



Ecologically Sustainable Development Report

Augusta St, Huntingwood, NSW, 2148

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E-LAB Consulting

Where science and engineering inspire design.

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Sustainability



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1 INTRODUCTION

1.1 EXECUTIVE SUMMARY

E-LAB Consulting has been commissioned by the Trustee for the Huntingwood Property Trust to prepare this report in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the State Significant Development Application (SSD- 36138263) for the proposed Augusta Street warehouse and distribution centre at Augusta Street, Huntingwood.

This report presents a summary of the ESD strategies proposed and commitments made for the development.

The proposed sustainability elements include:

- Targeting **5 Star Green Star Design & As Built v1.3 Certification** (with industrial guidance);
- Demonstrating Australian Best Practice;
- No gas on site to reduce fossil fuel consumption;
- Significant on-site energy generation through a major solar PV array on the roof to reduce operational energy and GHG emissions associated with the site;
- Water Sensitive Urban Design Principals being upheld;
- Water recycling through rainwater storage with excess discharged into bio-retention and detention areas;
- Less than 5kg of Construction and Demolition waste per square meter of GFA going to landfill;
- Minimum 5% dedicated to EV parking spaces to prepare for decarbonised future;
- Urban heat island effect mitigation strategies; and
- Following a range of sustainability initiatives across the site spanning energy efficiency, thermal performance, indoor environment quality, waste management and comfort.

The strategies and initiatives presented in this report demonstrate a strong commitment to sustainability in line with the requirements of Clause 2.19 of State Environmental Planning Policy (Resilience and Hazards) 2021 and incorporate principles of ESD as defined under section 193 of the Environmental Planning and Assessment Regulation 2021. These strategies and initiatives will be further developed during subsequent stages of the project.



1.2 PROJECT OVERVIEW

The site is located at 3 Augusta St, Huntingwood, within the Blacktown local government area (LGA). The development includes the construction and operation of a warehouse and distribution centre development of approximately 134,565 m² gross floor area, including four warehouse buildings, ancillary office space, office facilities, indicative warehouse fitout works inclusive of warehouse racking, on-site car parking, and associated works including excavation, landscaping, and signage.

site comprises multiple parcels of land and is legally described as:

- | | | |
|--|------------------------|----------------------|
| ▪ Lot 1 DP835264 | ▪ Lot 1 DP119616 | ▪ Lots 6-10 DP801210 |
| ▪ Lots 218-219 DP457024 | ▪ Lots 4-6 DP226294 | ▪ Lot 4 DP585492 |
| ▪ Lot 2151 DP135859 | ▪ Lots 50-52 DP1144623 | ▪ Lot 4 DP5853442 |
| ▪ Lot 2 DP516449 | ▪ Lot 7 DP803359 | ▪ Lot 2 DP1263824. |
| ▪ Lot 163-164, 168-188
and 216 DP8716 | | |

Figure 1 below shows the location of the site in context.



Figure 1. Augusta St, Huntingwood: site overview. (Source: Urbis 2022)

Figure 2 shows the proposed site operations and development.

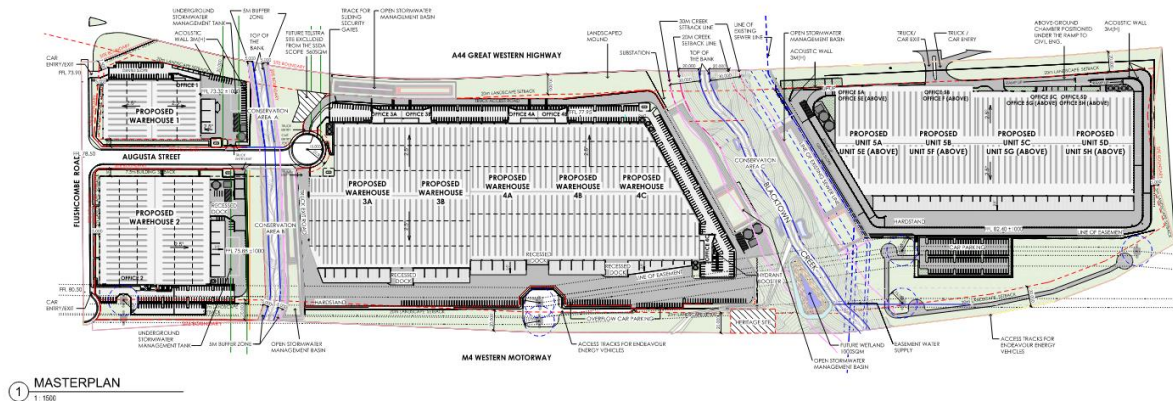


Figure 2. Proposed development site plan (Source: Pace Architects).

Key features of the site are as follows:

- The site has frontage to the Great Western Highway and the Western Motorway of approximately 940 metres and frontage to Flushcombe Road of approximately 250 metres. Augusta Street dissects part of the western portion of the site and is vested to Blacktown Council.
- Access to the site is currently available from Augusta Street which connects to Flushcombe Road to the west. Flushcombe Road intersects with the Great Western Highway, providing east-west access to the metropolitan road network, with right-in and right-out movements available via the existing signalised intersection.
- The eastern part of the site slopes to the west, while the western part of the site slopes to the east, with the central low point at Blacktown Creek adjacent to the easement for water supply
- The site is affected by multiple easements and restrictions including:
 - Multiple easements up to 30 metres wide for transmission lines along the southern part of the site. The site features high voltage power lines along the southern side.
 - An 10m wide easement for water supply which runs north-south within the central part of the site, with associated 9 metre wide and 3-metre-wide easements for construction purposes
- Lot 164 in DP8716 is identified as being owned by Amplitel as the land accommodates a Telstra mobile telecommunications facility which is proposed to be relocated.
- The site has been cleared but is undeveloped with scattered trees across the western boundary and southern boundaries and in the north-eastern corner. Blacktown Creek runs north-south through the central part of the site with riparian vegetation along the corridor.

