



SUSTAINABILITY REPORT

Burrah Park

1953 Elizabeth Drive NSW

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Sustainability Report

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1. Executive Summary

This ESD report has been prepared by Northrop Consulting Engineers to accompany a State Significant Development Application (SSDA) for a Concept and Stage 1 SSDA for a Warehouse and Logistics Estate at 1953-2109 Elizabeth Drive, Badgerys Creek. The site is legally described as Lot 1 in Deposited Plan 1306448.

The applicant, the trustee for Burra Park Prop Trust 1 is a joint venture entity, with ISPT Core Fund and UniSuper each holding an equal share. HB&B and ISPT have been appointed as the development team to oversee the project's delivery. By leveraging the expertise of both organizations, the venture is well-positioned to maximize Burrah Park's value to the community.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD- 70316465).

This report concludes that the proposed warehouse and distribution centre is suitable and warrants approval subject to the implementation of the sustainability initiatives detailed in Section 4, including but not limited to:

- Exceeding the energy efficiency requirements of Section J of the Building Code of Australia.
- Designing a highly efficient façade wall-glazing system to minimise heat gains while maximising daylight entry for daytime-occupied areas.
- Reducing potable water use through high WELS-rated sanitary fixtures and fittings.
- Collecting and reusing rainwater to conserve water resources.
- Increasing the use of daylighting to reduce reliance on artificial lighting and lower power consumption.
- Implementing comprehensive waste minimisation strategies.
- Adopting Water Sensitive Urban Design (WSUD) principles to manage stormwater effectively and protect water quality.
- Installing a solar array to generate renewable energy and reduce dependency on the grid.

The integration of these initiatives demonstrates a strong social and environmental commitments of the project, aligning the project to an Australian Excellence Sustainability Standard and effectively addressing and mitigating the negative environmental, social, and economic impacts associated with the project. The project seeks to meet and exceed the sustainable requirements set for non-residential developments. Further, the proposed building initiatives provide a cost-effective solution in design, construction and operation and the design team is committed to further pursuing the goals of sustainable development across this site as the project progresses.

2. Introduction

2.1 Background

This report has been prepared to accompany an SSDA at 1953-2109 Elizabeth Drive, Badgerys Creek (SSD- 70316465). The application seeks consent for a concept plan including future development lots and building footprints. The development also seeks consent for the Stage 1 works which will include bulk earthworks across the site, infrastructure delivery, road access/intersections, internal road construction, civil infrastructure and utilities, stormwater infrastructure works and the construction of three (3) warehouse buildings.

Specifically, development consent is sought for:

- Concept Plan
 - Concept Masterplan for the Burrah Park comprising warehouse buildings, internal road network layout, building locations, GFA, car parking, concept landscaping, building heights, setbacks, signage strategy, public art strategy, design excellence strategy and Connection with Country framework.
 - Developable area 131.73ha.
 - Total approximate GFA c. 63.00ha.
- Stage 1 – site preparation works
 - Demolition and removal of existing structures and vegetation.
 - Heritage salvage works (if applicable).
 - Construction of roads, access infrastructure, including a signalised intersection with Elizabeth Drive.
 - Dam de-watering and de-commissioning.
 - Bulk earthworks, cut and fill, benching, battering and retaining walls.
 - Lead in infrastructure, utilities and servicing.
 - Stormwater infrastructure including construction of Sydney Water basins and Water Sensitive Urban Design (WSUD) elements.
- Stage 1 – Development
 - Construction and fit out of 3 warehouse buildings and ancillary office space.
 - Stormwater management, fencing and landscaping.
 - Internal road network, active transport network, public domain and open space.
 - Subdivision, and
 - Estate and on lot signage.
 - Total approximate GFA 85,864sqm
 - Warehouse 1.1 - 26,860sqm
 - Warehouse 1.2 - 31,443sqm
 - Warehouse 3.1 - 27,561sqm

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 22 May 2024 and issued for the SSDA (SSD-70316465). Specifically, this report has been prepared to respond to the SEARs requirement issued below.

Table 1 Response to Ecologically Sustainable Development (ESD) of the SEARs

Item	Description of requirement	Section reference (this report)
Ecologically Sustainable Development	Identification of how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development	Section 3.2
	Demonstration of how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards	Section 4 and 5
	Demonstration of how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources	Section 4
	If Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022 applies: - demonstrate how the development has been designed to address the provisions set out in in Chapter 3.2(1) - provide a NABERS Embodied Emissions Material Form to disclose the amount of embodied emissions attributable to the development in accordance with section 35BA of the EP&A Regulation.	Section 3.3

To ensure that the development meets the SEARs and aligns with the client's commitment to sustainability, this report has examined the design documentation and the project's integration with the surrounding area. Northrop has then examined the ESD principles that have been incorporated into the project design and will provide guidance on further initiatives to be considered during the project's detailed design phase. This report lays out the site approach to sustainability and refers to the applicable elements of the planning requirements.

2.2 Site Location

The proposed Burrah Park development is situated at 1953-2109 Elizabeth Drive Badgerys Creek, NSW 2555, within the Penrith suburbs, and is surrounded by natural vegetation.

Figure 1 provides regional context and Figure 2 shows an aerial of the developable area be developed as part of this SSD.



Figure 1 Site subdivided into three lots (Source: Near Maps and Urbis)



Figure 2 Site Context - Development Area (Source: Near Maps and Urbis)

The key features of the site are summarised in the table below.

Table 2 Key Features of Site and Locality

Descriptor	Site Detail
Land Configuration	The site is legally described as Lot 1 in Deposited Plan 1306448. • The site area is 171.84ha The site generally slopes from high points adjacent to Elizabeth Drive (RL 75) to low points in the northeast corner (RL 40). Topography is characterised by a central ridgeline running from the central portion of the southern boundary towards the northeast.
Surrounding Land Use	Surrounding land uses include: • M12 Motorway and Metro (under construction) to the north and east with predominantly rural uses beyond • Western Sydney Airport is under construction opposite the site on the southern side of Elizabeth Drive, • Rural residential uses on the opposite side of Cosgroves Creek to the west.
Site Access and road network	The site is accessible from Elizabeth Drive, a State arterial road aligned in an east-west direction adjacent to the southern boundary.
Easements and Covenants	An easement for electricity purposes is located on the northern side of the site.
Services	The site has power and water available.
Acid Sulfate Soils	Not mapped.
Contamination	The site has the potential to be contaminated, due to the current agricultural land use. A Detailed Site Investigation will be submitted as part of the SSDA lodgement. As per previous Detailed Site Investigation prepared by Douglas Partners, the site is appropriate for proposed development subject to remediation works undertaken.
Stormwater and Flooding	As indicated in the <i>Wianamatta (South) Creek Flood Study – Existing Conditions (Prepared by Advisian for Infrastructure NSW, November 2020)</i> the site is subject to 1:100 ARI (average recurrence interval) along the main creek lines of Cosgroves and Badgerys Creek.

Descriptor	Site Detail
Bushfire Prone Land	The site is classified as bushfire prone land. A bushfire report will be submitted with the SSDA.
Flora and Fauna	The site currently consists of cleared rural land with the occasional scattered Cumberland Plain Woodland, trees, weeds, and shrubs. Most of the site is certified under the Cumberland Plain Conservation Plan (CPCP)
Riparian Corridor	Cosgroves Creek and Oaky Creek run along the western part of the site, while Badgerys Creek runs along the eastern side. The proposed development is designed to generally avoid land zoned ENZ. The site contains multiple hydrolines and dams.
Aboriginal Heritage	Aboriginal objects have been identified along the Oaky Creek – Cosgroves Creek corridor along the entirety of the western study area boundary.
European Heritage	The site does not contain any State or locally significant heritage listed items. The site does form part of the former CSIRO McMaster Field Station which is identified as a potential heritage item under the Precinct Plan. The site is adjacent to the McGarvie Smith Farm which is identified as a local Heritage Item under the <i>State Environmental Planning Policy (Precincts—Western Parkland City) 2021</i>.

