



10 Dangar Street, Wickham - HDA

Ecologically Sustainable Development Report for SSDA SSD-89869959 (and concurrent rezoning)

Prepared for: UPG Wickham Pty. Ltd.

Attention: Matthew Choi

Issue	File Ref.	Description	Author	QA Review	Date
A	2502208	ESD Report for SSDA [FINAL DRAFT for TOA]	TD	RB	27.03.2026
B	2502208	ESD Report for SSDA [FINAL for TOA]	TD	RB	31.03.2026
C	2502208	ESD Report for SSDA [FINAL for SSDA Submission]	TD	RB	24.04.2026

Limitations of this report: The report is prepared using design and systems assumptions at a development application level of resolution (before tender and detailed construction level of design and specification). It should be recognized that final detailed design (for construction certificate) will be refined and adjusted after procurement of the building contractor and after final specification and construction details are resolved. Analysis at this stage relies on comparisons of proposed activities against averages (often at different rated performance levels) as complete bottom up data is not yet available.

Report author: Troy Daly is a GBCA Green Star Accredited Professional (in Buildings and Communities rating schemes); has over 15 years experience in development projects with strong sustainability goals; holds a Master of Urban And Regional Planning and Bachelor of Economics.



Purpose of report

This ESD report has been prepared by Efficient Living Pty Ltd to support State Significant Development SSD-89869959 by Urban Property Group to develop a mixed use building at Wickham in the Newcastle LGA.

In response to SEARs (Clause 1) the report considers relevant ESD related policies and controls (as noted in Section 3 of the report).

In response to SEARs (Clause 15) the ESD report responds to key ESD factors required to address the ESD principles in section 193 of the EP&A Regulation, requirements of the Sustainable Buildings SEPP and relevant considerations from the Housing SEPP (ADGs). The report also responds to the SDRP feedback and recommendations. Section 2 of this report summarises responses to SEARs and the Sustainable Buildings SEPP with detail from Sections 4-7.

Outcomes of report

The report proposes a comprehensive ESD strategy and initiatives under a cohesive framework summarised in Figure 1 on this page. Key outcomes in respect to carbon and energy, climate resilience, water efficiency, materials and waste management and human health and well being are proposed ensuring all principles in Section 193 of the EP&A Regulation are considered (SEARs CI 15).

All requirements of the Sustainable Buildings SEPP 2022 are also considered including for:

- Chapter 2 BASIX Energy, Thermal and Water requirements for residential development
- Chapter 3 non-residential requirements to respond to general sustainability outcomes and then specifically to provide a Net Zero Statement and Agreement to Rate (NABERS) for the hotel proposal

The ESD Report should be considered in conjunction with the separate NatHERS and BASIX Report, Net Zero Statement and certification documents provided by Efficient Living.

CARBON AND ENERGY

- All electric residential accommodation, capable of Net Zero in operation, hotel all electric by 2035 (NZS provided)
- Thermally efficient (>7-star NatHERS average), BASIX Energy 65 versus 62 benchmark, NABERS Energy 4 star commitment for hotel
- Onsite PV array with expansion potential – to be included as core equipment with other roof services
- Investigation of onsite battery storage models, and renewable electricity power purchase agreement, through building/embedded network operator – supporting Net Zero outcomes and reducing peak demand