Key features of the locality:

- The site is approximately 34km west of the Sydney CBD and approximately 3.3km south of the Blacktown commercial centre.
- The region features a mix of land uses, including residential and employment-generating activities. The Huntingwood and Pemulwuy industrial estates are located to the west and south-east.
- The Prospect Reservoir is approximately 1km south of the site adjacent to the Western Sydney Parklands.
- North: The site adjoins the Great Western Highway. The land further to the north primarily comprises residential development including detached single and double storey dwellings. A small natural reserve known as Timbertop Reserve separates the residential development and associated landscaping.
- East: The land immediately to the east of the site is vacant. The Prospect Highway is located further east, providing access to the M4 Motorway and Great Western Highway. St Bartholomew's Church and Cemetery is located on the eastern side of the Prospect Highway.
- South: The M4 Motorway runs along the southern boundary of the site, with boundary landscaping providing visual screening of the site. The land on the opposite side of the Motorway comprises recreational and entertainment facilities in the form of a water park and a drive-in movie theatre.
- West: The land to the west comprises an animal holding facility and industrial development, characterised by large warehouse buildings.

1.3 RESPONSE TO SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARS)

This report outlines how the development will address Item 8 of the SEARs as follows:

- Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.
 - See Part 3 of this report
- Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.
 - See Part 3 of this report
- Demonstrate 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.
 - See Sections 3.2, 3.3, and 3.4 of this report, respectively

2 SUSTAINABILITY FRAMEWORKS

The Augusta St development's sustainability outcomes are influenced by the following key frameworks:

- State Environmental Planning Policy (Industry and Employment) 2021
- Huntingwood Precinct Development Control Plan (DCP) 2011
- Green Star Design & As Built v1.3
- Planning for Net Zero by 2050

The following will also be required for the development:

- A Voluntary Planning Agreement (VPA).
- A Vegetation Management Plan (VMP).
- An ecologist's assessment of the extent of native vegetation that is to be retained and investigate if the application exceeds NSW Biodiversity Offset Scheme clearing thresholds. A Biodiversity Development Assessment Report (BDAR), completed by an Accredited Assessor, is required if the proponent wishes to clear 0.25 ha or more.
- Provision of regional transport infrastructure and services in accordance with Clause 2.28 of Chapter 2 Western Sydney employment area of State Environment Planning Policy (Industry and Employment) 2021.

2.1 STATE ENVIRONMENTAL PLANNING POLICY (INDUSTRY AND EMPLOYMENT) 2021

The site is located within the Blacktown LGA however is excluded from the Blacktown Local Environment Plan 2015 due to its inclusion in the Industry and Employment SEPP, as Precinct 3 (Huntingwood). Under this policy, the site is zoned in IN1 General Industrial zone. In accordance with the aims of the Industry and Employment SEPP under the Clause 2.1, the Augusta St development must endeavour to protect and enhance the land, as well as:

- Provide for coordinated planning and development of the land;
- Ensure that development occurs in a logical, environmentally sensitive, and cost-effective manner and only after a development control plan (including specific development controls) has been prepared for the land concerned;
- Conserve and rehabilitate areas that have a high biodiversity, heritage, or cultural value, in particular areas of remnant vegetation;
- Maximise rainwater harvesting; and
- Follow ESD principles, including minimising consumption of potable water and greenhouse gas emissions.



2.2 HUNTINGWOOD PRECINCT DEVELOPMENT CONTROL PLAN (DCP) 2011

The Huntingwood Precinct DCP 2011 outlines the provisions relating to the development within the Huntingwood Precinct under WSEA SEPP, including the sustainability objectives that the development must consider, in particular:

- Ensuring ESD that actively anticipates and prevents damage to the environment;
- Conservation of areas of core habitat and archaeological significance and minimise the impact of the development;
- Ensuring high quality urban design outcomes are achieved; and
- Allowing for the provision of adequate landscaped areas for the use and enjoyment of the working population.

In accordance with Section 5 of the Huntingwood DCP, the project will practise ESD via its approach to:

- Water conservation and re-use measures;
- Energy efficiency through reducing load on heating, cooling, and ventilation systems;
- Air quality;
- Waste minimisation in construction and operation;
- Contamination;
- Geotechnical, including soil salinity;
- Noise;
- Visual impact;
- Biodiversity and bushfire management; and
- Indigenous and European heritage.



2.3 GREEN STAR DESIGN & AS BUILT V1.3

The development aims to meet and exceed industry best practice sustainability requirements within its design as part of the sustainability commitments associated with construction and operation. The development will be targeting 5 Star Green Star Design & As Built v1.3 rating, by achieving ESD in the nine categories identified in the Green Building Council of Australia's benchmarking tool:

- **Management** – Assesses the policies, procedures, targets, and strategies put in place to ensure buildings operate to their fullest sustainable potential.
- **Indoor Environmental Quality** – Creation of high-quality indoor environments to increase productivity and occupant satisfaction.
- **Energy** – Implementation of strategies and actions to measure and reduce a building's operational energy use, reliance on grid energy supply, and the greenhouse gas emissions associated with grid energy consumption.
- **Transport** – Discouragement of single-occupant vehicle use and encouragement of the use of sustainable transportation modes such as public transport, walking, or cycling.
- **Water** – Reductions in potable water use through the efficient design of building services, water reuse and substitution with non-potable water sources such as rainwater or greywater.
- **Materials** – Consideration of issues such as sustainable procurement and purchasing (materials in) and the management of waste (materials out).
- **Land Use and Ecology** – Address the ongoing impact of building operations on local ecosystems by discouraging degradation and encouraging the restoration of natural environments whenever possible. Improvement of biodiversity through policies and management practices.
- **Emissions** – Minimise point source pollution from buildings and building services to the atmosphere and local waterways. Manage and minimise emissions from stormwater, light pollution, and refrigeration.
- **Innovation** – Use creativity and the pioneering application of new ideas and approaches in order to facilitate the progression of the facilities management sector towards more sustainable outcomes.