2.3 Scope

Northrop Consulting Engineers have been engaged by HB+B Property Pty Ltd and ISPT Pty Ltd to provide a Sustainability Report that will outline how the project meets the relevant planning requirements. The following sections of this report will identify the ESD principles of the construction and its relation to the Planning Secretary's Environmental Assessment Requirements (SEARs), State Environmental Planning Policies, Western Sydney Aerotropolis Precinct Plan 2023, Western Sydney Aerotropolis Development Control Plan (DCP) 2022 and any other planning requirements relevant to the area.

3. Methodology

Information contained within this report has been prepared in direct response to:

- Secretary's Environmental Assessment Requirements (SEARs)
- Environmental Planning and Assessment Regulation 2021
- State Environmental Planning Policy (Planning Systems) 2021 – Schedule 1 (29)
- State Environmental Planning Policy (Precincts—Western Parkland City) 2021
- State Environmental Planning Policy (Industry and Employment) 2021
- State Significant Development Guidelines
- Western Sydney Aerotropolis Plan 2020
- Western Sydney Aerotropolis Precinct Plan 2023
- Western Sydney Aerotropolis Development Control Plan 2022 (DCP)
- Cumberland Plain Conservation Plan (CPCP)

The ESD initiatives and targets outlined within this report have been compiled based on the following:

- Best practice design principles.
- National Construction Code (NCC) Section J – Energy Efficiency Targets (i.e.: exceeding targets).
- Green Star Buildings Submission Guidelines
- Green Star Communities Submission Guidelines

3.1 Secretaries Environmental Assessment Requirements (SEARs)

This report discusses how the proposed development addresses Ecologically Sustainable Development (ESD) of the SEARs. The requirements are outlined below, along with references to where each response can be found within this report.

Table 3 Response to Ecologically Sustainable Development (ESD) of the SEARs

Item for inclusion	Report Location
Identification of how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development	Section 3.2
Demonstration of how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards	Section 4 and 5
Demonstration of how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources	Section 4
If Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022 applies:	Section 3.3
• demonstrate how the development has been designed to address the provisions set out in in Chapter 3.2(1)	

Item for inclusion
**Report
Location**

- provide a NABERS Embodied Emissions Material Form to disclose the amount of embodied emissions attributable to the development in accordance with section 35BA of the EP&A Regulation.

3.2 Environmental Planning and Assessment Regulation 2021

The following section describes how ESD principles (as defined within clause 193 of the Environmental Planning and Assessment Regulation 2021) are incorporated in the design, construction, and operation phases of the project.

Table 4 Principles of Ecologically Sustainable Development

Principle	Objective	Project Response
The precautionary principle	Namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In applying the precautionary principle, public and private decisions should be guided by: • careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and • an assessment of the risk-weighted consequences of various options.	Through the implementation of environmental management and building maintainability, the project will incorporate a focus on adaptability and resilience into the project design. The concept behind the precautionary principle is to create features in the project that can both; adapt to changes, which may eventuate in the future, and avoid the risk of serious or irreversible damage to the environment.
Inter-generational equity	Namely, that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.	To ensure the maintenance or enhancement of the health, diversity, and productivity of the environment for the benefit of future generations, the design will incorporate initiatives such as best practices PVC and low-impact paints, sealants, adhesives and FSC certified wood. Additionally, there will be a focus on integrating more vegetation and enhancing the connection with nature. Through these measures, the project will demonstrate a strong commitment to preserving the environmental health, diversity, and productivity of the local area.
Conservation of biological diversity and	Namely, that the conservation of biological diversity and ecological integrity should be a fundamental consideration.	By planting native vegetation, reducing stormwater runoff from the site, and employing integrated

Principle	Objective	Project Response
ecological integrity		landscaping, the project will work to enhance, conserve, and support the local biological diversity and integrity.
Improved valuation, pricing, and incentive mechanisms	Namely, that environmental factors should be included in the valuation of assets and services, such as: - polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and - the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and - established environmental goals should be pursued in the most cost-effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.	The design of this development will employ lifecycle costing to determine the optimal strategy for major plant items. Decisions will be based on whole-of-life costs rather than capital expenditure alone. The project will involve significant input from the Quantity Surveyor, who will ensure that the project remains on budget and effectively considers environmental factors in the valuation of assets and services.

Through the inclusion of the above and the sustainability initiative outlined within this report the project clearly addresses the ESD Principles into the design, construction and operation of the development as defined within clause 193 of the Environmental Planning and Assessment Regulation 2021. Further details of the general sustainability initiatives are outlined in **Section 4**.

3.3 State Environment Planning Policies (SEPP) 2022 - Sustainable Buildings Requirements

The SEPP (Sustainable Buildings) 2022 outlines new requirements to allow projects to reduce greenhouse gas emissions. This section specifically addresses the following sustainability objectives for non-residential buildings.

Table 5 Response to SEPP (Sustainable Buildings) 2022 Requirements

Reference	Objective	Design Response
General Sustainability	Reporting on general performance, including water conservation, waste minimisation and use of renewable energy.	- Energy metering and monitoring strategy will be implemented to effectively monitor the main energy uses within the building. - The project is also aiming to divert construction and demolition waste from landfill. - A waste management plan is developed to reduce operational waste.

Reference	Objective	Design Response
		Installation of solar array to generate renewable energy and reduce energy usage from the grid
Embodied Emissions Reporting	Implement processes of measuring and reporting on embodied emissions.	Disclose embodied emissions via the NABERS embodied emission material form (not part of this report).
Net Zero Provisions	Demonstrate at development application that the development is designed with sufficient space and infrastructure so all energy needs can be sourced from renewables by 2035.	All developments that meet the criteria for large commercial or state significant development outlined in Schedules 13-15 of the State Environmental Planning Policy 2022 will provide a Net Zero ready statement (not part of this report).
Energy Performance and Offsets	Independently verify that the development has met the energy performance required by the NCC, through NABERS post occupancy assurance. Purchase offsets for onsite fossil fuel use and to rectify any performance gap for energy efficiency	All developments that meet the criteria for large commercial or state significant development outlined in Schedules 13-15 of the State Environmental Planning Policy 2022 will commit to obtaining a minimum NABERS Energy star rating (not part of this report).
Water Performance	Independently verify that the development has met a minimum 3-star NABERS water rating.	All developments that meet the criteria for large commercial or state significant development outlined in Schedules 13-15 of the State Environmental Planning Policy 2022 will commit to obtaining a NABERS Water star rating (not part of this report).

3.4 State Environmental Planning Policy (Planning Systems) 2021 – Schedule 1 (29)

Schedule 1 (29) of the State Environmental Planning Policy (Planning Systems) 2021 defines the project as SSD in the Western Sydney Aerotropolis.

3.5 State Environmental Planning Policy (Precincts—Western Parkland City) 2021

Part 6.2 of the State Environmental Planning Policy includes principle development standards relevant to Ecologically Sustainable Development. The requirements are outlined below, along with references to where each response can be found within this report.