CLIMATE RESILIENCE— URBAN HEATING

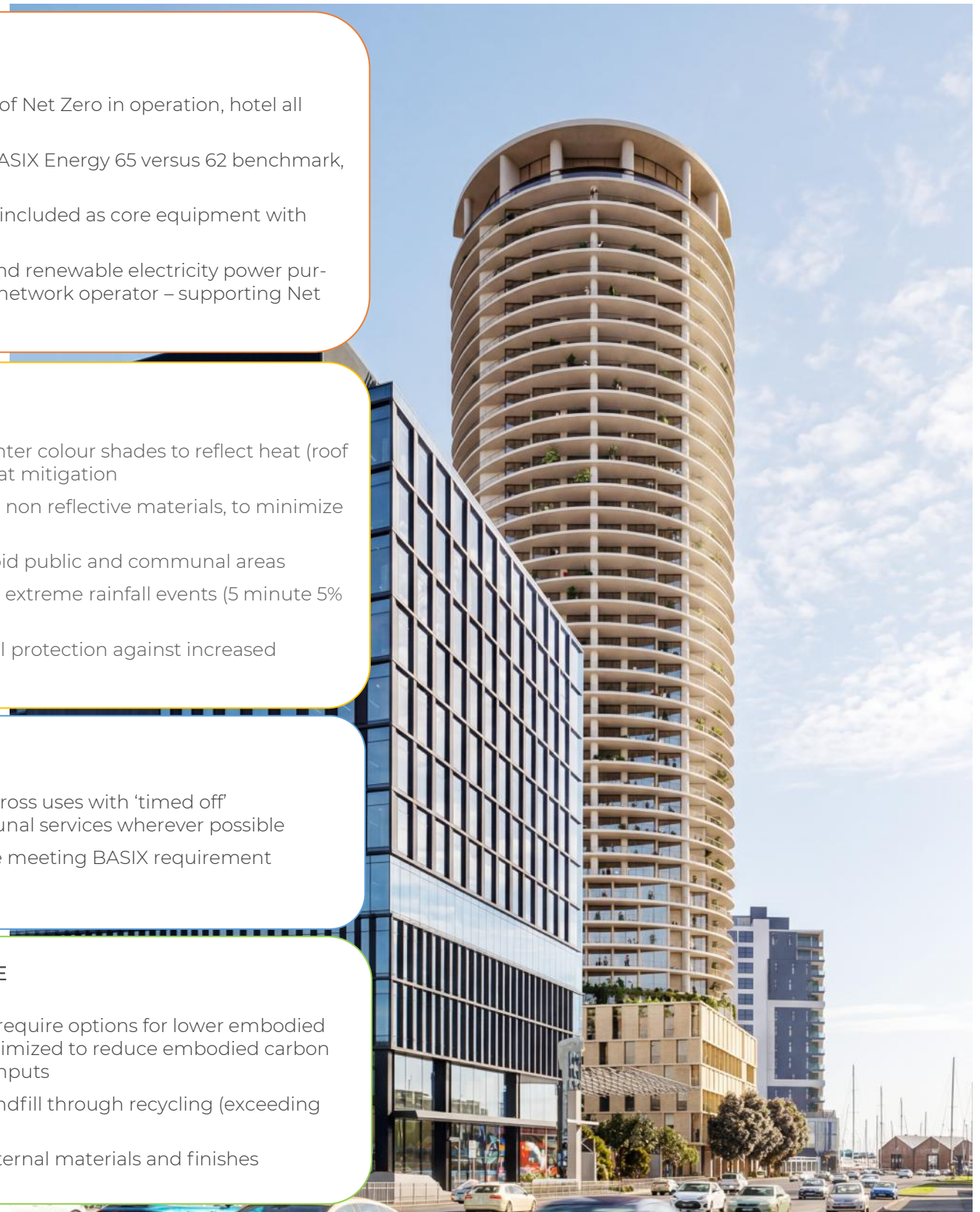
- Roof and paved surfaces to have appropriate lighter colour shades to reflect heat (roof SRI >80), landscape design to consider urban heat mitigation
- Façade design to include shading structure, and non reflective materials, to minimize heat retention and reflection to the street
- Heat discharge location from heat pumps to avoid public and communal areas
- Building and site drainage to consider increased extreme rainfall events (5 minute 5% and 1% AEP plus 10-20%)
- External systems and equipment to consider hail protection against increased extreme storm events

WATER

- High water efficiency appliances and fixtures across uses with 'timed off' mechanisms for commercial spaces and communal services wherever possible
- BASIX Water 40 achieved with rainwater storage meeting BASIX requirement
- Hotel proposal to achieve NABERS Water 3 star

