

TRADERS IN PURPLE

SSDA ESD REPORT

30-34 Padstow Parade, Padstow

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Jensen Hughes Australia

Providing building regulations, fire engineering, accessibility, and energy consulting services to NSW for over 25 years

Our story begins in 1997 with the founding of BCA Logic to fulfill the demand of a consult

ancy company whose expertise expanded across the entire life cycle of a building, from consulting on the initial planning through to construction and occupation.

BCA Logic, SGA Fire and BCA Energy joined Jensen Hughes in 2021, a leading global, multi-disciplinary engineering, consulting and technology firm focused on safety, security and resiliency. We continue to be at the forefront of our industry and work thoroughly to preserve our position by ensuring the successful delivery of projects.

Jensen Hughes was launched in 2014 through the historic merger of Hughes Associates and Rolf Jensen & Associates (RJA), two of the most experienced and respected fire protection engineering companies at the time. Since then, we have gained market leadership in nuclear risk consulting and established commanding positions in areas like forensic engineering, security risk consulting and emergency management. Over the past 22 years, our integration of more than 30 privately held engineering and consulting firms has dramatically expanded our global footprint, giving us a powerful market presence ten times larger than our nearest competitor in some of our markets and extending our historical lineage back to 1939.

With more than 90 offices and 1500 employees worldwide supporting clients globally across all markets, we utilise our geographic reach to help better serve the needs of our local, regional, and multinational clients. In every market, our teams are deeply entrenched in local communities, which is important to establishing trust and delivering on our promises.

Glossary & Definition

Term	Definition
BASIX	Building Sustainability Index
COP	Coefficient of Performance
DCP	Development Control Plan
DTS	Deemed-to-satisfy
EMP	Environmental Management Plan
ESD	Ecologically Sustainable Development
GHG	Greenhouse Gas
HVAC	Heating, Ventilating and Air-Conditioning
LEP	Local Environment Plan
Lumens	Luminous flux, equal to the amount of light emitted per second from a uniform source of 1 candela
Lux	Light intensity in a specific area (1 lux = 1 Lumen/m ²)
NCC	National Construction Code
PV	Photovoltaic
R _t	Total R-value for the system
R-value (m ² .K/W)	The thermal resistance of a component calculated by dividing its thickness by its thermal conductivity
SA	Solar absorptance
SHGC	Solar heat gain coefficient
U-value (W/m ² K)	The thermal transmittance of the composite element allowing for the effect of any airspaces, thermal bridging and associated surface resistances
VLT	Visible Light Transmission
WELS	Water Efficiency Labelling and Standard
CPTED	Crime Prevention through Environmental Design

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Executive Summary

Jensen Hughes Pty Limited (Jensen Hughes) has been engaged by Traders in Purple to provide an Ecological Sustainable Development (ESD) Report that outlines both regulatory and benchmarking design initiatives for the proposed project at 30-34 Padstow Parade, Padstow. The project will be assessed under the following compliance provisions:

- + 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.

The principles of ecologically sustainable development are the following—

- a) the precautionary principle,
 - b) inter-generational equity,
 - c) conservation of biological diversity and ecological integrity,
 - d) improved valuation, pricing, and incentive mechanisms.
- + Demonstrate how the development will meet or exceed the relevant industry-recognised building sustainability and environmental performance standards.
 - a) National Construction Code 2022, Volume One – Section J
 - b) BASIX and NatHERS compliance
 - + 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.
 - a) Sustainable Buildings SEPP 2022.

Beyond the compliance requirements, the project team is committed to its occupants, visitors, community, and the environment with a sustainably conscious development through design to operation.

1.0 Basis of Assessment

1.1 LOCATION AND DESCRIPTION

The building development is located at 30-34 Padstow Parade, Padstow, and consists of a mixed-use development containing ground floor retail/commercial with seven levels of residential use above.

The building has been classified as shown in Table 1, and the location of the project is set within the following climate zones as shown in Table 2.

Table 1: Building Classifications

Class	Level	Description
7a	Basement levels	Carpark
5	GF	Commercial use
6	GF	Commercial use
2	L1 – L7	Residential Apartment Units

Table 2: Climate Zones

Location	Climate Zone and Description
Sydney	5 - warm temperate

1.2 DESIGN DOCUMENTATION

This report has been prepared based on the following Design Plans and Specifications:

- + Bonus + Associates | Project #: 2015 | Revision: DA Issue | Issue:30/08/2024-11/09/2024

1.3 REPORT SCOPE

The purpose of this report is to assess the proposed design against the relevant environmentally sustainable design strategies to ensure the design is environmentally, culturally, socially, and economically sustainable, with resilience built in to anticipate future challenges. This report addresses:

- + Sustainability drivers stipulated from relevant regulatory and project requirements.
- + Project's design responses corresponding to the sustainability drivers.

