



ESD Report for SSDA
230 Martin Road, Badgerys Creek, NSW
EMKC³

Contents

1	Introduction	3
1.1.	Sustainable Design Frameworks	3
1.2.	Aim of Report	6
2	Project Description	7
2.1.	Information Sources	7
3	National Construction Code (NCC) 2022 Section J Compliance	8
4	Ecologically Sustainable Design	9
5	Passive Design & Energy Efficiency	9
6	Materials	10
7	Water	11
8	Construction	11
9	Land Use & Ecology	12
10	Emissions & Waste	12
11	Climate Change Adaptation	12
12	Conclusion	12

Revision History

Revision	Project	Description	Author	Checked By	Date
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1 Introduction

Aspire Sustainability Consulting has been engaged to prepare an Ecologically Sustainable Design (ESD) report to accompany the State Significant Development Application regarding the proposed development located at 230 Martin Road, Badgerys Creek NSW 2555. This report outlines the sustainable design initiatives proposed for the development, demonstrating a commitment to achieve Secretary's Environmental Assessment Requirements (SSD-65529236) and additional regulatory frameworks.

1.1. Sustainable Design Frameworks

The development shall be designed in line with the following sustainable design frameworks, ensuring key ESD design principles are implemented across all aspects of design:

- National Construction Code (NCC) 2022 Section J Compliance (via J1V3 Performance Solution);
- State Environmental Planning Policy (SEPP): Sustainable Buildings;
- Planning Secretary's Environmental Assessment Requirements (warehouses and distribution centres);
- Western Sydney Aerotropolis Development Control Plan (DCP) 2022; &
- Western Sydney Aerotropolis Precinct Plan 2024.

1.1.1. National Construction Code (NCC) 2022 Volume 1 Section J (Energy Efficiency)

Provisions within Section J of the NCC relate to energy efficiency and the reduction of Greenhouse Gas Emissions for Class 2 to 9 developments. Aspects of design required to be addressed in Section J include the façade, building envelope, lighting, HVAC, energy metering, building sealing and ventilation. All portions of the development will comply with NCC Section J.

The development will target Section J compliance through the delivery of a J1V3 Performance Solution that will be completed during early design development.

1.1.2. State Environmental Planning Policy (SEPP): Sustainable Buildings 2022

The Sustainable Buildings SEPP operates alongside the National Construction Code to implement minimum sustainability performance requirements for development in NSW, supporting the State's net zero emissions targets.

It provides a planning framework that mandates demonstrated energy efficiency and sustainability outcomes at the development application stage.

1.1.3. NABERS Energy Office Base Building 5.5 Star Rating

NABERS is Australia's most adopted building performance rating, aiming to account for all GHG emissions within a building, allowing commercial spaces to be benchmarked against common parameters such as energy consumption, hours of use, equipment density, location etc. The development at 230 Martin Road, Badgerys Creek NSW 2555 is targeting NABERS Energy for Office Base Building 5.5 Star Rating for commercial office spaces.

An Agreement to Rate will be executed by the developer prior to SSDA, committing to a 5.5 Star NABERS Energy Rating for Office Base Building in operation.

1.1.4. NABERS Water 3 Star Rating Office Base Building

NABERS Water ratings are awarded based on the amount of water used within a building. The rating assesses water consumption associated with all end uses across a building. The development at 230 Martin Road, Badgerys Creek NSW 2555 is targeting NABERS Water 3 Star Rating for Office Base Building in line with the Sustainable Buildings SEPP.

An Agreement to Rate will be executed for SSDA, committing to a 3 Star NABERS Water Rating for Office Base Building in operation.

1.1.5. Green Star Buildings 4 Star Equivalency Rating

Green Star 'Buildings' rating tool aims to meet current and future demands for the built environment and sets benchmarks for sustainability to address the growing need for reduced carbon emissions. This rating is valid for all building classes and acts as a guide to deliver healthy, resilient and positive buildings.