A 5 Star Green Star Design & As Built v1.3 pathway has been developed for the Augusta St warehouse or distribution centre. A summary of the points targeted is presented in the table below.

CATEGORY	POINTS AVAILABLE	5 STAR POINTS TARGETED
Management	14	13
Indoor Environment Quality	16	10
Energy	22	11
Transport	10	5
Water	12	8
Materials	14	9
Land Use & Ecology	6	1
Emissions	5	4
Innovation/ Global Sustainability	10	4
Total	109	65

Please refer to the Green Star Design & As Built Pathway for more detail into the credit requirements and responsible parties.

2.4 PLANNING FOR NET ZERO BY 2050

In alignment with NSW Department of Planning, Industry and Environment's Net Zero Plan – Stage 1: 2020-2030, the project proposes to be net zero ready. This includes the following strategies:

- Reducing energy loads and usage;
- Less than 5kg of Construction & Demolition waste per sqm GFA is going to landfill;
- On-site renewable energy through a large photovoltaic array;
- Eliminating gas to remove fossil fuel consumption and prepare for a decarbonised grid; and
- Committing to become Carbon Neutral in operation by 2030 under LOGOS' group sustainability strategy

3 PROJECT DESIGN RESPONSE

3.1 EPA PRINCIPLES

The Augusta St development will follow the golden standard in sustainability principals throughout the development. This includes the design, construction, and operational elements of the project. The key overarching principals are aligned with the definition of Ecologically Sustainable Development as defined in section 193 of the Environmental Planning and Assessment Regulation 2021. These include:

The Precautionary Principle:

Philosophy: Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

Project Response: The project is committed to incorporating elements to minimise impacts on the environment. A commitment to improvement on minimum benchmarks demonstrates the development's commitment to sustainability.

The Principle of Inter-generational Equity:

Philosophy: The present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations.

Project Response: The project is committed to incorporating careful selections into the project design. The design team will address key elements such as energy, potable water, and material consumption to do what is within the project's control to allow each following generation to have an opportunity for ecological equality.

The Principle of the conservation of biological diversity and ecological integrity:

Philosophy: Conservation of biological diversity and ecological integrity should be a fundamental consideration

Project Response: The project is committed to planting native vegetation and using integrated landscaping to enhance the overall ecological and biodiversity of the site. Rainwater and stormwater will be carefully managed and controlled to minimise impacts on surroundings.

Principles relating to improved valuation, pricing, and incentive mechanisms:

Philosophy: Environmental factors should be included in the valuation of assets and services. The users of goods and services should pay prices based on the full life cycle costs of providing goods and service.

Project Response: The project will target a construction waste diversion target of 90%, as well as develop specific project waste management strategies. These combine to ensure the project pays for the waste and damage it creates. Further, it is designed to be low-energy and low-water consumption, which provides an incentive for tenants through lower utility bills.

The Principle of Waste Minimisation:

Philosophy: All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.

Project Response: The project will target a construction waste diversion target of 90%, as well as developed specific project waste management strategies. Construction materials are chosen to be low impact in their manufacture, including best practice PVC and FSC/PeFC timber throughout where possible. This impacts waste both created by the site, as well as upstream and downstream waste categories.

The above principles are addressed by 5 key themes, being *Sea, Land, Water, Air and People*. These 5 key themes are centred around reducing harm as far as practicable across the practice of buildings and infrastructure, both in their construction and operation.



3.2 ENERGY

The only path to a low carbon economy and achieving a “2°C world”, where the average global temperature is kept to less than 2°C above pre-industrial levels, is through comprehensive and complete consideration of how the development consumes resources, including energy, water, and material efficiency.

The energy efficiency strategy follows the energy efficiency pyramid of design in Figure 3. In the first instance demand for Greenhouse Gasses should be reduced. Consideration should be to remove the need for energy to be consumed where possible. Beyond this, energy can be more efficient, through efficient lighting, mechanical systems, and appropriate services.

Once the system has reduced all available energy-consuming elements and made the remaining systems as efficient as possible, renewable energy sources will be considered. If space is allowed on the roof, PV will be installed. Only after all the above steps have been completed should offsets be used to close the gap and achieve neutrality.

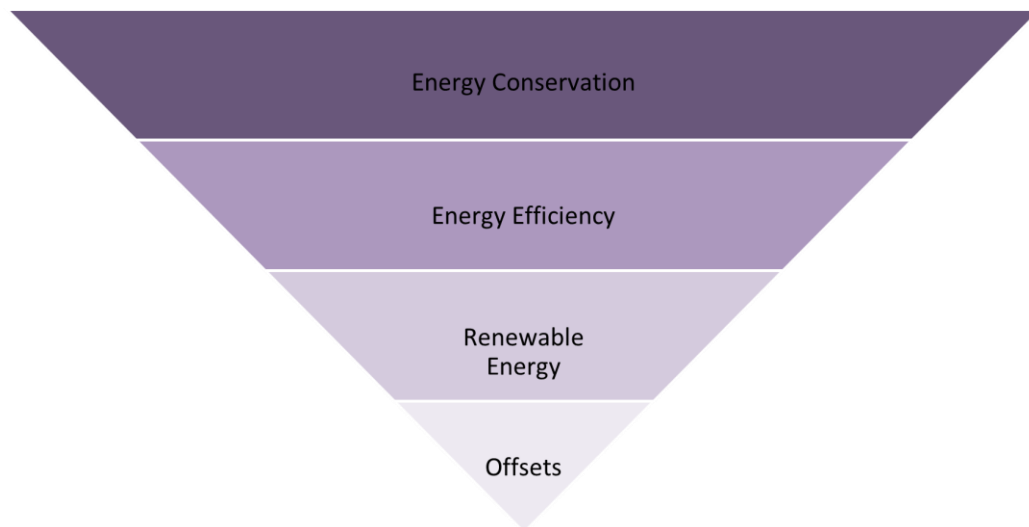


Figure 3. Energy efficiency pyramid: pathway to carbon neutrality.