1.4 LIMITATIONS

This report aims to provide high-level ESD design guidance to the project in accordance with State Design Review Panel (SDRP) objectives. It is intended that the options nominated in this report are subject to be discussed, assessed and workshop into the detailed design of the development. Section J compliance must refer to separate, designated assessment reports. Sections B, C, D, E, F, G, H and I of the NCC.

2.0 SEARS ESD Requirements & Strategy

The following regulatory frameworks are incorporated to form part of the overarching ESD strategy for the development:

- + 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.
- + Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.
- + 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.

To demonstrate the compliance with the requirements and principles listed above, please refer to Sections 2.1, 2.2 and 2.3 respectively below.

2.1 SECTION 193 OF THE EP&A REGULATIONS

Detailed in the below table are project commitments which address the principles highlighted in Section 193 of the EP&A 2021.

2.1.1 The precautionary principle
<p>The precautionary principle is 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—</p> <ul style="list-style-type: none"> + Careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment, and + An assessment of the risk-weighted consequences of various options.
<p>To ensure compliance with this principle, the contractor will compile and present all relevant information from various environmental studies listed below. These studies will assess the impact on different aspects of the environment, including fauna, flora, soil, and other environmental factors, as well as demonstrate a systematic and methodical approach to environmentally friendly construction that answers to site-specific environmental risks. The below documents collectively ensure the project does not incur adverse impacts on the environment, alleviating the concern of environmental damage to align with this principle.</p> <ul style="list-style-type: none"> + Biodiversity Development Assessment Report + Environmental Impact Statement + Geotech Engineer to determine requirements of: <ul style="list-style-type: none"> a) Surface and groundwater impact report b) Salinity management and/or acid sulphate soils management plan + Stormwater Engineer to determine requirements of: <ul style="list-style-type: none"> a) Flood risk report + Stormwater management plan + Contamination & Remediation assessment + Air quality impacts assessment, prepared in accordance with the relevant NSW Environment Protection Authority (EPA) guidelines. This assessment shall address mitigating emissions from construction works and air pollutants. A management plan to monitor and mitigate the risks of pollutants should be carried out.

2.1.2 Inter-generational equity

The principle of **inter-generational equity** is that the present generation should ensure the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations.

The contractor will take measures to avoid using materials that could pose a hazard to the environment and future generations. This will also be demonstrated through identifying 'Volatile Organic Compounds (VOC) limits' in (grams/Liter) of ready-to-use products that are certified under a Recognised Product Certification Scheme listed in the 'Exposure to Toxins Product' for adhesives, sealants and paints and the like. This will ensure that there are no carcinogens, contaminants or hazardous materials liberated into the building, on-site and into the surrounding environment to have detrimental effects on future generations and the environment.

The project is designed to be an all-electric building and will adhere to NCC2022 Section J *passive* and *active* design specifications for this building. NCC22 Section J9 provisions for PV and EV infrastructure to accommodate future progression towards renewable energies and EVs to assist in facilitating a reduction in GHG emissions.

The below reports are recommended to achieve this principle:

- + Trees and Landscaping plans to mitigate the urban heat island effect and increase urban tree canopy cover for prospective occupants.
- + Social Impact report, prepared in accordance with the Social Impact Assessment Guidelines for SSDA
- + CPTED Report
- + NCC22 Section J9 provisions for PV and EV infrastructure to accommodate future progression towards renewable energies and EVs to assist in facilitating a reduction in GHG emissions.

2.1.3 Conservation of biological diversity and ecological integrity

The principle of the **conservation of biological diversity and ecological integrity** is that the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making, including in the formulation, adoption and implementation of any economic and other development plan, program or project.

A *Biodiversity Development Assessment Report* and *Landscaping plans* fundamentally facilitate the conservation of biological diversity and ecological integrity by ensuring local flora and dependent fauna are supported and maximise green infrastructure through mitigation of the urban heat island effect where possible and enhance urban tree canopy cover which helps fauna (birds) native to the region.

The below reports are recommended to achieve this principle:

- + Biodiversity Development Assessment Report or BDAR Waiver
- + Trees and Landscaping plans to ensure the conservation of the local flora and dependent fauna and maximise green infrastructure.