Table 6 Response to Ecologically Sustainable Development (ESD) of the State Environmental Planning Policy (Precincts—Western Parkland City) 2021

Item for inclusion	Report Location
Development supports the goal of ecologically sustainable development within the region declared under the Act and known as the Sydney Region.	Section 4

3.6 State Environmental Planning Policy (Industry and Employment) 2021

Part 2.6 of the State Environmental Planning Policy includes performance objectives relevant to Ecologically Sustainable Development:

Table 7 Response to Ecologically Sustainable Development (ESD) of the State Environmental Planning Policy (Industry and Employment) 2021

Item for inclusion	Report Location
Minimise the consumption of potable water and greenhouse gas emissions.	Section 4

3.7 Western Sydney Aerotropolis Plan 2020

Part 6 and 7 of the Western Sydney Aerotropolis Plan include performance objectives relevant to Ecologically Sustainable Development:

Table 8 Response to Ecologically Sustainable Development (ESD) of the Western Sydney Aerotropolis Plan 2020

Item for inclusion	Report Location
Adaptation and resilience to climate change effects through sustainable energy, waste and circular economy design principles in development and operations.	Section 4
Create a sustainable precinct by providing urban tree canopies, blue and green corridors, biodiversity corridors, waste management and integration of natural water retention processes. Further enhance the efficient use of energy, water and other resources to achieve net zero emissions and improve the condition of native vegetation.	Section 4

3.8 Western Sydney Aerotropolis Development Control Plan (DCP) 2022

Part 2.5.2 and 2.12 of the Western Sydney Aerotropolis DCP includes performance objectives relevant to Ecologically Sustainable Development:

Table 9 Response to Ecologically Sustainable Development (ESD) of the Western Sydney Aerotropolis DCP 2022

Item for inclusion	Design Solution	Report Location
Site layout of development and public domain mitigates urban heat island effect.	Where feasible, the project will incorporate permeable paving and porous surfaces for extensive paving areas. Carparking areas and pathways in sensitive bushfire zones will feature pervious pavement and materials such as aluminium decking or Fibre Reinforced Plastic (FRP) boardwalks. Secondary pathways through Central Core Open space	Section 4

Item for inclusion	Design Solution	Report Location
	areas will consist of permeable decomposed granite. The landscaping design will include at least 15% deep soil across all lots, with expansive green spaces planned for the central precinct core to achieve a 40% canopy cover objective. Additionally, a 40% canopy cover goal has been set for roads.	
Buildings minimise cooling demand indoors and heat absorbance through orientation, the design of roofs and facades and materials.	Passive design strategies such as performance glazing, shading, orientation and use of insulation will be utilised to reduce demand on the mechanical air conditioning systems. Roofs with a high Solar Absorptance (SA) will be chosen to reflect solar radiation. Extensive green roofs will also be implemented on some office roofs to mitigate the urban heat island effect.	Section 4
Incorporate renewable energy systems to ensure all buildings can achieve a 100% renewable energy supply by 2030.	Tall buildings have the potential to achieve a renewable energy supply of up to 100% by 2030, either onsite or offsite. Utilising the available roof area for installing a solar PV system could contribute significantly to meeting these renewable energy goals. If achieving the net zero energy target onsite is not feasible, the building operator will consider alternatives such as a Power Purchase Agreement to compensate.	Section 4

3.9 Western Sydney Aerotropolis Precinct Plan 2023

Part 4.7 of the Western Sydney Aerotropolis Precinct Plan includes principle development standards relevant to Ecologically Sustainable Development. The requirements are outlined below, along with references to where each response can be found within this report.

Table 10 Response to Ecologically Sustainable Development (ESD) of the Western Sydney Aerotropolis Precinct Plan 2023

Item for inclusion	Report Location
Energy, water and waste systems are to use a circular economy approach to improve efficiency and result in low-carbon developments.	Section 4
Effectively use renewable energy supply including solar, wind, green hydrogen, and bioenergy.	Section 4

Item for inclusion

Report Location

Plan for, and achieve, leading industry targets by 2025 and from 2026 beyond to achieve sustainable regenerative targets:

Description	Leading industry practice	Sustainable regenerative
	Target 2020 and 2025	Target 2026 and beyond
BASIX	BASIX (Energy) – 45-60 BASIX (Water) - 60	BASIX (Energy) – 45-60 BASIX (Water) – 60
Non-residential uses (subject to final modelling)	Green Star Communities – 5+ stars Green Star – 5+ stars NatHERS – 7 star	Green Star Communities – 6+ stars Green Star – 6+ stars NatHERS – 8+ star/ Passive home
Circular economy targets	10% reduction of waste generation 85% reduction in construction waste	100% recovery and re-use of organic waste 90% reduction in construction waste

Section 5

Circular economy activities must be located with consideration of:

- nearby land uses, considering the likely construction and operational impacts of the proposed development
- proximity of the proposed development in relation to the Western Sydney Airport, and associated risks to airport and aircraft operations (in reference to the proposed development's risk assessment)
- proximity to land in the Environment and Recreation Zone and impacts on the environmental values of that land
- potential impacts on the amenity and use of open space e. proximity to major transportation routes, considering safe transportation of extractive and waste materials

The design team will consider the impact of circular economy activities on nearby land uses, including the Western Sydney Airport, environment and open space (not part of this report).

Incorporate accessible Circular Economy Infrastructure into mixed use developments to ensure adequate opportunity for people to participate in reuse and recycling schemes.

The design team will look to incorporate accessible Circular Economy Infrastructure where appropriate (not part of this report).

In deciding whether to grant development consent for the purposes of commercial premises, industrial premises or residential accommodation, the consent authority must consider whether:

- the façade and roof of the proposed buildings and paved surfaces are designed to reduce adverse effects of solar heat on the surrounding land, including open space and the public domain, including a requirement for light-coloured roofs, and
- the awnings and eaves of the building are designed to provide shelter from the sun and improve public comfort at street level, and

Section 4

Item for inclusion	Report Location
• building plant and equipment is designed to minimise the release of heat in the direction of open space and the public domain, and • the development accommodates tree canopy, pervious surfaces and landscaped areas to minimise solar heat absorption and reflection by hard surfaces.	

3.10 Limitations

Due care and skill have been exercised in the preparation of this report. No responsibility or liability to any third party is accepted for any loss or damage arising out of the use of this report by any third party. Any third party wishing to act upon any material contained in this report should first contact Northrop for detailed advice, which will consider that party's requirements.

4. Ecologically Sustainable Design Strategies

Burrah Park will incorporate a set of ESD strategies which minimise the impact and, where feasible, enhance the ecological, social and economic outcomes for construction workers, future tenants, the wider community and ecosystem ecologies both local, regional and global.

4.1 Energy Efficiency



Energy efficiency will be prioritised throughout the design development process, with the design team considering the following improvements. It is anticipated that the measures outlined below, in addition to the implementation of a solar array, will significantly reduce the site's grid electricity demands when compared to a standard practice building. The following initiatives will provide significant savings in energy use.

4.1.1 Fabric Optimisation

Intelligent design and material selection will ensure thermal comfort is achieved without relying solely on mechanical means. Passive design strategies such as performance glazing, shading and use of insulation will reduce demand on the mechanical air conditioning systems leading to lower energy consumption and greenhouse gas emissions.

Implementing effective shading design ensures consistent access to daylighting throughout the building, consequently helping to minimise the use of artificial lighting.

The building fabric will be designed to meet or exceed the NCC 2022 requirements for building envelope. Thermal breaks will be incorporated into walls and roofs where appropriate.

4.1.2 Cool Roof Integration

To mitigate the potential for increased urban heat island effects across the site and surrounding area, the design will integrate cool roofing systems. These systems aim to minimise heat buildup within the building materials, thereby reducing the energy demands on HVAC systems. This will be achieved by selecting roofing products with colours that have a Solar Absorptance (SA) equivalent to a light classification in the Building Code of Australia (BCA).

4.1.3 Energy Efficient Equipment

Only energy-efficient appliances and equipment will be used in the project, with a focus on selecting systems with higher Seasonal Energy Efficiency Ratio (SEER) rating when compared to Section J/ Minimum Energy Performance Standards (MEPS) requirements.