The development at 230 Martin Road, Badgerys Creek NSW 2555 is targeting a 4 star Green Star 'Buildings' Equivalency Rating.

The following table references sections within the report where compliance is demonstrated with applicable SEPP requirements.

Table 1: State Environmental Planning Policy (SEPP): Sustainable Buildings 2022 Requirements

3.2 Development consent for non-residential development	
1.a.	The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials.
1.b.	A reduction in peak demand for electricity, including through the use of energy efficient technology.
1.c.	A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design.
1.d.	The generation and storage of renewable energy.
1.e.	The metering and monitoring of energy consumption.
1.f.	The minimisation of the consumption of potable water.
2.	Development consent must not be granted to non-residential development unless the consent authority is satisfied the embodied emissions attributable to the development have been quantified.
3.3 Other considerations for large commercial development	
1.	In deciding whether to grant development consent to large commercial development, the consent authority must consider whether the development minimises the use of on-site fossil fuels, as part of the goal of achieving net zero emissions in New South Wales by 2050.
2.	Development consent must not be granted to large commercial development unless the consent authority is satisfied the development is capable of achieving the standards for energy and water use specified in Schedule 3.
3.	For the purposes of subsection (2), development is capable of achieving a standard specified in Schedule 3 if there is a NABERS commitment agreement in place to achieve the standard.
3.4 Other considerations for certain State significant development	
2.	In deciding whether to grant development consent to development to which this section applies, the consent authority must consider whether the development will minimise the use of on-site fossil fuels, as part of the goal of achieving net zero emissions in New South Wales by 2050.
Schedule 3 Standards for energy and water use for large commercial development	
1. Energy use	
1.	The standard for energy use for development for the purposes of prescribed office premises is a 5.5 star NABERS energy rating.
2. Water use	
1.	The standard for water use for large commercial development is a 3 star NABERS water rating.

1.1.6. SEAR's & Western Sydney Aerotropolis DCP 2022 Controls & Objectives

The following table references sections within the report where compliance is demonstrated with applicable SEAR's and DCP requirements.

Table 2: ESD Controls & Objectives

Planning Secretary's Environmental Assessment Requirements (SSD-65529236)	
•	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.
•	Demonstration of how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.
•	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.
•	If Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022 applies: a. Demonstrate how the development has been designed to address the provisions set out in in Chapter 3.2(1) b. Provide a NABERS Embodied Emissions Material Form to disclose the amount of embodied emissions attributable to the development in accordance with section 35B of the EP&A Regulation.
Western Sydney Aerotropolis DCP 2022	
O1	Minimise energy consumption and achieve net zero energy emissions by 2030.

1.2. Aim of Report

The following sections outline design initiatives being considered that reduce the environmental impact of the design, construction, and operation of the development, highlighting alignment with applicable targets and planning controls.

2 Project Description

The proposed development involves:

- Site clearance works, including the removal of existing structures;
- Bulk earthworks and the installation and augmentation of utilities infrastructure and other services;
- Construction and operational use of two warehouse or distribution centres containing ancillary manufacturing use in the proposed Lot 1 building with associated parking, landscaping across the site and access; &
- Other ancillary works including stormwater infrastructure (excluding works to be delivered by public authorities e.g., Park Edge Street and the Regional Stormwater Infrastructure basin) and delivery of the frontage upgrade of along Martin Road to facilitate access to the site.

