Preliminary ESD Advice for Planning Proposal

106 Wyee Rd & 1496 Hue-Hue Rd

SJB Planning

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Revision History

Revision	Project	Description	Author	Checked By	Date
1.0	150001	ESD Report	Payal Aggarwal	Luke Williams	29th January 2024

1 Introduction

Aspire Sustainability Consulting has been engaged to prepare preliminary Ecologically Sustainable Design (ESD) advice to accompany the Planning Proposal regarding the proposed rezoning at 106 Wyee Rd & 1496 Hue-Hue Rd. Key ESD initiatives are summarised for consideration to facilitate a sustainable building design concept that aligns with national construction code and location planning controls.

1.1. Site Description

The proposed site is located at 106 Wyee Rd & 1496 Hue-Hue Rd, Wyee in the Lake Macquarie LGA. The planning proposal involves the rezoning of the site from Rural RU4 Primary Production Small Lots to E1 Local Centre to enable the development of a supermarket with supporting retail and business uses (approx. 10,000-12,000sqm).

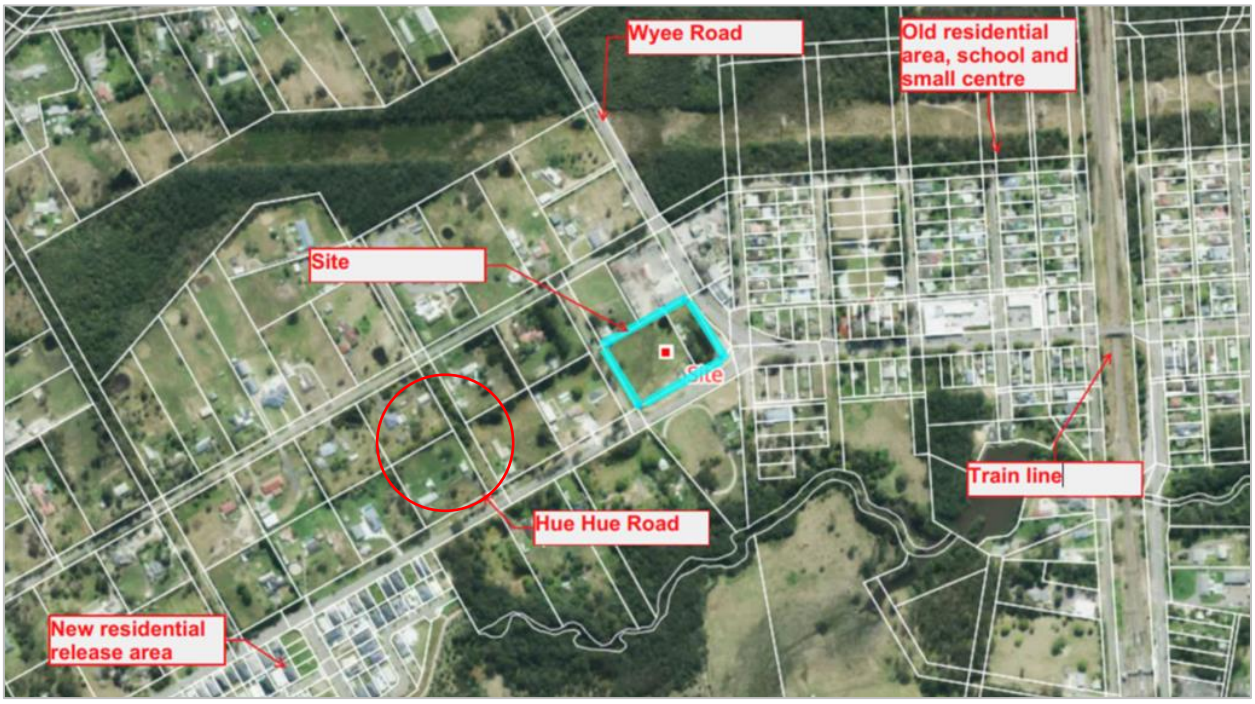

Figure 1: Site Location

1.2. Information Sources

- NCC Section J 2022 Volume 1;
- State Environmental Planning Policy (SEPP): Sustainable Buildings 2022;
- Hunter Regional Plan 2041;
- Lake Macquarie City, Environmental Sustainability Strategy and Action Plan 2020-2027;
- Lake Macquarie Development Control Plan 2014, Part 4;
- Lake Macquarie City, Urban Greening Strategy 2022-2032; &
- Lake Macquarie City, Urban Heat Strategy June 2022.

1.3. Aim of Report

The following sections summarise recommended design initiatives aligned with applicable code requirements and planning controls that reduce the environmental impact of the design, construction, and operation of the proposed site.

2 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:

- NCC 2022 Section J Compliance;
- State Environmental Planning Policy (SEPP): Sustainable Buildings 2022;
- Hunter Regional Plan 2041, Objective 7;
- Lake Macquarie City, Environmental Sustainability Strategy and Action Plan 2020-2027;
- Lake Macquarie Development Control Plan 2014, Part 4;
- Lake Macquarie City, Urban Greening Strategy 2022-2032; &
- Lake Macquarie City, Urban Heat Strategy June 2022.