4.1.4 HVAC System

The air-conditioning and ventilation systems will be designed to comply or exceed the minimum requirements of NCC 2022 Section J Part J6.

Ductwork and pipework systems will be designed to reduce system pressure losses to reduce fan and pump motor power. This includes the selection of equipment for reduced coil and vessel pressure drops and being generous with ductwork and pipework sizes to reduce friction losses.

4.1.5 Highly Efficient Lighting System

Installing efficient lighting systems, such as LED lighting, throughout the building will significantly decrease its overall energy consumption. LED lights are more efficient than traditional fluorescent lights and are characterized by an extended lifespan contributing to a reduction in carbon emissions.

They are also efficient in dissipating heat and therefore reduce the heat load experienced within conditioned spaces.

Lighting will be designed to comply or exceed the minimum requirements of NCC 2022 Section J Part J7 and will be controlled via automatic control system.

4.1.6 Energy Metering and Monitoring

An energy metering and monitoring strategy will be implemented to effectively monitor the main energy uses within the building as per the requirements of Section J9D3 in the NCC 2022.

4.2 Energy Generation



With the above energy efficiency measures, the energy load of the facility will be significantly reduced. This will enable a large portion of the site electrical energy demand to be met through onsite renewable energy generation from a solar array. The use of solar arrays will assist to both offset the site energy use and minimise the site daytime peak demand from the grid.

4.3 Indoor Environment Quality



Indoor environment quality is always an important consideration in spaces that are regularly occupied. The following have been considered as part of the building design.

4.3.1 Daylight Access

Daylighting systems will be integrated throughout the internal and external areas of this project to support the admission of natural light and direct sunlight throughout the design. This will be achieved using high Visible Light Transmission (VLT) windows within the office and installing translucent roof sheeting over the warehouse roof, aiming for a minimum of 10% transparency. Adopting an integrated daylight approach will improve the wellbeing of the building occupants by creating a visually stimulating environment.

In addition to promoting occupant comfort, providing daylight will reduce the overall energy consumption of the building. Natural light will alleviate the need for artificial lighting whilst the direct sunlight will enhance thermal comfort during cooler months. Furthermore, the provision of roof lights in the warehouse will ensure continued operational resilience, enabling work to proceed in the event of power outages.

4.3.2 Indoor Air Quality (IAQ)

The quality of indoor air has a significant impact on both our health and the environment, potentially leading to adverse health effects such as allergies and asthma.

To address this concern, the project will improve the outdoor air provided to regularly occupied spaces, which will reduce CO₂ build up within the office areas and improve comfort for the building occupants.

4.3.3 Interior Noise Level Control

Internal noise levels will be actively considered with the building layout and systems design, taking into account how noise will reverberate through the building. The use of acoustic insulation and sound isolation measures will ensure that interior noise levels to be maintained below acceptable limits.

4.3.4 Material Selection

Materials selection for the project aims to improve the internal environment of the site with materials with low volatile organic compound (VOC) and formaldehyde content preferred to help minimise respiratory issues for building occupants.

4.4 Water Efficiency



A strong focus has been put on the effective management of water within the building with the following initiatives being included in the design in all areas throughout the project.

4.4.1 Rainwater Capture and Reuse

The site's extensive building roofs offer significant potential for rainwater harvesting, presenting a particularly advantageous opportunity. The project design will incorporate rainwater harvesting systems to collect, store, and distribute rainwater to offset the site potable water usage. Further feasibility studies will be conducted to determine the optimal end-use for any non-potable water applications on site.

4.4.2 Water Efficient Equipment

Water efficient fixtures and fittings will reduce the water consumption of the site. As an indication, the following should be targeted:

Table 11 Sanitary Fixtures Efficiency

Fixture / Equipment Type	WELS Rating	WELS Label
Taps	5 Star	
Urinals	5 Star	
Toilet	4 Star	
Showers	3 Star	
Dishwashers	5 Star	

4.5 Circular Economy and Waste Management



Effective waste management throughout construction and operation of the site will help to promote resource efficiency and minimise the adverse environmental impacts of the project. By integrating circular economy principles, a system can be created where materials are reused, recycled and repurposed, reducing waste and conserving natural resources. The following are being considered as part of the design process.

4.5.1 Waste Management Plan

A Waste Management Plan will be prepared with the following key objectives:

- To minimise the environmental impacts of the operations of the development.
- To minimise the impact of the management of waste within the development.
- To ensure waste is managed to reduce the amount landfilled and to minimise the overall quantity generated.

- To ensure appropriate storage and collection of waste.

4.5.2 Separated Waste and Recycling Streams

The provision of separated waste and recycling streams is proposed for effective recycling of the project's operation waste. Segregation of waste by general, recycling and paper/cardboard waste will be incorporated into the project which will improve the buildings operational efficiency and result in significant environmental benefits. Both interim and final waste storage, transfer and collection methods have been detailed in the Waste Management Plan.

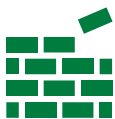
4.5.3 Construction Waste Minimisation

The project will limit the amount of construction waste sent to landfill with the aim of at least 80% of all waste produced to be sent to recycling facilities or reused onsite.

4.5.4 Hazardous Waste Management

A hazardous materials survey is being developed for both concept and stage 1 works to ensure exposure to any hazardous waste is minimised for a healthy environment.

4.6 Low Impact Materials Selections



Embodied energy will be reduced by avoiding unnecessary use of materials and procuring materials with a low carbon footprint where appropriate.

Steel and concrete suppliers with environmental product disclosures (EPDs) will be preferred to support the improvement of industry standards and transparency of information on material impacts.

4.7 Sustainable Transport



The following site attributes and sustainable transport initiatives will be implemented to reduce carbon emissions associated with transport, and access to amenities by building users.

4.7.1 End of Trip Facilities

In accordance with the Western Sydney Aerotropolis Development Control Plan 2022 (DCP), end of trip facilities will be incorporated into the design to promote walking and cycling among staff members, encouraging sustainable transportation practices and enhancing employee well-being.

4.7.2 Sustainable Transport

On a precinct level, the project will incorporate sustainable transport options to encourage alternatives to single-occupancy vehicle travel, such as walking, cycling, carpooling, and public transportation shown in Figure 3.