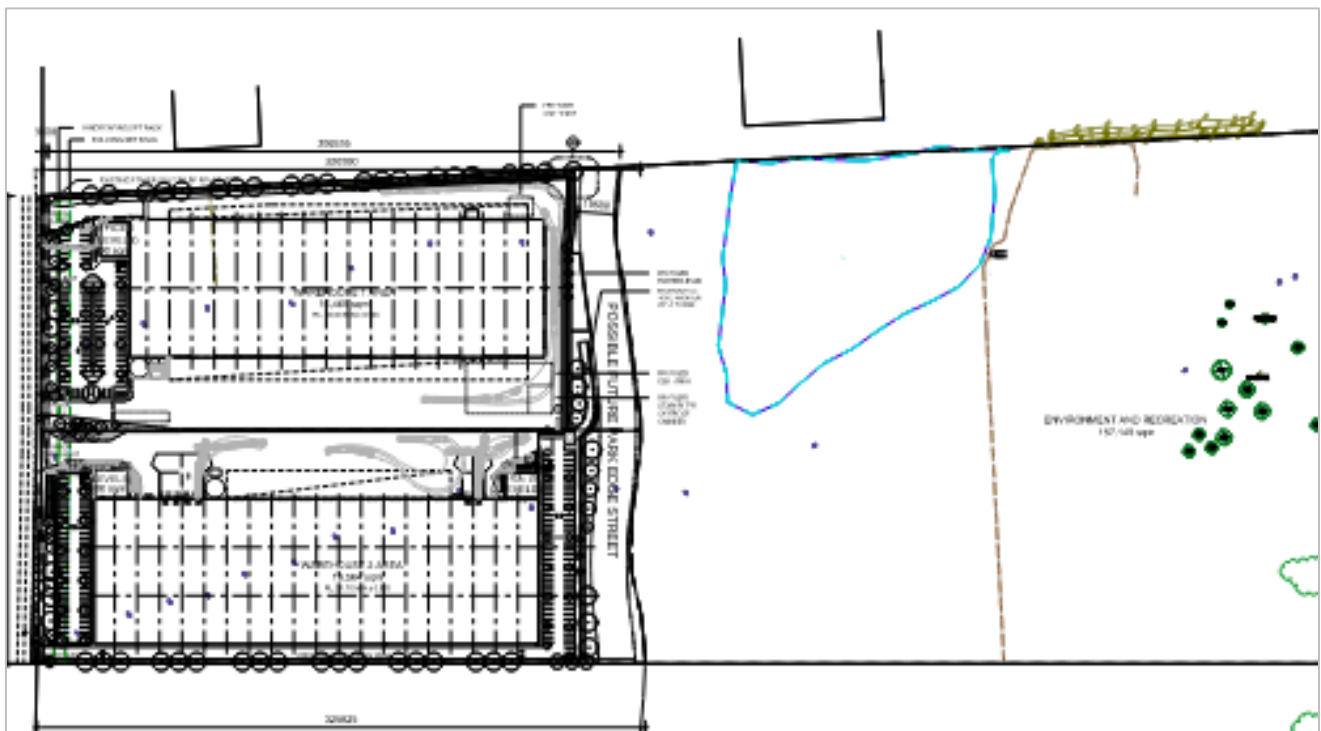


Figure 1: Site Layout

2.1. Information Sources

- NCC Section J 2022 Volume 1;
- Sustainable Buildings SEPP Overview August 2022;
- Planning Secretary's Environmental Assessment Requirements (warehouses and distribution centres);
- Architectural drawings: 21.04.26;
- Landscape drawings: For SSD Application 20.03.26;
- Civil Infrastructure Report, 18.09.24;
- Civil Drawings: For Approval 25.11.25; &
- Western Sydney Aerotropolis DCP 2022.

3 National Construction Code (NCC) 2022 Section J Compliance

3.1 Glazing

Most glazing areas are well shaded and should allow double glazing window systems to be avoided in most spaces if desired.

It should be noted double glazed window systems can achieve a much higher VLT with the same Solar Heat Gain Coefficient (SHGC) as a single glazed system, therefore if clear glazing is a key driver to allow maximum daylight penetration, double glazing should be considered.