SUSTAINABLE MATERIALS AND WASTE AVOIDANCE

- Concrete, steel and aluminium procurement to require options for lower embodied carbon (certified in EPDs) - structural design optimized to reduce embodied carbon through reduced volume of concrete and steel inputs
- Target to avoid >90% of construction waste to landfill through recycling (exceeding the NSW 80% target)
- Specifications for low VOC and formaldehyde internal materials and finishes



10 Dangar Street, Wickham

Ecologically Sustainable Development Report



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1. Introduction and project information

Introduction

This ESD Report is submitted to the Department of Planning, Housing and Infrastructure (DPHI) on behalf UPG Wickham Pty Ltd (the Applicant), to support a State Significant Development Application (SSDA) and concurrent Rezoning Report for the construction of a 43-storey mixed-use development at 10 Dangar Street, Wickham (the site). The site is located within the Newcastle local government area (LGA) and occupies a prominent corner position immediately north of the Newcastle Interchange.

The project has been selected by the NSW Housing Delivery Authority (HDA) as a key development to help accelerate the delivery of well-located, diverse and affordable housing in New South Wales. Commencing in early 2025, the HDA plays a coordinating role across government agencies, focusing on unlocking complex sites through strategic planning, infrastructure coordination, and streamlined assessment pathways.

Following the Applicant’s expression of interest (EOI 240837), the HDA considered and recommended to the Minister for Planning and Public Spaces (the Minister) that the project be declared SSD under Section 4.36(3) of the Environmental Planning and Assessment Act 1979 (EP&A Act) on 23 June 2025. Following this recommendation, the development was declared by the Minister to be SSD pursuant to the State Significant Development Declaration Order 2025 (No 10), Part 2, Section 1(a), dated 30 June 2025.

Relevant SEARs/Rezoning Requirements

This ESD Report addresses the following relevant Secretary’s Environmental Assessment Requirements (SEARs) and Guidance for Concurrent Rezoning Report: SSD Housing issued for the project set out in the table below.

In response to SEARs (Clause 15) the ESD report considers key ESD factors required to address the ESD principles in section 193 of the EP&A Regulation including:

- Reduced carbon emissions, energy efficiency and energy sources—including efforts to reduce embodied carbon emissions in materials
- Water efficiency and alternative water sources to potable water where available

Requirement	Response/ Location in Report
SEARs Requirement	
15. Ecologically Sustainable Development (ESD): • 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. • Where relevant, provide an assessment of the development against the standards for non-residential development set out in Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022.	Section 2—summary of response against SEARs and Sustainable Buildings SEPP Sections 4-7—detailed ESD measures by ESD category

- Climate change resilience
- Sustainable materials and waste avoidance

These factors primarily address the requirements of SEARs (Issue 15) together with other key ESD factors raised in the SDRP process and required for consideration in Chapter 3 of the Sustainable Building SEPP.

The Sustainable Building SEPP 2022 also requires that the ESD Report, and NatHERS/BASIX certification report by Efficient Living, responds to:

- BASIX Energy, Thermal and Water benchmarks for residential components of the building (Chapter 2)
- General sustainability requirements for non-residential components of the building (Chapter 3)
- A NABERS embodied emissions materials form required for non-residential development under the SEPP
- For the hotel component of the proposal ('major project') a Net Zero Statement and also NABERS Agreement to Rate
- Climate change resilience

The ESD Report also considers broader ESD relevant policies and plans consistent with SEARs Clause 1.

Methodology to identify ESD measures and outcomes

Efficient Living uses a combination of industry benchmarks, reference projects and comparative project data, together with industry recognised modelling tools, to propose ESD measures.

It should be noted that a wide cross section of ESD factors are considered with both qualitative and quantitative measures.

The committed and proposed ESD measures in this report are considered against the performance and detail required under key planning policy requirements at a State level (primarily responses to SEARs and the Sustainable Building SEPP), and as relevant at a Local level.