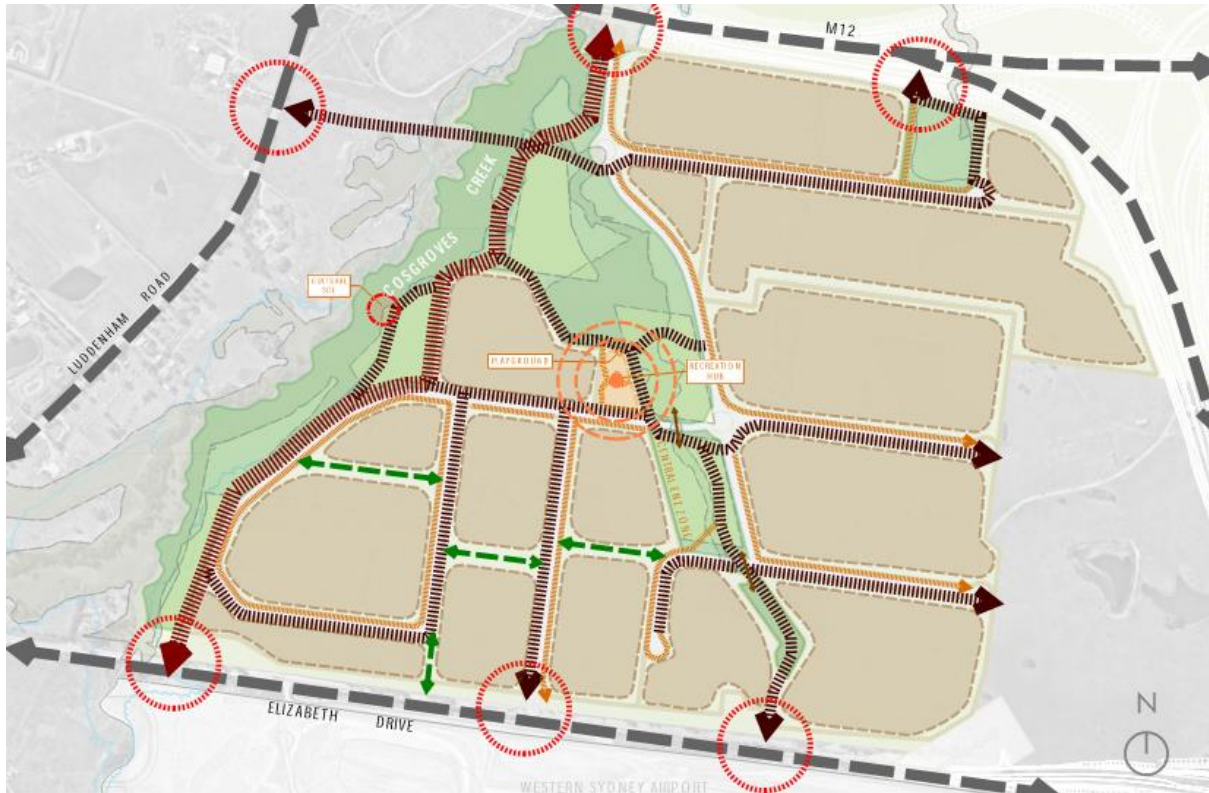


Figure 3 Design diagram - Active Transport (Source: Nettletontribe)

4.7.3 Electric Vehicles (EV) Infrastructure

Provisions for dedicated car parking spaces equipped with charging infrastructure will be strategically implemented for electric vehicles. The aim is to encourage the adoption of electric vehicles to promote green transport, thereby minimising greenhouse gas emissions and promoting sustainable transportation practices.

4.8 Water Sensitive Urban Design



Water Sensitive Urban Design (WSUD) stands at the forefront in modern urban planning, offering innovative solutions to the complex challenges of water management in urban environments.

In accordance with the aims of the SEARs, Western Sydney Aerotropolis Precinct Plan 2023 and Western Sydney Aerotropolis Development Control Plan 2022 (DCP) the development must adhere to the principles of Water Sensitive Urban Design (WSUD). WSUD integrates the urban water cycle, including stormwater, groundwater, and wastewater management and water supply, into urban design to minimise environmental degradation and improve aesthetic and recreational appeal.

The project incorporates a strong focus on water sensitive urban design with the external landscape design assisting to minimise water use for irrigation. The landscaping largely consists of native planting with low water-use requirements, the exception to this being the plants used in and around the trunk drainage and basin networks. Alongside water minimisation benefits, the use of native vegetation will help support local flora and fauna and contribute to the greater ecosystem.

Efficient irrigation systems assist to minimise water use on the site and are being explored by the design team with details to be finalised once the design has progressed further.

Stormwater will be effectively managed through stormwater retention ponds, alongside vegetation, help to decrease site stormwater discharge and reduce pollutants in stormwater.

The project will aim to achieve the storm water quality targets during construction and operation phases, as specified in Section 4.5.1 Total water cycle management of the Western Sydney Aerotropolis Precinct Plan 2023 and Section 2.3 Stormwater, Water Sensitive Urban Design and Integrated Water Management of the Western Sydney Aerotropolis Development Control Plan 2022 (DCP).

4.9 Improved Ecology



Through planting native vegetation and promoting improved interaction with the natural environment, the project will look to improve the site's ecology and minimise its ongoing environmental impact.

4.9.1 Light Pollution to Neighbouring Bodies

The design team is investigating strategies to reduce light pollution that could affect migratory animals and insects in nearby areas. Specific measures, such as the potential use of Versalux 'Equinox' streetlights or similar fixtures along pathways in open spaces, are under consideration for their ability to emit amber light, thereby reducing the impact on local wildlife. These decisions will be finalised as the design progresses further.

4.9.2 Riparian Buffer Zone

Riparian buffer zones provide numerous benefits, including habitat preservation, erosion control, water quality improvement, and enhanced biodiversity. As such, a 40m Vegetated Riparian Zone (VRZ) will be created off the Cosgroves Creek top of bank (to be managed by a Vegetation Management Plan) and a 20m VRZ will be created off either side of the top of bank for the trunk drainage running through the central core. Refer to Figure 4 for a diagram of the VRZ.



Figure 4 Riparian Buffer Zone Diagram (Source: Geoscapes)

4.9.3 Native Endemic Planting

In areas designated as ENZ Environment and Recreation and/or Parkland Priority Precincts, native planting from the Cumberland Plain Woodland and River-Flat Eucalypt Forest will be utilised, potentially extending beyond the Vegetated Riparian Zones (VRZ) along waterways. This approach not only enhances biodiversity and supports local ecosystems but also contributes to the preservation of native habitats and the restoration of natural landscapes.

4.10 Mitigating Urban Heat Island Effect



The urban heat island effect is significant due to its role in elevating temperatures in urban areas, which can increase energy usage, health risks, and environmental strain. To address this issue, the project should prioritise strategies like green infrastructure, light-coloured materials, permeable pavement and sustainable urban planning to create cooler and healthier built environments.

4.10.1 Light-coloured Roofing

To mitigate potential urban heat island effects on the site and its surroundings, a roof colour with a high Solar Absorptance (SA) will be chosen to reflect solar radiation.

4.10.2 Permeable or Porous Pavement

Where feasible, the project will incorporate permeable paving and porous surfaces, including materials like 'StoneSet' for extensive paving areas. High-traffic pathways will be made from concrete, while carparking areas and pathways in sensitive bushfire zones will feature pervious pavement and materials such as aluminium decking or Fibre Reinforced Plastic (FRP) boardwalks. Secondary pathways through Central Core Open space areas will consist of permeable decomposed granite.

4.10.3 Increasing Vegetation

The landscaping design will include at least 15% deep soil across all lots (refer to Figure 5), with expansive green spaces planned for the central precinct core to achieve a 40% canopy cover objective (refer to Figure 6). Additionally, a 40% canopy cover goal has been set for roads. Vegetation plays a crucial role in mitigating the urban heat island effect by providing shade, reducing temperatures, and enhancing overall environmental quality. For Stage 1, landscaping efforts will aim for a 15% canopy cover across lots, with areas within the Bush Fire Asset Protection Zone (APZ) limited to a maximum canopy cover of 15% and shrub coverage restricted to 10%.



Figure 5 Design Diagram - Deep Soil (Source: Nettletontribe)



Figure 6 Design Diagram - Canopy Cover (Source: Nettletontribe)

4.10.4 Green Roofs

Extensive green roofs, which also serve as amenity spaces, will be installed on one of the office areas as part of Stage 1 works. Green roofs not only enhance aesthetics but also offer benefits such as reducing urban heat island effects by providing natural insulation and improving air quality through vegetation.

4.11 Smart Places

The project's smart infrastructure will integrate digital connectivity with electrical networks, enabling the deployment of smart technology for various applications. Planned components include fibre and wireless networks, an Internet of Things sensor network, distributed energy resources, embedded networks, Battery Energy Storage Systems (BESS), and multi-function poles with smart lighting controls.