3.2 Insulation

Compliance with NCC Section J 2022 will likely involve the following:

- R2.0-R2.5 insulation batts (approximately 90mm) to external and internal walls between conditioned/non conditioned spaces;
 - Where lightweight walls are present in the thermal envelope, R0.2 thermal breaks are required to be installed between the outer construction layer (FC/Aluminium Cladding) and stud frame housing insulation;
- R1.00 insulation (approximately 25mm if rigid PIR insulation) between floors of conditioned spaces and unconditioned spaces below; &
- R3.30 insulation (approximately 60-70mm if rigid PIR insulation) to ceilings/roofs, with reflective backing facing airspace/ceiling void.

Insulation requirements will be finalised in the Design Development Stage following completion of Section J report.

3.3 New NCC 2022 Section J Provisions

Additional provisions relating to EV infrastructure & PV that will need to be considered are outlined below:

Table 3: J9D4 Requirements (EV Infrastructure)

Building Class	Infrastructure Requirements	% of Car Parking Spaces	Future Charging Requirements
Class 5 (Office)	Sized to support future installation of 7kW (32A) Type 2 chargers	10%	Capable of delivering a minimum 12kWh from 9am to 5pm daily
Class 7b (Warehouse)	Sized to support future installation of 7kW (32A) Type 2 chargers	20%	Capable of delivering a minimum 12kWh from 9am to 5pm daily

Solar PV (J9D5)

J9D5 requires electrical infrastructure and free roof area for future installation of PV to 20% of the roof area or an equivalent generation capacity elsewhere on-site. PV panels are indicated roof plan in architectural drawings. PV size and kW to be detailed in Design Development Stage.

4 Ecologically Sustainable Design

The following Sections contain sustainable design initiatives proposed and currently being explored by the design team in line with the ecologically sustainable design categories outlined below:

- | | | |
|--------------------------------------|-------------|-----------------------------|
| ▪ Passive Design & Energy Efficiency | ▪ Water | ▪ Emissions |
| ▪ Construction | ▪ Materials | ▪ Waste |
| ▪ Land Use | ▪ Ecology | ▪ Climate Change Adaptation |

5 Passive Design & Energy Efficiency

The proposed industrial warehouse development will consider the following initiatives throughout design development:

- A light colour roof reduces the sites contribution to the urban heat island effect, also lowering internal temperatures by minimising the heat being transferred through the building fabric;
- Horizontal shading on the northern facades and vertical shading to the eastern and western façade helps, minimising peak heating, ventilation and air conditioning (HVAC) loads whilst allowing winter daylight penetration;
- Suitably performing glazing to office facades, protecting from hot ambient air during summer whilst allowing heat to be kept inside during winter; &
- Thermal mass utilised where possible, helping to smooth out daily temperature peaks and troughs.

Energy efficiency initiatives being proposed in design are outlined below:

- Metering in line with minimum performance standards to track and monitor energy consumption;
- Efficient, air-cooled HVAC systems that eliminate water consumption associated with heat rejection;
- Exceeding minimum energy efficiency provisions within NCC 2022 Volume 1;
- Solar PV systems installed throughout site to provide a portion of the sites power, whilst reducing peak power demands;
- Provide a Net Zero Statement in line with SEPP Net Zero Provision;
- Achieve 5.5 Star NABERS Energy as per SEPP Energy Standards (office areas only); &
- Energy efficient LED lighting throughout with appropriate motion & daylight controls.

6 Materials

The environmental footprint of the development can be reduced through the procurement of sustainable products. This can include products produced with lower than typical energy consumption during manufacture, made with reused content, or not transported large distances to its point of use.

During the detailed design phase, the sustainable materials strategy for the development will explore the following items:

- Environmental Performance Declarations (EPD's) for major material elements;
- Disclosure of embodied emissions in line with SEPP C3 Embodied Emissions;
- Recycled content in products where appropriate;
- FSC timber;
- Use of local materials;
- Use of prefabricated modules; &
- Paints, adhesives & sealants specified to contain low VOC & formaldehyde, improving internal air quality.



Figure 3: Examples of third-party environmental product declarations that can be explored during design development.