2.1 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.

The development will achieve compliance with Section J through the completion of a J1V3 Performance Solution.

2.2 State Environmental Planning Policy (SEPP): Sustainable Buildings 2022

The Sustainable Buildings SEPP is aligned with National Construction Code & NSW Net Zero Policy which aims to ensure buildings are more energy efficient, produce less GHG emissions and inform future benchmarks associated with embodied emissions. The development is required to:

- Address general sustainability requirements (SEPP C2);
- Disclose embodied emissions for future benchmarks (SEPP C3).

It should be noted that the Sustainable Buildings SEPP is a framework that sets minimum performance requirements for projects in NSW, however local councils may enforce increased sustainability targets.

Table 1: SEPP Requirements

SEPP C.2 General Sustainability Requirements	
C.2.1	Minimise waste from associated demolition and construction, including choice and reuse of building materials.
C.2.2	Reduce in peak demand for electricity through the use of energy efficient technology.
C.2.3	Generate and store renewable energy.
C.2.4	Reduce reliance on artificial lighting and mechanical heating and cooling through passive design.
C.2.5	Meter and monitor energy consumption.
C.2.6	Minimise the consumption of potable water.
SEPP C.3 Embodied Emissions	
C.2.7	The form will measure key materials in the substructure, superstructure and façade of the building via a bill of quantities prepared by a quantity surveyor, designer or engineer.

Discussions with the project team has determined the proposed site shall adopt ESD initiatives to address controls and objectives within the following regional planning instruments:

- Hunter Regional Plan 2041, Objective 7;
- Lake Macquarie City, Environmental Sustainability Strategy and Action Plan 2020-2027;
- Lake Macquarie Development Control Plan 2014, Part 4;
- Lake Macquarie City, Urban Greening Strategy 2022-2032; &
- Lake Macquarie City, Urban Heat Strategy June 2022.

The following tables contain a summary of key ESD objectives associated with the abovementioned planning instruments that the project team will ensure to address during future design phases:

Table 2: Hunter Regional Plan 2041, Objective 7 – Net Zero, Climate Resilience & Sustainable Infrastructure

Performance Outcomes	
1.	Communities are designed and equipped to be safe, hazard-resilient places.
2.	Neighbourhoods have inbuilt flexibility and adaptability to accommodate new uses and users in the long-term.
3.	The effects of climate change are managed to optimise safety and resilience for communities and the natural environment.
4.	Development is located away from high-risk areas to avoid community exposure to natural hazards as far as is practical.
5.	Places are designed to support the goal of net zero emissions by 2050 and opportunities for mitigation and adaptation to a changing climate and environment.

Table 3: Lake Macquarie Development Control Plan 2014, Part 4 Objectives

Energy Efficient and Generation, Section 6.20	
a.	To ensure building orientation maximises solar access and natural cross ventilation.
b.	To ensure energy efficiency is achieved in all developments.
c.	To allow opportunities for future installation of renewable energy generation and low carbon technology.
d.	To minimise the economic impacts of increasing electricity costs and any requirements to disclose energy efficiency when selling or leasing a property.
e.	To promote increased levels of energy efficiency in large-scale developments.
f.	To ensure that development minimises the use of water and non-renewable resources.

Table 4: Lake Macquarie City, Urban Heat Strategy June 2022

Objectives	
6.	Increase the amount of green cover and vegetation in urban areas.
7.	Improve selection of building and construction materials to make them more resilient and reduce the impacts of urban heat.
8.	Make changes to policy and legislation to recognise the challenge of urban heat and encourage cooling strategies.
9.	Increase community resilience in adapting to urban heat.
10.	Ensure Council activities account for rising temperatures.

Table 5: Lake Macquarie City, Urban Greening Strategy 2022-2032

Objectives
1. Increase the extent and quality of greening in public spaces
1.1 Achieve a 10 per cent increase in tree canopy cover by 2030 in the 14 suburbs categorised as vulnerable to urban heat; &
1.2 Aim for 30 per cent tree canopy cover in all residential zones, 25 per cent in business zones and 15 per cent in industrial zones.
2. Increase the extent and quality of greening in new developments
2.1 Aim for 30 per cent tree canopy cover potential in new residential zones, 25 per cent in new business zones and 15 per cent in new industrial zones.
3. Activate community greening of the city
3.1 Aim to register 1,000 community planted street trees per year for the next 10 years; &
3.2 Aim to activate community urban greening.

Table 6: Lake Macquarie City, Environmental Sustainability Strategy and Action Plan 2020-2027

Objectives
Strategic Theme 1 Protecting and enhancing our natural landscapes: 1.1 Ensuring ecosystems are connected; 1.2 Protecting habitat of high conservation value; & 1.3 Encouraging land use practices that support high water quality in the aquatic environment.
Strategic Theme 2 Supporting resilient communities: 2.1 Addressing the risks to health, safety and infrastructure from natural hazards and pollution events; & 2.2 Addressing the influence climate change is expected to have on the frequency and severity of natural hazards.
Strategic Theme 3 Creating a sustainable city and communities: 3.1 Maximising the efficient use of energy and reducing greenhouse gas emissions; 3.2 Maximising the efficient use of water and diversifying suitable supply options such as harvested stormwater; 3.3 Implementing sustainable transport options including low emission vehicles, walking and cycling;& 3.4 Guiding land use planning to support development of a high-quality built environment.
Strategic Theme 4 Responsible consumption and production: 4.1 Encouraging separation of once unrecovered resources into useful components and development of markets for their beneficial reuse; & 4.2 Recognising that resources include the land, water and energy needed to create our goods and services, as captured in the concept of the ecological footprint.