2.1.4 Improved valuation, pricing, and incentive mechanisms.

The principle of **improved valuation, pricing and incentive mechanisms** is 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 most cost-effectively by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their solutions and responses to environmental problems.

A Life Cycle Cost (LCC) is recommended to be completed to evaluate the cost of services provided and materials chosen or procured for use in the development and will reduce the negative environmental effects because of the development and construction impacts that have been minimised. Goods and service providers shall acknowledge the entirety of the Life cycle cost as an incentive to mitigate the negative impact on the environment because of the good/service being provided.

All fundamental appliances are to be provided and installed to ensure their appropriateness and efficiency. The fixtures specified also comply with water-saving requirements

Incorporating key principles of NSW Circular economic policy as listed below, which shift design and construction from a resource-intensive model to one that maximizes value creation while minimising environmental impact keeps materials in use for as long as possible and mitigates long-term replacement and repair costs, assisting in LCC clarity.

- a) Sustainable management of all resources.
- b) Valuing resource productivity
- c) Design out waste and pollution.
- d) Maintain the value of products and materials
- e) Innovate new solutions for resource efficiency
- f) Create new circular economy jobs
- g) Foster behaviours change through education and engagement.

2.2 RELEVANT INDUSTRY-RECOGNISED BUILDING SUSTAINABILITY STANDARDS

2.2.1 NCC 2022 Volume One Section J Provisions

The primary objective of Section J provisions is designed to reduce greenhouse gas emissions through improved performance of building fabric elements and operational services systems in the following categories. Deemed-to-Satisfy (DtS) compliance is mandated for the project's minimum provision, but it is recommended to exceed the baseline requirement where reasonable. The project is committed to meeting and exceeding, where possible, the standards of performance within NCC 2022 Section J:

- + J4 Building Fabric
- + J5 Building Sealing
- + J6 Air-conditioning & ventilation systems
- + J7 Artificial lighting & power
- + J8 Heated water supply
- + J9 Facilities for energy monitoring and on-site distributed energy resources

Retail / Commercial Building Elements	DTS Compliance Requirements	Compliance Recommendation (Refer to Section J Report)
Face Brick External Walls	Rt1.40	+ 75mm R1.50 or equivalent. R0.2 Thermal break tape on metal frame exterior.
Concrete Internal Walls (Conditioned to non-conditioned internal)	Rt1.40	+ 75mm R1.50 or equivalent. R0.2 Thermal break tape on metal frame exterior.
Trafficable Concrete Slab Roof	Rt3.70 and SA less than 0.45	+ KoolTherm K10 G2 Soffit 70mm R3.20 or equivalent.
Suspended Concrete Slab Floor	Rt2.00	+ Additional R2.00 thermal Insulation required.

2.2.2 BASIX and NatHERS Compliance

The Building Sustainability Index (BASIX) aims to deliver equitable, effective water and greenhouse gas reductions across the state of New South Wales. BASIX is implemented under the Environmental Planning and Assessment Act. BASIX applies to all residential dwelling types and is part of the development application process in New South Wales.

BASIX reduces water and energy consumption in residential dwellings. These environmental outcomes also provide a long-term financial saving for the homeowner – and a valuable contribution to the sustainable future of our communities.

BASIX	Target Score	Project Score
Water	40%	40% - Pass

Central Water Strategy	Commitment	Comments
Common Landscape	≈ 600m ²	
Fire Sprinkler Systems	Closed-loop test systems	

Dwelling Water Strategy	Commitment	Comments
Showerheads	4 Star (6.0-7.5L/min)	
Toilets	4 Star	
Kitchen Taps	5 Star	
Bathroom Taps	5 Star	
Washing Machines	N/A	
Dishwashers	4 Star (Water)	Excluding all social housing units under the LABC requirements (A101, A102, A203, A207, A307, A407, A507, B103, B202, B402, B405, B502, B505, B602, B605)

BASIX	Target Score	Project Score
Energy	60%	66% - Pass

Common Energy	System	Efficiency	Comments
Basements	ventilation (supply + exhaust)	carbon monoxide monitor + VSD fan	
Switch and Comms	ventilation supply only	thermostatically controlled	
Waste	ventilation exhaust only	-	
Service and Plant	ventilation supply only	thermostatically controlled	
Resi Lobbies	no mechanical ventilation	-	

Common Lighting	System	Efficiency	Comments
Basements	fluorescent	motion sensors	
Switch and Comms	fluorescent	motion sensors	
Waste	fluorescent	motion sensors	
Service and Plant	fluorescent	motion sensors	
Resi Lobbies	light-emitting diode	motion sensors	
Lifts	light-emitting diode	connected to lift call button	