7 Water

The development will reduce water consumption by incorporating the following water saving measures into design:

- Installing fixtures and fittings in line with best practice guidelines recommended by Green Star Buildings rating tool;
- Ensuring native plant species such as Brachychiton Ruprestis, Brachychiton Populneus, Backhousia Myrtifolia, etc as specified in 'Landscape drawing (For SSD Application 20.03.26)' are incorporated throughout, where possible;
- A total of 3x27kL rainwater tanks have been proposed to reduce the total volume of runoff discharging from the development which will be directed to the existing pond within the ENZ area and reused for landscape irrigation and toilet flushing as specified in 'Civil Infrastructure Report';
- Site water management plan in line with section 7.3 of 'Civil Infrastructure Report' to be submitted with the development application which includes proposals to reduce mains water supply;
- Achieve 3 Star NABERS Water as per SEPP Water Standards; &
- Install stormwater run-off control and water quality management systems.

Table 4: Recommended Water Efficiency of Fixtures & Appliances

Fixture/Equipment Type	WELS Rating
Taps	5 stars
Urinals	5 stars
Toilet	4 stars
Showers	3 stars
Clothes Washing Machines	4 stars
Dishwashers	5 stars



Figure 4: WELS Water Rating Label

8 Construction

Sustainable construction practices that will be considered for implementation throughout construction include:

- Contractor construction waste management plan to investigate >80% of construction waste by weight being diverted from landfill; &
- Responsible management systems such as an Environmental Management Plan & implementing an Environmental Management System in line with ISO 14001.



Figure 5: Sustainable Waste Management Hierarchy

9 Land Use & Ecology

The development aims to reduce potential negative impacts resulting from urban development and enhance local ecology by implementing the following:

- Plant beds & trees at multiple locations which allow for deep planting and significant canopy cover, providing shade, improving air quality as well as enhancing local levels of biodiversity;
- Utilising stormwater and Water Sensitive Urban Design (WSUD) features in line with section 2.3 Stormwater, Water Sensitive Urban Design and Integrated Water Management of Western Sydney Aerotropolis DCP 2022, decreasing the strain on central water infrastructure systems;
- Light colour schemes to external surfaces and areas of deep soil vegetation that reduce the urban heat island effect.

10 Emissions & Waste

ESD initiatives associated with emissions and waste currently implemented in design include:

- Stormwater & WSUD features in line with section 2.3 Stormwater, Water Sensitive Urban Design and Integrated Water Management of Western Sydney Aerotropolis DCP 2022, reducing the sites impact from stormwater runoff and pollution;
- Adopting air cooled HVAC systems, eliminating the risk associated with legionella disease when cooling towers are installed on site;
- Provision of facilities to enable separation of multiple waste streams including glass, plastic, cardboard and organic waste (OWMP will be complete); &
- Minimisation of construction waste to landfill.

The potential to use air conditioning systems with refrigerants that have a low Global Warming Potential will also be explored, subject to no detrimental impacts on air conditioning system efficiency.

11 Climate Change Adaptation

To ensure the long-term durability of the site and its ability to adapt to a changing climate, the following measures will be considered:

- Rainwater tank to reduce the potable water consumption of the development and reduce the strain on central water infrastructure;
- Light colour schemes keep the external surfaces of the building cool, reduce impacts of the urban heat island effect & keep naturally ventilated spaces cool;
- Increasing capacity of mechanical and electrical distribution boards to accommodate an increase in building electrical loads associated with a warming climate;
- Ensuring the development is constructed in accordance with recognised standards regarding wind tolerance and impacts from hail; &
- Offering areas of respite during extreme weather events.

12 Conclusion

This report demonstrates the development is on track to achieving sustainability requirements contained within SEAR's and Western Sydney Aerotropolis DCP 2022 requirements in addition to the Sustainable Buildings SEPP.

Throughout design development, detailed investigations will be carried out to further refine the ESD strategy for the development, providing an exceptional example of sustainable design to the Badgerys Creek community and beyond.