equal to or greater than the required 2% value of the building's total contract value.	Developer	Review achievability with the Developer 0.5% contract value attributable to indigenous art.	Plans, contracts, certificates	low	low	low
		1		1		33.2	Exceptional Performance: meet both of the following criteria.									
							Social Procurement Strategy	The project team must develop and implement a social procurement strategy or plan (this can be part of an overall project procurement plan/strategy) that directs at least 4% of the building's total contract value to generate employment opportunities for disadvantaged and under-represented groups.	Developer	Review achievability with the Developer 0.5% contract value attributable to indigenous art.						
							Employment Opportunities	Generate employment opportunities for disadvantaged and under-represented groups can be achieved either: - Directly, through workforce targets; or - Indirectly, through social procurement. A combination of these strategies can be used to achieve the credit, as long as the total dollar spend on the above activities is equal to or greater than the required 4% value of the building's total contract value.	Developer	Review achievability with the Developer 0.5% contract value attributable to indigenous art.	Plans, contracts, certificates	low	low	low
2				2	**Design for Inclusion**	34.1	Credit Achievement									
							Inclusive Design	The building's design and construction must be able to be navigated and enjoyed by stakeholders of diverse ages, genders, and physical and mental abilities. This applies to common spaces, bathroom facilities, and amenities provided within the building. This must include: - Equal access to the building: Provide equitable, appealing, safe, and secure access in a manner that does not segregate or stigmatise users through all principal entrance points and main thoroughfares inside and outside the building. - Diverse wayfinding: Introduce visual, physical, olfactory, and auditory solutions to help individuals navigate the site in a safe and enjoyable manner. - Inclusive spaces: Introduce internal and external spaces for a diverse range of users, including parents, family restrooms, emergency rooms, quiet rooms, and social interaction rooms. These rooms must be accessible to all users.	Developer		Drawings, photographs	high	low	low

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38	9	5	0	51
90%	50%	10%	0%	% risk
42	18	45	10	113
Lo	Med	Hi	NP	Possible

Projected Points

Subtotals

Lo	Med	Hi	NP	Possible
		1		1
2	4	8	0	14
Y	-	-	-	-
		2		2

Nature		Explanation	Responsible Party	Alignments	Comments	Action by	Achievability (Technical)	Documentation Difficulty	Added Cost Risk
Impacts to Nature									
	34.2	Exceptional Performance: in addition to the Credit Achievement, meet the following criteria.							
		Needs Analysis	A Needs Analysis is conducted, meeting the following requirements: - The project team must consult with distinct community types to develop a needs analysis that will influence the project during the design phase - Consultation must be undertaken early in the design process and include a balanced cross-section of representation of the target group - Consultation must be considerate and relevant to the project - The consultation process must generate a report that is then used to influence the design of the project As a result of the needs analysis, the building must show how it aligns with best practice guidelines, such as the Design for Dignity Guidelines: Principles for Beyond Compliance Accessibility in Urban Regeneration.	Developer			Plans, drawings, photographs, analysis	NP	low	low
	35.0	Minimum Expectation: meet all three of the following criteria.							
		Site Ecological Value	At the date of purchase or option contract, land clearing does not occur on the site as a result of the building, infrastructure, or construction works on the following: - Old-growth forest - Prime agricultural land - Any wetland listed as being of 'High National Importance' - Aspects considered 'Matters of National Environmental Significance' listed under the Environmental Protection and Biodiversity Conservation Act (1999).	Landscape	Aligned with 23.1 Ecological Value and 24.0 Conditional Requirement					
		Managing Light Pollution Impacts	- Light pollution to neighbouring bodies: all outdoor lighting on the project complies with AS 4282:1997 Control of the obtrusive effects of outdoor lighting. - Light pollution to night sky: one of the following specified reductions in light pollution must be achieved by the project: -Control of upwards light output ratio (ULOR); or - Control of direct illuminance.	Electrical	Aligned with 27.0 Light Pollution to Neighbouring Bodies and 27.1 Light Pollution to Night Sky	Provided there is no external façade/general lighting, which would be needed, this will be achievable. Will require coordination with other services.	DA, plans, drawings, schedules, plots, data sheets, reports, narratives	high	low	low
		Wetland Management Plan	The site-specific Wetland Management Plan must be prepared by a qualified Ecologist or other qualified professional and include requirements for ongoing quarterly monitoring, annual reporting, and management of the wetland ecosystem for a minimum of five years. The plan must be exhibited to the public on the applicant's website or the local council's offices or library for a minimum of 24 months.	Landscape	Aligned with 24.2 Contamination and Hazardous Materials					
	35.1	Credit Achievement: in addition to the Minimum Expectation, meet all three of the following criteria.							
		Protecting Ecological Values	- Context report: understand the site's historical and current ecological context by documenting the site's current ecological values by type and biomass. - Protecting ecology: show how ecological values will be protected.	Landscape			DA, plans, drawings, schedules, plots, data sheets, reports, narratives	low	med	low
		Retaining High Biodiversity Values	If deemed necessary by an Ecologist, at least 50% of existing site with high biodiversity value is retained.	Landscape	Aligned with 24.1 Reuse of Land					