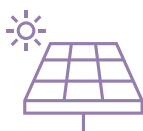
To achieve the above, the following initiatives are proposed:



Electrification – No gas will be used on site, enabling the development to be ‘net zero ready’ and allow the benefits of decarbonisation of the grid to be realised. This is in keeping with the local council’s vision for the site.



Efficient Lighting Systems – High efficiency LED lighting throughout, including in common areas with efficiency controls to meet the requirements of NCC 2022 Section J. Controls will include motion sensors, time clocks and zoned switching.



Renewable Energy – The roof area provides a good opportunity for installation of a solar photovoltaic system. This can generate renewable electricity to offset grid use and minimise stress on the grid at peak times. The size of the system would need to take into consideration roof design, spatial allowance and building demand. This ability will be balanced with plant requirements and exploring opportunities for activation.



Controls, Energy Metering and Monitoring – Energy meters and monitoring systems will be provided to comply with NCC 2022 Section J Part J8 requirements. Exhaust fans will be connected to light switches to ensure they do not run when not required.





Hot Water – Hot water is likely to be provided by energy efficient heat pump systems. These systems are highly efficient and can be run off the solar PV system to reduce the operational carbon of the development.



Integration of Cool Roofing – roofing with a high albedo will reduce Urban Heat Island effect and reduce load on the HVAC system.

3.3 WATER CONSUMPTION & WSUD

To achieve responsible water consumption and water sensitive urban design, best practice water-saving initiatives will need to be implemented throughout the project. The following initiatives will be explored to achieve the potable water targets:

Sanitary Fixtures – By implementing low-flow water fixtures, the consumption will be significantly reduced. All sanitary fixtures are to be provided with the minimum WELS ratings identified below:

Taps – 6 Star WELS

Toilets – 4 Star WELS

Urinals – 6 Star WELS (0.8 L per flush)

Showers – 3 Star WELS (<9 L/min)



Landscape Irrigation – Efficient irrigation systems will be considered, including underground surface drip systems, moisture sensors, and the use of native plants in the landscaping plan. Native plants have evolved to thrive in the Australian environment and are typically more resilient than their exotic counterparts. They typically require less water and are more likely to survive the predicted increase in extreme drought conditions due to climate change. Native vegetation also stores a significant amount of carbon, helping to mitigate climate change.



Recycled water and rainwater – the development will supply most of the irrigation needs from on-site rainwater tanks to serve landscape irrigation and washdown. Rainwater will be captured from the roof of the buildings to reduce potable water demand.



The development's design is deliberately working to reduce potable water consumption by in the first instance reducing water use, then offsetting it through rainwater tanks. The rainwater tanks are designed to meet as much of the site irrigation needs as possible.

3.4 MATERIALS

In line with the principals of sustainability outlined in the EPA, the project will have a significant focus on materiality. The scope of consideration includes the following action items within the project response:

- **Construction Waste** – Less than 5kg of construction and demolition waste per square meter of GFA is going to landfill. This diverts and ensures reuse or recycling of a high portion of site waste.
- **Low VOC and Low Formaldehyde Materials** – paints, adhesives, sealants, floor coverings, carpets and engineered wood will be selected appropriately to provide a healthier and low-impact environment. Such efforts provide a cleaner and better environment for all.
- **Best-Practice PVC** – cables, pipes, flooring, and blinds will be selected and specified to be Best Practice PVC. This ensures upstream performance will be met and has significant benefit for the overall environment during the construction process.
- **Best Practice Steel** – Where possible, steel will come from a sustainable steel manufacturer, who has an action plan.
- **FSC/PeFC Timber throughout** – where possible, timber, including virgin and engineered timber through construction and fitout elements under the builder's control will be specified as FSC/PeFC. This ensures the timber provided to site is of the highest standard and sourced from sustainable sources.
- **Waste Management Plan** – Development of an ongoing Waste Management Plan so waste can be sorted, separated, and recycled. This will assist ongoing diversion from landfill for the development.

3.5 COMFORT AND QUALITY

To ensure the best quality for users and visitors inside the space, the development will commit to the following key initiatives:

- **Visual Comfort** – Maximising high-quality light into the living spaces, with views to the sky and nature where possible.
- **Acoustic Excellence** – Designing the building layout to be protected from noise from external sources. Delicate material selection, acoustic attenuation, and designing the shape of the building and openings accordingly achieves the performance.
- **Thermal Comfort** – Appropriate mix of vernacular design, overhangs, high-performance windows, and mechanical systems to deliver the users optimised thermal.
- **Lighting Comfort** – Use of high colour rendering index (CRI > 80) LED lighting throughout the entire development. Low-glare lighting with baffles or louvres to limit UGR.
- **Generous natural planting** – Greenery through natural planting throughout the development assists in a connection to nature for users and passers-by. It also has a cooling effect, reducing the Urban Heat Island burden on the project.

The above combine to ensure the development is responsible, efficient, beautiful, and in the best interest of not just the developers, but the residents, community, and society as a whole.