These infrastructure elements, along with deployable sensors and controls, aim to achieve operational efficiencies and sustainability objectives at the estate scale, including:

- Decreased emissions through the utilisation of renewables
- Energy efficiency through dynamic load management
- Water efficiency through smart metering and irrigation
- Envisensing including water and air quality monitoring
- Smart lighting to reduce energy consumption

5. Green Star Framework

5.1 Overview

The Green Building Council of Australia provides an internationally recognised system to assess sustainable outcomes throughout the life cycle of the built environment. It was developed by the Australian Building Industry through the Green Building Council of Australia (GBCA), which is now the nation's leading authority on sustainable buildings and communities. As such, the project is looking to implement some additional elements drawn from the Green Star Buildings and Green Star Communities tool to holistically address all elements of Ecologically Sustainable Design Principles across a building and precinct level.

This section provides a summary of how the project is incorporating best practice in line with elements drawn from the Green Building Council of Australia (GBCA). These elements provide a benchmark for the project to industry best practice.

The Green Star Buildings tool incorporates ESD principals across eight major categories:

- Responsible
- Healthy
- Resilient
- Positive
- People
- Places
- Nature
- Leadership

The Green Star Communities tool incorporates ESD principals across five major categories:

- Governance
- Liveability
- Economic Prosperity
- Environment
- Innovation

The following outlines the benchmarked categories for this project and outlines how the project design team can deliver equivalency to this best practice standard.

5.2 Green Star Buildings

5.2.1 Responsible

The Responsible category aims to assist owners, builders, and the supply chain on the sustainability journey to ensure the building is designed, built, and handed over in a responsible manner. This proposed project design is incorporating the following areas of focus:

- Responsible Construction
- Verification and Handover
- Operational Waste

5.2.1.1 Responsible Construction

To ensure responsible construction is achieved within this project, a formalised systematic approach to the planning, implementing, and auditing phase of construction is proposed to promote opportunities for improved environmental and social outcomes. From the onset of construction an Environmental Management System certified to the recognised standard AS/NZS ISO 14001 and environmental management plan covering the scope of construction activities should be introduced. Additionally, the project design should look to divert at least 80% of the demolition and construction waste from landfill and provide sustainability training to all contractors and subcontractors present

onsite for more than three days regarding the sustainable attributes of the building and their role in delivering a sustainable building.

5.2.1.2 Verification and Handover

The project design should aim to incorporate an array of monitoring and metering systems regarding the energy and water usage of the building. These systems should be independently verified through a series of commission and tuning assessments conducted prior to, during and 12 months following the completion of the building. Relevant building information regarding the operation and maintenance of the building to deliver best practice should be provided to the building facilities management team to enhance the environmental performance of the building.

5.2.1.3 Responsible Resource Management (Operational Waste)

The building design should provide storage areas to ensure the efficient collection and separation of waste into appropriate waste streams by the building occupants and waste collection contractors. The waste storage area design considers safe accessibility for collection vehicles including driveway access and appropriate height clearances which are to be assessed and signed off by a waste specialist or contractor.

5.2.2 Healthy

The Healthy category strongly emphasises the importance of improving the indoor environment quality of rated buildings to enhance the health and wellbeing of occupants. The proposed project design is incorporating the following areas of focus:

- Clean Air
- Light Quality
- Acoustic Comfort
- Exposure to Toxins

5.2.2.1 Clean Air

Outdoor air pollutant infiltration should be mitigated through compliance with ASHRAE Standard 62.1:2013 regarding the minimum separation distances between pollution sources and outdoor air intakes. Photocopying equipment should meet minimum emissions standards for indoor pollutants, and any kitchen stoves or vehicles should be exhausted directly to the outside of the building.

Where mechanical ventilation is provided it should increase the supply of air by 50% compared to the minimums outlined in AS 1668.2.2012. The HVAC system should be sized according to the increased outdoor air rates.

5.2.2.2 Light Quality

Lighting within the building should be LED and flicker free with a Colour Rendering Index (CRI) of 85 to meet minimum comfort requirements to ensure occupant comfort.

The project design should also aim to address the quality of artificial light in the space by providing highlights and contrasts and avoiding excessive lighting or overly uniform solutions. Horizontal and vertical illuminance levels for typical tasks should also be designed in accordance with current best practice standards and guidelines.

To control glare from artificial lighting, bare light sources should be fitted with baffles, louvers, translucent diffusers, ceiling design or other means to obscure the direct light source from all viewing angles of occupants.

High levels of daylight should be provided to ensure regularly occupied areas are in reasonable proximity to windows or skylights and occupants are in or near daylight areas during their daily activities.

External glare from sunlight should be reduced through a combination of blinds, screens, fixed devices, tinted glazing or other means.

5.2.2.3 Acoustic Comfort

An Acoustic Comfort Strategy should be prepared to ensure the building design delivers acoustic comfort to the occupants. This strategy should be prepared by a qualified acoustic consultant during the design stage to ensure the proposed performance metrics for each Acoustic Comfort criteria applicable to this project type will exceed the minimum legislative and best practice guidelines.

5.2.2.4 Exposure to Toxins

At least 95% of all internally applied paints, adhesives, sealants and carpets should meet the below stipulated 'Total VOC Limits' (TVOC).

Table 12 Maximum TVOC Limits for Paints, Adhesives and Sealants

Product Category	Max TVOC content in grams per litre (g/L) of ready to use product
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

To demonstrate compliance with this credit, the use of carpets all products should be certified under a recognised Product Certification Scheme or other recognised standards.

5.2.3 Resilient

The Resilient category provides building owners the opportunity to demonstrate their careful consideration towards the short-term and long-term performance and resilience of the building regarding several disruptions including climate change and other externalities ranging from pandemics to infrastructure failure. The proposed project design is incorporating the following areas of focus:

- Climate Change Resilience

5.2.3.1 Climate Change Resilience

The project team should conduct a climate change pre-screening to consider potential impacts and exposure risks to climate change for the building which will be effectively communicated to the building owner and future tenants. This checklist should be signed off by a member of the project leadership team and shared with key project stakeholders, including the client/building owner.

5.2.4 Positive

This category drives project designs to address critical aspects of the built environment such as the need to reduce the energy consumption of a building and a transition to renewable energy to pursue the 1.5 °C climate trajectory. This category encourages the built environment to address its emissions alongside water consumption. The proposed project design is incorporating the following areas of focus:

- Upfront Carbon Emissions
- Energy Use – Reference Building Pathway
- Energy Source
- Water Use

5.2.4.1 Upfront Carbon Emissions

The proposed project design should incorporate good design and responsible material selection to ensure the upfront carbon emissions are at least 10% less than those of a reference building. This is proposed to be achieved through reductions in the impact of concrete and steel.

5.2.4.2 Energy Use – Reference Building Pathway

The project design should aim to reduce energy use by at least 20% in comparison to a 2019 National Construction Code or later Section J compliant building. This should be assessed as part of the project detailed design with a strong focus on the measures detailed in Section 4 of this report.

5.2.4.3 Energy Source

In alignment with the SEPP 2022 and the NSW Government policy for Net Zero Emissions, the project should aim to remove fossil fuel use from the site where possible by 2035. This should be detailed in a supporting net zero statement, alongside any renewable energy generation and energy minimisation strategies used in the project and a quantification of annual energy consumption and amount of emissions relating to energy use in the building (if information is available).

5.2.4.4 Water Use

The proposed project design should look to incorporate efficient water fixtures, rainwater capture and reuse systems and infrastructure for potential future recycled water connection to reduce the potable water usage of the building by 15-45% in comparison with a 2019 National Construction Code or later Section J compliant building.

All sanitary fixtures and water-using appliances installed within the project's scope should, at minimum, meet the following WELS ratings:

Table 13 Sanitary Fixture Efficiency

Fixture / Equipment Type	WELS Rating
Taps	5 Star
Urinals	5 Star

Fixture / Equipment Type	WELS Rating
Toilet	4 Star
Showers	3 Star
Clothes Washing Machines	4 Star
Dishwashers	5 Star

5.2.5 Places

The Places category places people at the forefront of design. Buildings inevitably impact their wider surroundings, and this category emphasises the importance of promoting positive impacts and limiting negative ones. This is achieved through celebrating culture, promoting a sense of belonging and welcomeness to occupants and visitors. The proposed project design is incorporating the following area of focus:

- Movement and Place

5.2.5.1 Movement and Place

The project design should incorporate changing facilities including shower installations based on the regular occupancy of the building as well as lockers to encourage occupants and visitors to use active, low carbon and public transport options rather than private vehicles. The project design should emphasise the importance of providing safe facility accessibility to all building occupants.