Where relevant, comment and reference to published Australian standards and sustainability rating schemes is made. Efficient Living also relies on its experience across multiple NSW proposals to provide opinion on whether the proposed ESD measure meets 'industry benchmarks' which can be subjective.

The ESD report also recommends further detail and specification outcomes as the project moves into detailed design development and building tender processes. Final ESD outcomes can not be fully determined until the detailed level of design and final construction package of works is agreed.

1. Introduction and project information

The site

The site is located at 10 Dangar Street, Wickham, within the Newcastle LGA. The site benefits from triple street frontages, with a primary street frontage of approximately 64m to Dangar Street, and secondary street frontages of approximately 61m to Hannell Street and 50m to Charles Street.

The surrounding locality comprises a diverse mix of land uses including residential, commercial, and light industrial uses, reflecting the area's ongoing transition. The site's frontage to Hannell Street, a major arterial road, supports high levels of connectivity to the broader metropolitan area. The site is located immediately north of the Newcastle Interchange, providing bus, rail and light rail services. Strategically, the site sits at the intersection of the Newcastle West End, Wickham, and Honeysuckle precincts, positioning it to support the city's transition to a higher-density, mixed use metropolitan centre.

The site is currently vacant following demolition works approved under DA2018/01197 (as modified).

Proposal description

Rezoning Proposal

To facilitate the proposed development described in Section 3.2, a concurrent Rezoning Proposal is sought to make the following amendments to the Newcastle Local Environmental Plan 2012 (Newcastle LEP 2012) in relation to the site:

- Amend Clause 7.9 to permit a maximum building height of RL152 on the site; and,
- Amend the Clause 7.9A to permit a maximum FSR of 14.4:1 on the site.

State Significant Development Application

The proposed amendments to the Newcastle LEP 2012, as outlined above, will facilitate the following development, proposed via a concurrent SSDA. Specifically, the proposed works sought under the SSDA include:

- Construction of a 43-storey (+ plant) mixed-use tower, comprising:
 - 245 residential apartments
 - 99 co-living units
 - Ground floor retail premises, to all three street frontages
 - A hotel component within the podium
 - Basement car parking
- Associated landscaping and public domain improvements,

including the provision of a pedestrian through-site link that runs east/west adjacent to the Newcastle Interchange.

It is noted that the project will commit to providing 15% of the residential GFA as affordable housing for a minimum of 15 years, to be managed by a registered Community Housing Provider (CHP).

The proposed SSDA will seek consent for the use of basement structures and enabling works approved under DA2018/01197 (as modified).

For a detailed description of the proposed development, refer to the EIS prepared by Beam Planning, and the Architectural Drawings prepared by SJB Architecture.



2. Project responses to SEARs

SEARs REQUIREMENTS	Project response (and reference to relevant report section)	Supporting project documents as relevant
1. Statutory Context - Address all relevant legislation, environmental planning instruments (EPIs) (including drafts), plans, policies, guidelines and planning circulars. - Identify compliance with applicable development standards and provide a detailed justification for any non-compliances.	The report primarily considers the EP&A Act ESD principles and required ESD measures for CI15 of the project SEARs provided for the proposal. In addition the report also considers ESD principles or objectives from the following State strategies and policies: - Greater Newcastle Metropolitan Plan 2036 - Sustainable Buildings SEPP and Housing SEPP (ADGs) - NSW Government Net Zero Plan The report also includes compliance with National Construction Code (NCC) Section J Energy Efficiency requirements as is mandatory for components of this project type. These considerations are made in Section 4 of the report.	
15 Ecologically Sustainable Development (ESD) 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 project is not considered to create any threat of serious environmental damage given it's location on an existing developed site in a highly urbanised area. The development process is established with any potential impacts understood with a high level of certainty. - The project demonstrates a commitment to minimising environmental impact, implementing climate change resilience measures and implementing CO2 emission and resource conservation measures.	
Principle 1—the precautionary principle (Section 193, EP&A Regulation 1a) The precautionary principle is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In applying the precautionary principle, public and private decisions should be guided by— - careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and - an assessment of the risk-weighted consequences of various options.	- In combination these initiatives deliver the concept behind a precautionary approach to approving development based on avoidance of potential future or uncertain impacts. - On balance the project presents very low risk to the environment and supports sustainable outcomes.	