3.6 URBAN HEAT ISLAND MITIGATION

The site is location in a position which experiences the urban heat island effect. Figure 4 shows the variation of temperature compared to a non-urban vegetated surface, such as a heavily wooded area. The site experiences temperatures of **4.6°C above baseline** (SEED Database, 2016).

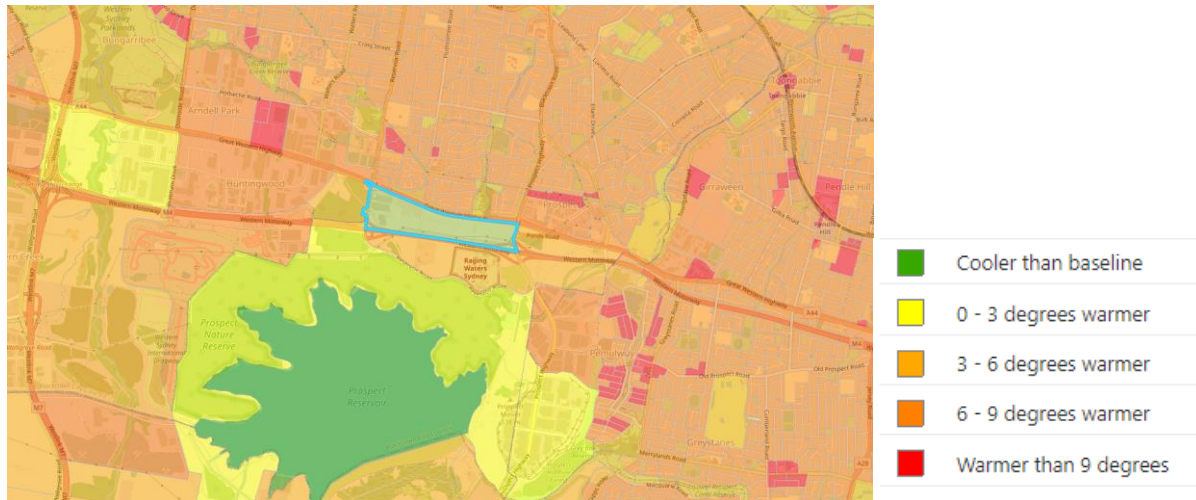


Figure 4. Urban heat island effect at the site. (Source: SEED Database)

To minimise the urban heat island effect and provide a more comfortable environment for occupants, the development can implement the following initiatives:

- Gardens with drought tolerant planting
- Light coloured external materials and roof
- Plant trees with wide tree canopies

3.7 SECTION J

The Augusta St development will be subject to compliance with Section J under the NCC 2022 code. This code places strict environmental performance requirements on the building envelope and services within the building.

The project will demonstrate compliance via verification method JV3 – verification using a reference building (energy modelling). The design of the building fabric will need to demonstrate compliance with this clause through dynamic modelling of the building against a reference case.

The scope of the Section J compliance is limited to areas that meet both of the following criteria:

- Non-Residential areas
- Conditioned Spaces

As such, this includes the majority of areas within the development.

3.8 SUSTAINABLE TRANSPORT

The development will provide easy access to Sydney's extensive public transport network. The nearest bus stop is 600m away from the development, which gives access to Blacktown train station. From here, there is easy access by bus and rail to Sydney's extensive public transport network. A Green Travel Plan will be provided to indicate innovative solutions to minimise reliance on private vehicle use.

The development also has the potential to support the shift away from fossil fuel transport by providing the infrastructure for electric vehicle (EV) charging in the carpark. Future demand for EV is expected to continue to rise, so the infrastructure required to install and support this transition will be installed from day 1. A minimum of 5% of parking spaces will have EV parking infrastructure. This supports the development's commitment to transitioning to a carbon neutral economy.