5.2.6 People

The People category targets issues such as diversity and gender equity, inclusion, and mental health. This category encourages solutions that address social health of the community whilst bringing a new dimension to the design and construction process of buildings. The proposed project design is incorporating the following areas of focus:

- Inclusive Construction Practices

5.2.6.1 Inclusive Construction Practices

During the construction phase the head contractor should provide adequate onsite facilities, policies, and training to promote workplace diversity and enhance the overall wellbeing of site occupants. This can be achieved through the provision of gender inclusive bathroom facilities, gender-specific fit-for-purpose personal protective equipment as well as the enforcement of policies which address discrimination, racism and bullying onsite.

Training should be provided to all contractors and subcontractors present onsite for more than three days regarding drugs and alcohol awareness and discrimination policies present onsite. The head contractor should also look to evaluate the effectiveness of physical and mental health programs provided to the needs of the onsite workers.

5.2.7 Nature

The Nature category addresses the pressures placed upon ecosystems and biodiversity as a result of rapid urbanisation. This category encourages building designs to minimise their impacts on the natural environment by actively bringing nature and biodiversity back into the cities. It also celebrates the positive impacts of green spaces and biodiversity on people and the urban environment. The proposed project design is incorporating the following area of focus:

- Impacts to Nature

5.2.7.1 Impacts to Nature

The proposed project should avoid the development of highly ecological valued sites whilst minimising the light pollution to neighboring bodies. Outdoor lighting should be designed to achieve control of upward light output ratio (ULOR) by demonstrating that no external luminaire on the project has a ULOR that exceeds 5%, relative to its actual mounted orientation.

5.2.8 Leadership

The Leadership category provides recognition for the implementation of innovative practices, processes, and strategies that promote achievements within the built environment that surpass the scope of the rating tool as released.

To address leadership, the project should consider how it can positively influence the industry or the operation of the building throughout its design, construction, and operation.

5.3 Green Star Communities

5.3.1 Governance

Robust governance frameworks that are transparent, accountable, and adaptable empower sustainable communities to grow and realise a common vision. To foster engagement, transparency, and capacity building within the community and industry throughout the project, the following objectives should be pursued:

- Adaptation and resilience
- Corporate responsibility
- Sustainability awareness
- Community participation and governance
- Environmental management

5.3.2 Liveability

Liveability aims to promote and recognise developments that create safe, accessible, and culturally vibrant communities. This category supports the development of healthy and active lifestyles and rewards communities that provide high levels of amenity, activity, and inclusiveness. The following should be considered throughout the project:

- Healthy and active living
- Community development
- Sustainable buildings
- Culture, heritage and identity
- Walkable access to amenities
- Access to fresh food
- Safe places

5.3.3 Economic Prosperity

Affordable living, investment in education and skills development and community capacity building can foster prosperity and productivity in a community. The project should aim to incorporate economic prosperity through the following:

- Community Investment
- Education and Skills Development

- Incentive Programs
- Digital Infrastructure
- Peak Electricity Demand Reduction

5.3.4 Environment

The Environment category focuses on lessening the impacts of projects on land, water, and the atmosphere. It aims to minimise the impact of urban development on ecosystems. It promotes resource management and efficiency by encouraging infrastructure, transport, and buildings with reduced ecological footprints. The project should aim to consider the impact of their design on the environment by exploring sustainable options in the following categories:

- Integrated Water Cycle
- Greenhouse Gas Strategy
- Materials
- Sustainable Transport and Movement
- Sustainable Sites
- Waste Management
- Heat Island Effect
- Light Pollution

5.3.5 Innovation

The project should aim to implement innovative practices, processes, and strategies that promote sustainability in the built environment.

6. Conclusion

This report has addressed the ESD to support the Burrah Park development of a concept plan and Stage 1 development for an industrial warehouse and logistics estate located at 1953-2109 Elizabeth Drive Badgerys Creek, NSW 2555

Specific sustainability initiatives proposed for the building include, but are not limited to:

- Exceeding the energy efficiency requirements of Section J of the Building Code of Australia.
- Designing a highly efficient façade wall-glazing system to minimise heat gains while maximising daylight entry for daytime-occupied areas.
- Reducing potable water use through high WELS-rated sanitary fixtures and fittings.
- Collecting and reusing rainwater to conserve water resources.
- Increasing the use of daylighting to reduce reliance on artificial lighting and lower power consumption.
- Implementing comprehensive waste minimisation strategies.
- Adopting Water Sensitive Urban Design (WSUD) principles to manage stormwater effectively and protect water quality.
- Installing a solar array to generate renewable energy and reduce dependency on the grid.

Overall, through the implementation of the initiatives noted within this report the project clearly demonstrates the site's commitment to ESD principles throughout the design, construction, and operation. Additionally, the project design team has worked to optimise the sites energy performance, address key climate related risks posed to the site, align the project to the NSW Government's commitment to carbon neutrality by 2050, and benchmarked the project to industry best practice sustainability.

Appendix A – Greenstar Buildings Pathway

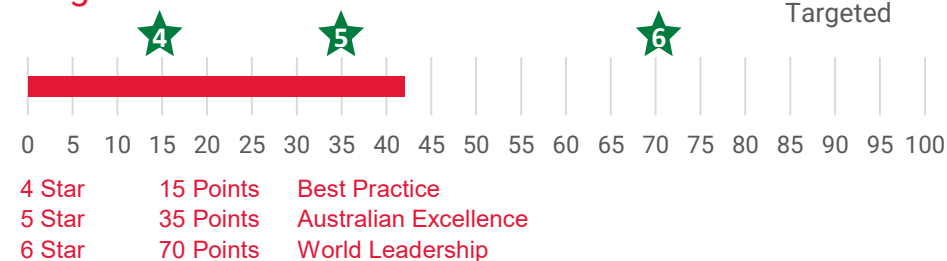
Green Star Buildings v1 rev B - Pathway



Project Name	Burrah Park - Stage 1
Target Rating	5 Star
GS registration	2023+
Author	#Name
Revision	Draft
Date	26/07/2024

Climate Positive Pathway	Required
Minimum expectations (ME) ♦	Achieved
Credit Achievement (CA)	32
Exceptional Performance (EP)	9
Core points targeted	41
Leadership points	1
Sector specific points	0
Total Points Targeted	42
Buffer Points	7
Possible Points	0

Targeted Points



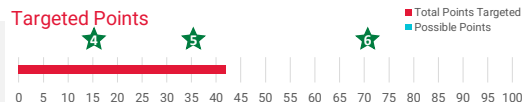
Category	Available	Targeted	Possible
Responsible	17	5	0
Healthy	14	6	0
Resilient	8	3	0
Positive	29	24	0
Places	8	3	0
People	9	0	0
Nature	14	0	0
Sub-total	99	41	0
Leadership	Unlimited	1	0
Sector Specific	Unlimited	0	0
Total	99	41	0

Core Points Overview

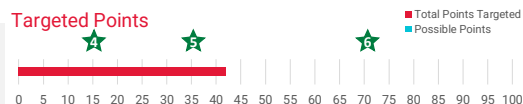


Climate Positive Pathway
Minimum expectations (ME) ♦ The buildings must be fossil fuel free, highly efficient buildings, powered by renewables, and built with low carbon materials.
There is a set of Minimum Expectation that must be achieved by all projects to achieve a Green Star rating.