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Lo	Med	Hi	NP	Total
38	9	5	0	51
90%	50%	10%	0%	% risk
42	18	45	10	113
Lo	Med	Hi	NP	Possible

Projected Points

Lo	Med	Hi	NP	Possible										
	2			2	**Biodiversity Enhancement**	36.1	Credit Achievement: meet all three of the following criteria.							
							Landscape Area	At a minimum, external landscape in the building, whether horizontal or vertical must be provided at a ratio of either 15% of the site area or at a ratio of 1:500 of the GFA, whichever is larger. Vertical or horizontal landscapes are acceptable.	Landscape		Landscape design will be appropriate for its urban setting. Landscaping on roof to achieve 4,000m2 for biodiversity and mitigation of heat island effect.	Plans, schedules, photographs			
							Diversity of Species	- Landscape must be shown to be diverse and include multiple species/genus/etc. - Greater than 60% of plants must be indigenous and the site must include at least one significant (nesting) tree or equivalent habitat provision per 500m² of landscaped area. - No invasive species are allowed, as per the Australian Weeds Strategy 2017 to 2027.	Landscape	Aligned with 23.0 Endangered, Threatened or Vulnerable Species	>60% indigenous species and 4 significant nesting trees.	Schedules, reports			
							Biodiversity Management Plan	A suitably qualified professional, such as a qualified ecologist or landscape architect, must prepare the Plan. The plan must outline key actions that need to be undertaken in order to maintain the ecological integrity of biodiversity on the site, whether this is existing or that created as part of the development.	Landscape		Landscape may need input or a specialist ecologist to prepare such a plan.	Plans			
	2			2		36.2	Exceptional Performance: in addition to the Credit Achievement, meet both of the following criteria.							
							Landscape Area	As a minimum, external landscape in the building, whether horizontal or vertical must be provided at a ratio of either 30% of the site area or at a ratio of 1:300 of GFA, whichever is larger. Vertical or horizontal landscapes are acceptable.	Landscape		Landscape design will be appropriate for its urban setting. Landscaping on roof to achieve 4,000m2 for biodiversity and mitigation of heat island effect.	Plans, schedules, photographs			
							Diversity of Species	- Landscape must be shown to be diverse and include multiple species/genus/etc. - An ecologist must review, assess, and verify how the choice of landscaping and biodiversity is diverse and resilient to climate change impacts, thereby increasing the longevity of the landscape. - Greater than 80% of plants must be indigenous and the site must include at least one significant (nesting) tree or equivalent habitat provision per 250m² of landscaped area. - No invasive species are allowed, as per the Australian Weeds Strategy 2017 to 2027. - The site must preserve, restore and/or support vulnerable ecosystem through planting critically endangered and/or endangered plant species which are native to the bioregion.	Landscape		>80% indigenous species and 8 significant nesting trees.	Schedules, reports			
		2		2	**Nature Connectivity**	37.1	Credit Achievement							
							Species Connectivity	The site may include any of the following strategies: - Landscaping: Where connectivity is being achieved through landscaping, this must be contiguous with existing, restored, and new habitats. As a minimum requirement for habitat connectedness, the conservation area must make up at least 25% of the total external area within the building's site boundary. To be eligible, this must be at least 182m² - Infrastructure: Design features such as a canopy bridge, wildlife tunnels, green roofs, amphibian tunnels and green infrastructure are used to connect nature on site to adjacent natural areas, which are either existing, restored, or new.	Landscape		Landscape design encourage urban canopy and biodiversity.	Plans, photographs, reports, drawings			

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5 Star Achievability

Four Star 15 to 34 points **Five Star** 35 to 69 points **Six Star** 70 or more points

Achievability risk: **Low** = 90%, **Med** = 60%, High = 10%, **NP** = not possible.