2. Project responses to SEARs

SEARs REQUIREMENTS	Project response (and reference to relevant report section)	Supporting project documents
Principle 2—Inter generational equity (Section 193, EP&A Regulation 1b) 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.	Achieving inter generational equity requires that the proposal takes steps to avoid, mitigate and support processes that preserve the environment and sustainability of communities over the long term. Core responses to deliver these long term sustainability outcomes include: • Avoiding resource depletion— through resource efficiency, steps towards waste recycling and a circular economy, with a focus on the longer term and full life cycle impacts for the environment and community. • Helping to mitigate climate risk—through measures to reduce CO2 emissions from the proposal (operational and embodied). • Helping to adapt to climate change risk—through including measures in the proposal that allow future communities to better manage climate change impacts. • Creating places that will support ongoing human health over the long term. The proposal includes environmental performance initiatives and outcomes to deliver inter generational equity. Sections 4-7 of this report set out these categories and have been determined based on meeting or exceeding industry benchmarks. The proposed ESD initiatives incorporate measures that greatly reduce GHG/carbon emissions and consumption of energy, incorporate onsite renewable electricity supply, conserve water and minimise resource consumption and embodied energy in materials. The primary performance benchmarks for these categories include: Minimising carbon emissions and energy (Section 4) - exceeding regulatory requirements • Scope 1 and 2 CO2 emissions for the building, c.65% savings against a BASIX benchmark; options included to reduce Scope 3 CO2 emissions • Sustainable Building SEPP 2022 BASIX Energy score of 65 versus 62 benchmark, average NatHERS thermal performance rating of c. 7.0 stars, Hotel with agreement to achieve NABERS Energy 4 star—meeting the required benchmarks • Delivery of a 30kW PV array, with provision for a future c. 80-95kW PV array subject to hotel and co-living demand and delivery, included for onsite renewable electricity; education and contract options to be highlighted to future building managers and Owners Corporation for 100% renewable electricity to common building electric services • Investigate options to reduce upfront carbon emissions in key materials by 10-20% with a focus on reduced embodied carbon concrete, steel and aluminium; optimised structural grid building fabric strategy to reduce need for high strength transfer slabs; reuse of bricks from existing buildings on site • Provision for future battery inclusion in the building electrical system and provision for 100% EV parking spaces for residential areas and 20% of hotel areas (NCC 2022) allows transition away from ICE vehicles Water conservation (Section 5) - exceeding regulatory requirements • Reduce potable water demand to meet the Sustainable Building SEPP BASIX requirements through water efficient appliances and fixtures—residential achieves BASIX score of 40% and Hotel with agreement to achieve NABERS Water 3 star meeting the required benchmark • Alternative water source (minimum 5,000L rainwater tank) used for green landscape areas	• BASIX and NatHERS certificates • NABERS Agreement to Rate document • Hotel Net Zero Statement • Proposal Stormwater Management Plan/Integrated Water Management Plan