3 Ecologically Sustainable Design

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

- Passive Design & Energy Efficiency
- Water
- Emissions & Waste
- Transport
- Construction
- Climate Change Adaptation
- Materials
- Land Use & Ecology
- Indoor Environment

Feedback from the design team will drive discussions to refine the approach to sustainable design for the proposed site.

4 Passive Design & Energy Efficiency

The planning proposal has considered the following initiatives:

- A light external colour scheme that reduces the sites contribution to the urban heat island effect, also lowering internal temperatures by minimising the heat being transferred through the building fabric;
- Vertical shading or extended overhangs to Eastern and Western glazed facades, minimising peak HVAC loads whilst mitigating glare;
- Suitably performing glazing for each facade, protecting from hot ambient air during summer whilst allowing heat to be kept inside during winter;
- Thermal mass utilised where possible to reduce internal temperatures and peak HVAC loads; &
- Walls and floors comprising high thermal mass, helping to smooth out daily temperature peaks and troughs.

Energy efficiency initiatives being explored 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;
- Provision of an all-electric development;
- Achieving net zero operation through energy efficient design, renewable technologies and procurement of green power or offsetting residual emissions;
- Energy efficient LED lighting throughout with appropriate motion & daylight controls.

5 Transport

The development is located in a central location within Wyee, well connected to a variety of sustainable modes of transport such as train stations and bus stops. Additionally, showers and locker facilities for staff will be investigated during detailed design.

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;
- Use of Supplementary Cementitious Material (SCMs) in structural concrete;
- FSC timber;
- Use of local materials;
- Reuse of the existing building facade to reduce material usage;
- Use of prefabricated modules;
- Consider design for disassembly, and provide increased MSSB capacity; &
- Paints, adhesives & sealants specified to contain low VOC & formaldehyde, improving internal air quality.

Figure 2: 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 requirements outlined in Table 7;
- Ensuring native plant species are incorporated throughout served by efficient irrigation methods;
- Inclusion of rainwater reuse tank for landscape irrigation;
- Re-use of water captured from the sprinkler system;
- Achieve 4 Star NABERS Water in line with Lake Macquarie DCP; &
- Air cooled HVAC systems, reducing water associated with heat rejection.

Table 7: Recommended Water Efficiency of Fixtures & Appliances

Fixture/Equipment Type	WELS Rating
Taps	5 stars
Urinals	5 stars
Toilet	4 stars
Showers	3 stars (> 4.5 but <= 6.0)
Clothes Washing Machines	4 Stars
Dishwashers	5 Stars

Figure 3: 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;

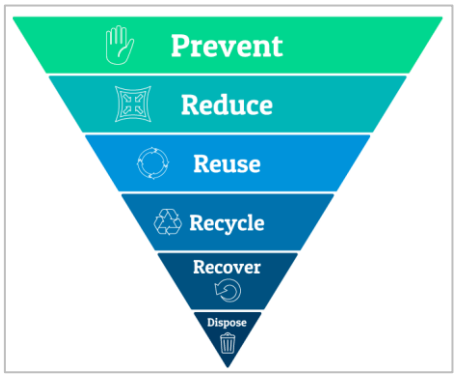

Figure 4: Sustainable Waste Management Hierarchy

9 Land Use & Ecology

The planning proposal considers the potential negative impacts resulting from urban development and aims to enhance local ecology through implementing the following design principles:

- Plant beds & trees in locations which allow for deep planting and canopy cover, providing shade, improving air quality as well as enhancing local levels of biodiversity;
- Utilising stormwater and WSUD features in line with Lake Macquarie DCP, decreasing the strain on central water infrastructure systems, and providing safe havens for local biodiversity;
    - WSUD advice addressing WSUD objectives within applicable planning policy frameworks has been provided to accompany the planning proposal; &
- 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 planning controls, 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 Indoor Environment

A high-quality indoor environment will be provided to increase occupant amenity and provide a space that is healthy and pleasant to remain in for extended periods of time.

- Use of low-VOC paints and low formaldehyde finishes that minimise occupant exposure to contaminants on site;
- Glazing with high VLT & light colour schemes to increase indoor daylight amenity;
- Consideration of biophilic elements of design.

12 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.

13 Conclusion

This report demonstrates the planning proposal has considered the adoption of sustainable design initiatives that exceed local planning policy sustainability objectives.

Throughout design development discussions will be held to further refine the ESD strategy for the site, ensuring an exceptional example of sustainable design is showcased to the Wyee community and beyond.