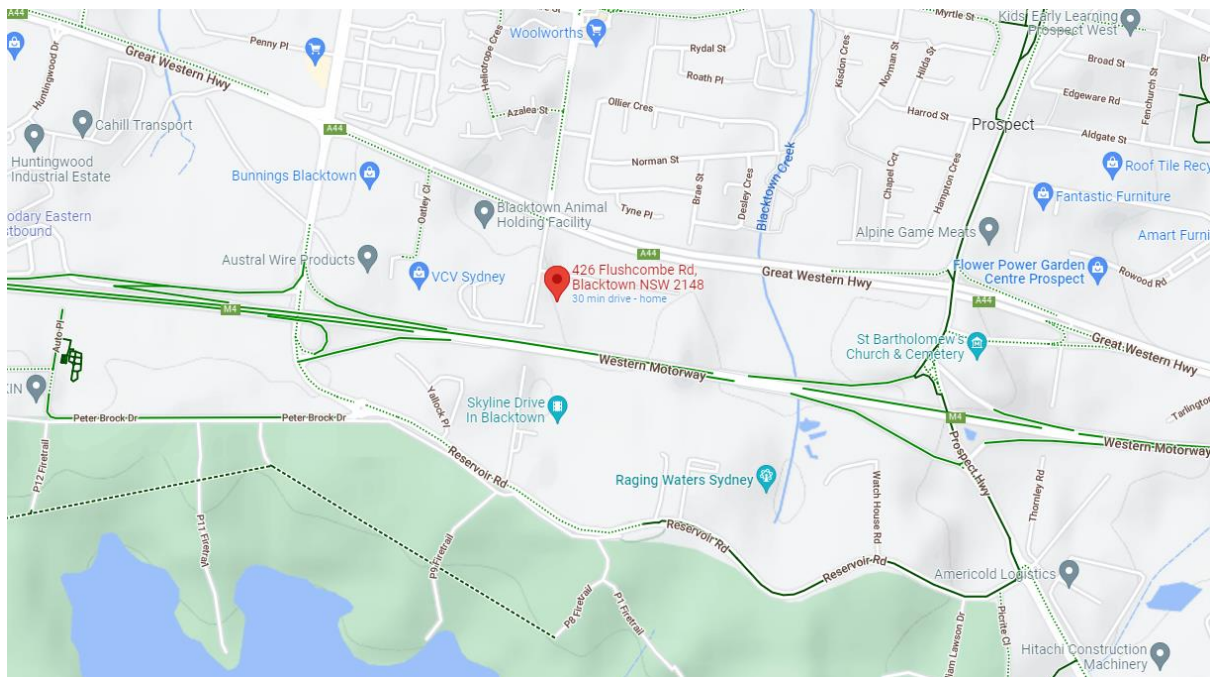


Figure 5. Bicycle Network around Huntingwood Estate

4 CONCLUSION

This report provides an outline of the Augusta St development's Ecologically Sustainable Design initiatives to be considered for the development to demonstrate Design Excellence.

The ESD strategies proposed will assist the development to achieve high levels of sustainability and environmental performance. These targets include:

- Targeting **5 Star Green Star Design & As Built v1.3 Certification** (with industrial guidance);
- Demonstrating Australian Best Practice;
- No gas on site to reduce fossil fuel consumption;
- Significant on-site energy generation through a major solar PV array on the roof to reduce operational energy and GHG emissions associated with the site;
- Water Sensitive Urban Design Principals being upheld;
- Water recycling through rainwater storage with excess discharged into bio-retention and detention areas;
- Less than 5kg of Construction and Demolition waste per square meter of GFA going to landfill;
- Minimum 5% dedicated to EV parking spaces to prepare for decarbonised future;
- Urban heat island effect mitigation strategies; and
- Following a range of sustainability initiatives across the site spanning energy efficiency, thermal performance, indoor environment quality, waste management and comfort.

The strategies and initiatives presented in this report demonstrate a strong commitment to sustainability which meet and exceed expectations for the development. Further opportunities for optimisation of the building's performance will be developed during subsequent stages of the project.



Appendix A **Green Star Pathway**



Project Name	Warehouses at Huntingwood
Project Location	Huntingwood Logistics Estate
Green Star Tool	Design & As-built v1.3 (in conjunction with industrial guidance)
Project Registration No	TBC
Targeted Rating Level	5-star
Revision Date	28-Aug-23

99	Applicable points (excludes 10 innovation points)
65.7	Targeted points (includes innovation points)
5-star	Targeted points rating level

Credit	No	Credit Criteria	Points Summary			Remarks
			Max Points	T	NT	

Management						
Green Star Accredited Professional	1.1	Accredited Professional	1	1		ESD Consultant to be engaged throughout the project as project GSAP, including workshops, providing assistance and preparing Green Star submission. LOGOs has engaged E-LAB as GSAP, so credit is met
Commissioning and Tuning	2.0	Environmental Performance Targets	R	R		A project specific Design Intent Report must be developed. Services to provide input with description of systems in specifications. To be completed by GSAP
	2.1	Services and Maintainability Review	1	1		Services and maintainability review to be led by LOGOs covering Commissionability, controllability, maintainability, operability and safety. LOGOs to review and address Subcontractor and services team comments, all parties to sign off review.
	2.2	Building Commissioning	1	1		Air Permeability targets and testing may be excluded for unconditioned spaces such as the warehouse. Only need to test in office in accordance with AS/NZS ISO 9972:2015
	2.3	Building Systems Tuning	1	1		Building Tuning Commitment for all nominated building systems, at a minimum, the commitment must include quarterly adjustment and measurement for the first 12 months after occupation and a review of building system manufacturer warranties.
	2.4	Independent Commissioning Agent	1		1	Little value relative to cost in this kind of project
Adaptation and Resilience	3.1	Implementation of a Climate Adaptation Plan	2	2		Will need to be included early in design to be awarded
Building Information	4.1	Building Information	1	1		All subcontractors to provide O&M manuals and Building Log Book(s) in line with CIBSE TM31. Building Users Guide to be developed & provided to building users. Potential to provide online if easiest or through BIM models.
Commitment to Performance	5.1	Environmental Building Performance	1	1		>80% of the project's GFA, excluding car parking areas, is covered by a commitment to set, measure and report on its environmental performance (Potable Water and Operation Waste metrics)
	5.2	End of Life Waste Performance	1	1		Logos to provide a confirmation on implementation of renovation (end-of-life) performance. Will require lease agreement with tenant.
Metering and Monitoring	6.0	Metering	R	R		Monitoring systems (EMS) should be installed adhering to Green Star requirements.
	6.1	Monitoring Systems	1	1		
Responsible Construction Practices	7.0	Environmental Management Plan	-	R		Project team to develop best practice Environmental Management Plan for the project.
	7.1	Environmental Management System	1	1		Project team is ISO14001 certified. Formalised implementation and auditing of EMS plus reporting of non-conformities with corrective and preventative actions.
	7.2	High Quality Staff Support	1	1		Programs and policies in place going beyond legal OHS requirements promoting physical well-being and mental health (at least 3 distinct issues)
Operational Waste	8A	Performance Pathway - Specialist Plan	1	1		The floor plan to have separate waste bins, dedicated waste storage and access to waste storage area aligning with Green Star requirements. DA OWMP (Operational Waste Management Plan) normally is sufficient
	8B	Prescriptive Pathway - Facilities				
			14	13	1	