Central Energy Strategy	Commitment	Comments
Lifts	Gearless Traction w/ VVVF Motor Lift load capacity under 1501kg	
Hot Water	Central electric heat pump – air sourced. COP above 3.0 R0.6 insulation around ring main and supply riser	
Solar PV	30pkW System	

Dwelling Energy Strategy	Commitment	Comments
Dwelling Ventilation	Bathroom fan - Ducted w/ interlock to light Kitchen fan - Ducted w/ manual switch Laundry fan - Ducted w/ interlock to light	
AC Cooling and Heating	System Type – 1 phase AC - ducted Efficiency – Above COP/EER of 3.0	
Social Units Cooktop	Electric	A101, A102, A203, A207, A307, A407, A507, B103, B202, B402, B405, B502, B505, B602, B605
Other Cooktop	Induction	
Oven	Electric oven	
Dishwashers	4 Star (Energy)	Excluding all social housing units under the LAHC requirements (A101, A102, A203, A207, A307, A407, A507, B103, B202, B402, B405, B502, B505, B602, B605)
Private outdoor clothes drying line	Yes - To all social housing units only	As per LAHC guidelines

The Nationwide House Energy Rating Scheme (NatHERS) provides energy ratings for new dwellings. This is helping create energy efficient, resilient, and comfortable homes for the future that cost less to run.

BASIX	Target Score	Project Score
Thermal Comfort (NatHERS)	7 Star Average 6 Star Minimum	TBC

Thermal Construction Details	
Glazing	
TBC	TBC
External Walls	
External Walls of Units	Hebel and Brick - Additional R2.50 insulation <i>Note external walls to have an air gap between the external skin and metal frame, otherwise an R0.20 thermal break will be required.</i>
Internal Walls	
Between Corridor to Units	Hebel - Additional R2.50 insulation <i>Note external walls to have an air gap between the external skin and metal frame, otherwise an R0.20 thermal break will be required.</i>
Between Fire Stairs / Lifts to Units	Concrete - Additional R2.00 insulation
Intertenancy Walls	No additional insulation modelled
Internal Walls Inside Units	No additional insulation modelled
Dwelling Floors	
Floors To Internal Areas	Concrete - No additional insulation
Floors To Basement / External	Concrete - Additional R2.30 insulation soffit board
Dwelling Roofs	
Roof To Corridors and External	Concrete - Additional R2.75 insulation soffit board

2.3 MINIMISE GREENHOUSE GAS (GHG) EMISSIONS AND CONSUMPTION OF ENERGY, WATER, AND MATERIAL RESOURCES

Demonstration of achieving this item can be done through compliance with the Sustainable Buildings State Environmental Planning Policy 2022 (SB SEPP).

Chapter 2 of the SB SEPP, standards for residential development - BASIX, provides governance to assess the development with Schedule (1) of SB SEPP, dictating energy and water use, in addition to thermal performance.

Minimising consumption of GHG Emissions, energy, water, and material resources can all be achieved via BASIX. As described in Section 2.2.2 BASIX and NatHERS Compliance, BASIX aims to deliver equitable, effective water and greenhouse gas reductions across the state of New South Wales for residential buildings.

The commitments set out in Section 2.2.2 BASIX and NatHERS Compliance, including electric services and appliances, efficiency controls, water-efficient fixtures, and high levels of passive design and thermal comfort, will ensure that every possible effort is made to minimise the consumption of GHG Emissions, energy, and water to a market-leading level.

Chapter 2.1(5) of the SB SEPP, states that “development consent must not be granted to development... unless the consent authority is satisfied the embodied emissions attributable to the development have been quantified”.

Embodied emissions (material resources) reporting is integrated into the BASIX and must be quantified and reported on to produce a valid certificate. The use of low embodied energy materials will be investigated and evaluated during the detailed design stages of the project.

3.0 Design Summary

The design outlined in this report follows the guidelines and objects of the Sustainable Buildings SEPP, Section J and Section 193. This report provides an overview of the environmentally sustainable design principles incorporated into the design, as well as specific proposals for maximising energy and water efficiency within the project.

Addressing the applicable sustainability objectives of the above, the report incorporates:

- + Effective passive design features, high-performance energy and water systems, alternative resource options, and sustainable construction practices. These elements directly address the energy efficiency and water conservation criteria outlined to achieve the SEARS ESD objectives

In summary, this report details the project's commitment to achieving the objectives and requirements outlined. By fulfilling these commitments, the project will meet the SEARS objective for sustainable performance, energy and water efficiency, and material resource use.