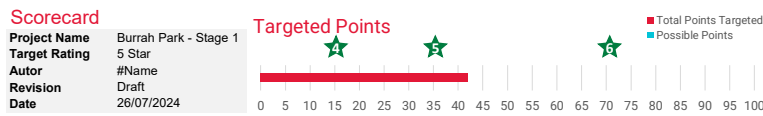
Project Name	Burrah Park - Stage 1
Target Rating	5 Star
Author	#Name
Revision	Draft
Date	26/07/2024

[illegible]

Project Name	Burrah Park - Stage 1
Target Rating	5 Star
Author	#Name
Revision	Draft
Date	26/07/2024

[illegible]

Project Name	Burrah Park - Stage 1
Target Rating	5 Star
Author	#Name
Revision	Draft
Date	26/07/2024

[illegible]

Project Name	Burrah Park - Stage 1
Target Rating	5 Star
Author	#Name
Revision	Draft
Date	26/07/2024

[illegible]

Appendix B – Greenstar Communities Pathway

Green Star - Communities Scorecard v1.1

Project:	Burrah Park
Targeted Rating:	6 Star - World Leadership

Core Points Available	Total Score Targeted
100	86

Total Points Awarded	Total Points TBC
0.0	0.0

CATEGORY / CREDIT	AIM OF THE CREDIT / SELECTION	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED	CERTIFICATION STAGE
Governance				28		
Green Star Accredited Professional	To recognise projects that engage a Green Star Accredited Professional to support the Green Star certification process.	1.1	Green Star Accredited Professional	1	1	Initial certification
Design Review	To encourage and recognise projects that undertake a design review process designed to facilitate sustainable urbanism.	2.1	Site Planning and Layout	4	4	Initial certification
		2.2	Urban Design	4	2	Initial certification
Engagement	To encourage and recognise projects that develop and implement a comprehensive, project specific stakeholder engagement strategy early in the planning process to inform the planning and design of the plan for development.	3.1	Stakeholder Engagement Strategy	3	3	Initial certification
		3.2	Strategy Implementation	3	3	Initial certification
Adaptation and Resilience	To encourage and recognise projects that are resilient to the impacts of a changing climate and natural disasters.	4.1	Climate Adaptation	2	2	Initial certification
		4.2	Community Resilience	2	2	Initial certification
Corporate Responsibility	To encourage and recognise projects with a project applicant that has corporate responsibility as a core value.	5.1	Corporate Responsibility	1	1	Initial certification
		5.2	Sustainability Reporting	2	2	Initial certification
Sustainability Awareness	To encourage and recognise those projects that enhance knowledge and understanding of its sustainability attributes.	6.1	Community Users' Guide	1	1	Initial certification
		6.2	Sustainability Education Facilities	1	1	Initial certification
Community Participation and Governance	To encourage and recognise projects that establish mechanisms for community management arrangements for facilities and programs.	7.1	Community Facility Management	1	1	Initial certification
		7.2	Community Program Management	1	1	Initial certification
Environmental Management	To encourage and recognise the adoption of formal environmental management practices.	8.1	Environmental Management System	1	1	Initial certification
		8.2	Environmental Management Plan	1	1	Initial certification
Total				28	26.0	

POINTS AWARDED	POINTS TBC	OUTCOME	ASSESSMENT COMMENTS
0.0	0.0		
0.0			

Liveability				25		
Healthy and Active Living	To encourage and recognise projects that promote healthy and active living.	9.0	Minimum Requirement - Footpaths	-	Complies	Initial certification
		9.1	Active Lifestyle	2	2	Initial certification
		9.2	Recreational Facilities	2	2	Initial certification
		9.3	Healthy Places	1	1	Initial certification
Community Development	To encourage and recognise projects that engage in and facilitate the development of the project's community.	10.0	Minimum Requirement - Community Development Plan	-	Complies	Initial certification
		10.1	Community Development Officer	1	1	Initial certification
		10.2	Community Group	1	1	Initial certification
		10.3	Community Events	1	1	Initial certification
		10.4	Community Information	1	1	Initial certification

[illegible]

Environment		29				
Integrated Water Cycle	Water Sensitive Urban Design – Performance Pathway	24A.1	Stormwater – Performance Pathway	2	2	Initial certification
		24A.2	Water Sensitive Urban Design – Performance Pathway	5	5	Initial certification
		24B.1	Alternative Water Sources - Public Open Spaces	-		
		24B.2	Alternative Water Sources - Buildings	-		
		24B.3	Stormwater Peak Discharge	-		
		24B.4	Stormwater Quality	-		
Greenhouse Gas Strategy	Greenhouse Gas Strategy – Performance Pathway	25A	Greenhouse Gas Strategy – Performance Pathway	6	3	Initial certification
		25B.1	Energy Efficiency - Infrastructure Lighting	-		
		25B.2	Energy Efficiency - Existing Buildings	-		
		25B.3	Renewable Energy Production	-		
		25B.4	District Heating and Cooling	-		
Materials	Life Cycle Assessment (LCA) – Performance Pathway	26A	Life Cycle Assessment (LCA) – Performance Pathway	5		
		26B	Life Cycle Impacts – Prescriptive Pathway	-		
Sustainable Transport and Movement	Sustainable Transport and Movement: Performance Pathway	27A	Sustainable Transport and Movement: Performance Pathway	3	3	Initial certification
		27B	Sustainable Transport and Movement: Prescriptive Pathway	-		
Sustainable Sites	To encourage projects that avoid or minimise impacts on environmentally sensitive sites while recognising projects that reuse previously developed land and reclaim contaminated land using best practice remediation.	28.0	Conditional Requirement	-	Complies	Initial certification
		28.1	Previously Developed Land	1		
		28.2	Best Practice Site Decontamination	1	1	
Ecological Value	To encourage and recognise projects that enhance the ecological value of the project site.	29.1	Change of Ecological Value	1		
		29.2	Biodiversity Enhancement	1	1	
Waste Management	To encourage and recognise projects that reduce the environmental impact of waste.	30.1	Construction and Demolition Waste	1	0.8	Initial certification
		30.2	Operational Waste	1	1	Initial certification
Heat Island Effect	To encourage and recognise projects that implement measures to reduce heat island effect.	31.1	Heat Island Effect	1	1	Initial certification
Light Pollution	To encourage and recognise projects that minimise the adverse impact of light emissions.	32.1	Light Pollution	1	1	Initial certification
Total		29		18.8		

0.0	0.0	

Innovation		10				
Innovative Technology or Process	The project meets the aims of an existing credit using a technology or process that is considered innovative in Australia or the world.	33A	Innovative Technology or Process	10		
Market Transformation	The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in Australia or in the world.	33B	Market Transformation			
Improving on Green Star Benchmarks	The project has achieved full points in a Green Star credit and demonstrates a substantial improvement on the benchmark required to achieve full points.	33C	Improving on Green Star Benchmarks			
Innovation Challenge	Where the project addresses an sustainability issue not included within any of the Credits in the existing Green Star rating tools.	33D	Innovation Challenge		8	Initial certification
Global Sustainability	Project teams may adopt an approved credit from a Global Green Building Rating tool that addresses a sustainability issue that is currently outside the scope of this Green Star rating	33E	Global Sustainability			

		Marketing strategy (1), financial transparency (1), fossil fuel free community (5), Reconciliation Action Plan (1)

Total	10	8
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0	0
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TOTALS	AVAILABLE	TARGETED
CORE POINTS	100	78.0
CATEGORY PERCENTAGE SCORE		78.0
INNOVATION POINTS	10	8.0
TOTAL SCORE TARGETED		86.0

AWARDED	TBC
0.0	0.0

RATING ACHIEVED	
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