Credit	No	Credit Criteria	Points Summary			Remarks
			Max Points	T	NT	

Indoor Environment Quality

Indoor Air Quality	9.1	Ventilation System Attributes	1	1		Ventilation systems intakes and exhausts designed to ASHRAE 62.1, have adequate access to both sides of heating & cooling coils, humidifiers & filters. Ductwork to be blue bagged on site prior to installation. Requires compliance with fitout as well. Up to 4 rows of cooling coils are compliant for 1-sided access.
	9.2	Provision of Outdoor Air	2			To be explored in the design stages. Requires ventilation fans for non conditioned warehouses. Warehouse space where naturally ventilated to comply with AS1668.4 will meet this requirement in the warehouse
	9.3	Exhaust or Elimination of Pollutants	1	1		Tenant Dependent. Logos will discuss with the tenant regarding the use of low emission certified printers approved by Green Star. If kitchen is present in the building, the stove tops should be of electric source.
Acoustic Comfort	10.1	Internal Noise Levels	1	1		Credit to be substituted with the Acoustic Comfort credit in the Green Star Buildings rating tool.
	10.2	Reverberation	1	1		
	10.3	Acoustic Separation	1	1		
Lighting Comfort	11.0	Minimum Lighting Comfort	R	R		CRI >80% and 12-bit or greater resolution for LED drivers or flicker free luminaires
	11.1	General Illuminance and Glare Reduction	1	1		
	11.2	Surface Illuminance	1		1	Indirect lighting system and special ceiling materials/ coating required to achieve the prescribed ceiling reflectance and luminance.
	11.3	Localised Lighting Control	1		1	Spaces to have lighting systems controllable by individuals (i.e. switching on/ off and adjusting the lighting levels). In the past, DALI lighting systems with dimmable features has been accepted by few assessors while other rejects.
Visual Comfort	12.0	Glare Reduction	R	R		>95% of primary/ secondary spaces comply with best practice lighting levels. Assessment carried out in accordance with AS/NZS 1680.1:2006.
	12.1	Daylight	2		2	Daylight strips are required on the roof. Not possible through daylight strips on the roof for multi-level warehouses.
	12.2	Views	1	1		No requirement for views in the warehouse
Indoor Pollutants	13.1	Paints, Adhesives, Sealants and Carpets	1	1		Requires 95% of products to comply with formaldehyde limits prescribed. E0 or E1 typically. Medium risk as requires fitout compliance.
	13.2	Engineered Wood Products	1	1		Requires 95% of products to comply with formaldehyde limits prescribed. E0 or E1 typically.
Thermal Comfort	14.1	Thermal Comfort	1	1		Office space only
			16	10	4	

Energy

Greenhouse Gas Emissions	15E	Reference Building Pathway	20	10	0	
	15E.0	Conditional Requirement	R	R		Minimum improvement of 10% against NCC 2019 reference building.
	15E.1	GHGe Reduction: Building Fabric	4		3	1 point (2% reduction) for minor improvement of façade performance against code minimum. E-LAB to demonstrate through JV3 and Energy modelling
	15E.2	GHGe Reduction	16	8		Atleast 45% reduction in annual GHGe compared to benchmark buildings should be achieve through energy efficient system and without renewable energy. Do not consider the training equipment load (e.g. simulators) for energy modelling. All 16 points will be possible if 100% of the building electricity is met through roof top solar and/or GreenPower.

Credit	No	Credit Criteria	Points Summary			Remarks
			Max Points	T	NT	
	15E.3	Off-site Renewables	8		8	
	15E.4	District Services	7		7	
	15E.5.1	Transition Plan	1			Tenant Dependent. Logos can develop a transition plan for the building confirming no fossil fuel usage beyond 2030, but, tenant should provide confirmation accepting the transition plan.
	15E.5.2	Fuel Switching	2	2		No fossil fuels should be burned on site to generate electricity, heating or cooling.
	15E.5.3	On-site Storage	1		1	Not targeted, requires battery storage system.
Peak Electricity Demand Reduction	16B	Modelled Performance Pathway: Reference Building	2	1		20% reduction (for 1 pt) in peak electricity demand should be achievable while 30% reduction can be confirmed based on modelling results during the design stage.
			22	11	0	

Transport						
Sustainable Transport	17B	Prescriptive Pathway - Industrial	7	5	1	Max of 7 points can be targeted under this pathway
	17B.1	Access by Public Transport	1			Site dependent point. Eligibility of point is determined by GBCA calculator which use site and location details. This point was not possible for Moorebank site.
	17B.2	Reduced Car Parking Provision	1		1	Need to reduce the car parking spaces provided significantly lower than the current design.
	17B.3	Low Emission Vehicle Infrastructure	5	3	1	
	17B.3A	15% dedicated parking for fuel efficient vehicles	1	1		15% of the parking spaces are dedicated to fuel efficient vehicles. Fuel efficient vehicles are those having an overall rated fuel efficiency of 5L/100km or better, or 115g CO2/100km or better as listed in the Australian Green Vehicle Guide.
	17B.3B	5% dedicated parking for electric vehicles along with charging stations	1	1		At least 5% of the parking spaces to have electric charging infrastructure. At least 2 car parking spaces should be provided with electric charging facilities with provision to increase the number of charging stations for the future.
	17B.3C	Parking for car share vehicles	1	1		A Technical Question to be submitted to GBCA to award a point for providing at least 5% of the parking spaces to be designated for carpooling/ car sharing vehicles.
	17B.3D	No parking spaces provided	1		1	
	17B.4	Active Transport Facilities	2	2		Provide adequate showers and lockers to the building occupants. Provision of bicycle parking spaces is optional under industrial pathway.
	17B.5	Proximity to Amenities	2		2	TBC. Atleast 4 amenities (café's, grocery store, gym, prayer room etc) should be located within the site or 400m from the radius of the site or project achieves a Walk Score of >70
Total			10	5	1	

Water						
Potable Water	18A	Performance Pathway	12	8	3	>45% potable water consumption reduction compared to reference building with standard practice water efficiency.
Total			12	8	3	

Materials						
Life Cycle Impacts	19A	Life Cycle Assessment	7	5	0	Carryout LCA to determine opportunities to reduce the embodied carbon and operational GHGe. Points achieved depends on the reduction of carbon emissions achieved. Having rooftop solar will contribute to points through operational emissions reduction.
	19A.1	Comparative Life Cycle Assessment	6	4	0	
	19A.2	Additional Reporting	4	1	0	
	20.1	Structural and Reinforcing Steel	1	1		>95% of steel (by mass) sourced from responsible steel maker (accredited to the Environmental Sustainability Charter of the ASI). For concrete framed buildings, >60% (by mass) produced using energy reducing processes.