Lo	Med	Hi	NP	Total
38	9	5	0	51
90%	50%	10%	0%	% risk
42	18	45	10	113
Lo	Med	Hi	NP	Possible

Projected Points

Subtotals

Lo	Med	Hi	NP	Possible												
		2		2	**Nature Stewardship**	38.1	Credit Achievement: meet all four of the following criteria.							low	med	low
							Area of Restoration or Protection	The area of restoration must be equivalent to the total GFA of the development or site area, whichever is greater.	Landscape		Create offsite nature offset equal to project GFA. As many of the existing areas/trees to be removed and recycled there may be no opportunity of Restoration or protection activities.		Plans, invoices, contracts			
							Location of Restoration or Protection Activities	Land for restoration must be in Australia and restored to equivalent ecological value of the site before any development occurred. The location of the land designated for the offsite restoration must not be in the development boundary.	Landscape		Create offsite nature offset equal to project GFA.					
							Activities to Protect or Restore	Achieving the credit can be done by either: - The project owner protecting or restoring an area offsite themselves; or - The project owner supports an organisation that restores an area on their behalf.	Landscape		Create offsite nature offset equal to project. Landscape could align with this, increase biodiversity in planting design. Could other methods, seed collection etc take place.					
							Legislated Requirements	Where the project is required to purchase biodiversity offsets, invest in land restoration, restore land, or similar, as part of an EPBC action, development approval, or other legislated requirements, these actions cannot be used to demonstrate compliance with this credit.	Landscape		Create offsite nature offset equal to project GFA. Up to ongoing management of the site.					
2				2	**Waterway Protection**	39.1	Credit Achievement: meet both of the following criteria.							high	low	low
							Stormwater Volume	Demonstrates a reduction in average annual stormwater discharge (ML/yr) of 40%across the whole site.	Civil	Aligned with 26.1 Stormwater Peak Discharge			Calculations, models, reports, drawings, plans			
							Pollution Reduction Targets	All stormwater discharge from site meets: Total Suspended Solids 85%; Gross Pollutants 90%; Total Nitrogen 45%; Total Phosphorus 65%.	Civil	Aligned with 26.1 Stormwater Peak Discharge			Drawings, certificates			
	2			2		39.2	Exceptional Performance: in addition to the Credit Achievement, meet both of the following criteria.							med	med	med
							Stormwater Volume	Demonstrates a reduction in average annual stormwater discharge (ML/yr) of 80%across the whole site.	Civil	Aligned with 26.1 Stormwater Peak Discharge			Calculations, models, reports, drawings, plans			
							Pollution Reduction Targets	All stormwater discharge from site meets: Total Suspended Solids 90%; Gross Pollutants 95%; Total Nitrogen 60%; Total Phosphorus 70%.	Civil	Aligned with 26.1 Stormwater Peak Discharge			Drawings, certificates			

0	0	5	0	5	Leadership		Explanation	Responsible Party	Alignments	Comments	Action by	Achievability (Technical)	Documentation Difficulty	Added Cost Risk
				5	**Market Transformation**	40.1	Credit Achievement: up to 5 points available.							
							Innovative Initiatives	To claim points, the project team must show that an initiative is innovative by demonstrating that the technology or process is not commonly used within Australia's building industry globally, depending on the context of the innovation claimed. Projects must demonstrate these initiatives align with the GBCA's scoring metrics: - Control of outcome: the initiative delivers a guaranteed outcome - Length of impact: the initiative delivers long-lasting impacts - Scale of impact: the scale of impact is significant. For example, the outcome may satisfy multiple UN Sustainable Development Goals - Transformation potential: the initiative has the potential to transform an industry or sector - Value generation: the initiative can deliver benefits to both stakeholders (e.g., building owner or occupants) as well as the general public.	Developer				NP	med	med
							Credit Achievement									

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5 Star Achievability					Four Star 15 to 34 points Five Star 35 to 69 points Six Star 70 or more points								
Lo	Med	Hi	NP	Total	Achievability risk: **Low** = 90%, **Med** = 60%, High = 10%, **NP** = not possible.								
38	9	5	0	51	**Projected Points**								
90%	50%	10%	0%		% risk								
42	18	45	10	113	Subtotals								
Lo	Med	Hi	NP	Possible									
		5		Unlimited	**Leadership Challenges**	41.1	Leadership Challenge	Project teams can target as many Leadership Challenges as they wish. Leadership Challenges will be uploaded to the GBCA website as they are developed. All criteria as listed on the Leadership Challenges must be met to claim reward.	Developer	- Use a Triple Bottom Line (financial, social, and environmental), benefit-cost analysis (BCA) on at least six credits - LEED - Achieve at least 100 lux for 15% of the nonregularly occupied floor area for buildings 5 floors and above - LEED - Operate 95% of the load of at least one major energy system in the project directly off DC power, from a central DC source such as an on-site PV system, fuel cell, shared DC power supply or battery storage - LEED - Build only all-gender facilities - LEED - Install sensors and/or software for advanced transportation monitoring system that enable daily measurements - LEED - Reduce bird injury and mortality from in-flight collisions with buildings - LEED - Surface at least 75% of the building's gross exterior wall area (including vertical fenestration) with a "cool-wall material" to reduce urban heat islands - LEED - Collection of urine from toilets to produce fertiliser - BREEAM - Construction single-use plastic tracker - BREEAM - Vacuum drainage system - BREEAM	low	med	med