Credit	No	Credit Criteria	Points Summary			Remarks
			Max Points	T	NT	
Responsible Building Materials	20.2	Timber	1		1	FSC certified timber to be used including formwork, structural timber etc. Alternatively the credit can be consider "Not Applicable" if the total cost of timber is less than 0.1% of the total project contract value.
	20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1		90% of cables, pipes, flooring, blinds either: - do not contain PVC - meet Best Practice Guidelines for PVC Typically BAU across items tracked. Includes non PVC items
Sustainable Products	21.1	Product Transparency and Sustainability	3	1		Use resued materials, materials with high recyled content, materials with EPDs where possible. Target achieving the sustainable attributes for high cost items such as steel, concrete, glass etc
Construction and Demolition Waste	22.0	Reporting Accuracy	R	R		Waste contractors and facilities to hold compliance verification summaries issued by a Suitably Qualified Auditor.
	22A	Fixed Benchmark	1	1		1 pt for <10kg/m² Additional innovation pt for <5kg.m² if achieved across GFA. Need to include fitout, which will give an extra allowance.
	22B	Percentage Benchmark				
			14	9	1	

Land Use & Ecology						
Ecological Value	23.0	Endangered, Threatened or Vulnerable Species	R			If the landscape area is more than 15% of the site area, this credit can be swapped with Biodiversity Enhancement credit from the new Green Buildings rating tool whose requirements are comparitively easy to achieve.
	23.1	Ecological Value	3			
Sustainable Sites	24.0	Conditional Requirement	R	R		Site does not contain old growth forest, prime agricultural land or wetland of 'High National Importance'.
	24.1	Reuse of Land	1		1	The site is a brownfield site with demolition of an existing industrial building.
	24.2	Contamination and Hazardous Materials	1	1		TBC. Depends on need for site remediation. Target this credit if site remediation is required
Heat Island Effect	25.1	Heat Island Effect Reduction	1		1	Through a TQ, check with GBCA if grey concrete on hardstand can be used to demonstrate compliance with hardscape SRI requirements.
			6	1	2	

Emissions						
Stormwater	26.1	Stormwater Peak Discharge	1	1		Post development stormwater discharge does not exceed pre development discharge using 1 year or 5 year ARI depending on site climate risk assessment.
	26.2	Stormwater Pollution Targets	1	1		Stormwater pollution reduction targets to be in line with Column B. One Innovation point. 80% TSS, 90% GP, 45% TN, 60% TP, 90% TPH, 90% Free Oils.
Light Pollution	27.0	Light Pollution to Neighbouring Bodies	R	R		All outdoor lighting to comply with AS4282:1997 for light spill to inhabited boundaries.
	27.1	Light Pollution to Night Sky	1	1		Requires upward light output ratio <5%; OR Max direct illuminance of 0.5 lux to site boundary and 0.1 lux to 4.5m beyond site boundary.
Microbial Control	28.0	Legionella Impacts from Cooling Systems	1	1		Achievabe if air cooled chillers are used. In case of water cooled chillers, compliance to Green Star requirements should be evaluated during the design stage.
Refrigerant Impacts	29.1	Refrigerant Impacts	1		1	Not targeted, requires use of low ODP refrigerants and leak detection & auto recovery.
			5	4	1	

Credit	No	Credit Criteria	Points Summary			Remarks
			Max Points	T	NT	

Innovation (An additional 10 points can be selected by the project team on top of the available 100 points)						
Innovative Technology or Process	30A	Innovative Technology or Process	7	0	5	
	30A-2	GHGe: Onsite Renewable Energy	2			TBC, dependent on the total building load and the final solar system capacity. 1 point will be awarded if installed solar system capacity can cater to 15% of the building demand (2 points for 30%).
	30C-3	Indoor Pollutants: Ultra Low VOC paints	1	1		>50% of paints (by volume) in building have a max TVOC content of 5g/L
Improving on Green Star Benchmarks	30C-10	C&D Waste: Reduction of C&D Waste	1	1		C&D waste going into the landfill should be less than 5kg of waste per square meter of GFA. It is possible to achieve this credit with a comprehensive C&D waste management plan. Head Contractor to confirm the credit
	30C-11	Stormwater: Stormwater Pollution Targets	2	1	2	Pollutant reductions for TTS - 80%, Gross Pollutants - 90%, Total Nitrogen - 45%, Total Phosphorus - 60%, Total Petroleum Hydrocarbons - 90%, Free Oils - 90%.
Innovation Challenge	30D-9	Financial Transparency	1	1		Head Contractor to fill the financial transparency calculator
	30D-16	Occupant Engagement	1			Tenant Dependent . If targeted, Logos will take responsibility to get the confirmation letter from the tenant.
Global Sustainability		Green Cleaning	1			Tenant Dependent. If targeted, Logos will take responsibility to get the Green Cleaning Policy and letter signed from the tenant.
		Groundskeeping Practices	1			Tenant Dependent. If targeted, Logos will take responsibility to get the Site Maintenance Policy and letter signed from the tenant.
		LEED NC v4 - Integrative Process	1			ESD consultant to document and complete the LEED NC v4 - Integrative process workbook.
			10	4	1	