2. Project responses to SEARs

SEARs REQUIREMENTS	Project response (and reference to relevant report section)	Supporting project documents
Principle 2—Inter generational equity (Section 193, EP&A Regulation 1b) 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.	Climate change resilience (Section 6) - Final building systems and site drainage detailed design to be reviewed in detailed design development to consider increased extreme rainfall events, storm events and heat wave events for operational performance in extremes - Heat island mitigation steps including high reflection (SRI) horizontal hard surfaces, planned canopy and green landscape areas and façade design minimising building reflection to the ground level Responsible materials and waste management (Section 7) - Target to recycle or reuse at least 90% of key demolition and construction waste; implement waste streaming to support operational phase recycling outcomes - Procurement strategy to prefer key materials with Environmental Product Disclosures confirming low environmental impact - Procurement strategy to target low VOC and low/no formaldehyde products to improve air quality and support human health	Proposal Waste Management Plan
Principle 3- conservation of biological diversity and ecological integrity (Section 193, EP&A Regulation 1c) 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.	- The renewal strategy for the site seeks to maximise the use of local native species, or species suitable for site microclimate outcomes, and minimise environmental impacts (such as carbon emissions, stormwater volume and quality controls) such that the post development outcome retains biodiversity values consistent with local flora and fauna. - It is noted that the land use strategy for the site, directly adjacent to a major transport interchange, is heavily urbanised and the green landscape and deep soil opportunities at ground level are balanced in this context. - A stormwater management plan will be developed for the site seeking to minimise any impacts of stormwater (quantity and quality) leaving the site and entering the local water system (consistent with City of Newcastle stormwater management controls).	- Proposal Stormwater Management Plan/Integrated Water Management Plan - Proposal landscape plan/landscape design report

2. Project responses to SEARs

SEARs REQUIREMENTS	Project response (and reference to relevant report section)	Supporting project documents
Principle 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 in the most cost effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.	• The sustainability and environmental measures for the project are being incorporated in the early design and cost plan for the project to ensure the most economic pathways are identified through design and construction. • Further, the specification of materials and equipment will strongly consider the most cost efficient operations and maintenance outcomes which are anticipated to also match the most efficient environmental outcomes for the apartment, co-living and hotel complex operation (for example use of PV arrays to minimise the long term financial and environmental cost of electricity, electric heat pump hot water systems, choice of robust building materials with a long useful life). • Future building managers and occupants will be able to choose their preferred pathway and retailer to access renewable electricity for hotel, co-living, private apartment uses and for electric vehicle charging—communal area access to renewable energy will be factored into the building cost through provision of the solar/PV array system and then determined by the building managers and Owners Corporation for base building/common area potential for renewable electricity purchase.	

2. Project responses to SEARs

SEARs REQUIREMENTS	Project response (and reference to relevant report section)	Supporting project documents
CI 15 Where relevant, provide an assessment of the development against the standards for non-residential development set out in Chapter 3 of State Environmental Planning Policy (Sustainable Buildings) 2022 Development consent for non-residential development. In deciding whether to grant development consent to non-residential development, the consent authority must consider whether the development is designed to enable the following— The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials, • A reduction in peak demand for electricity, including through the use of energy efficient technology, • A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design, • The generation and storage of renewable energy, • The metering and monitoring of energy consumption, • The minimisation of the consumption of potable water.	Section 4 of this report outlines: • Steps to improve energy efficiency through passive design steps (meeting NCC 2022 SJ requirements) and through efficient equipment and lighting • Provision for the future maximum possible PV array on the roof space targeting service to co-living and hotel uses subject to final electrical demand analysis (and taking into account BASIX requirements for residential apartments) • Provision for energy storage options for batteries and electrical systems to support implementation (consistent with NCC 2022 requirements) • Metering and monitoring systems to allow for optimal system management—the next level of detailed electrical design is recommended to include how the diverse electrical load from the mixed uses could be optimised to reduce total building load Section 5 of this report outlines: • Efficient water appliances and fixtures to reduce water demand • Any rainwater storage required to support landscape irrigation on the site	
Development consent must not be granted to nonresidential development unless the consent authority is satisfied the embodied emissions attributable to the development have been quantified.	• An assessment of the embodied CO2 emissions attributable to the development, following the NABERS reporting protocol, will be submitted with this development	• NABERS Embodied Emissions Materials Form
The hotel component of the proposal is considered as 'large commercial' and therefore requires a Net Zero Statement and NABERS Agreement to Rate to be submitted with the Development application	• Transition of any gas based commercial cooking equipment in the Hotel or Retail uses will be transitioned to all electric services by 2035—with the electrical capacity confirmed to allow this transition • A Net Zero Statement for the hotel use will be submitted with this proposal	• Hotel proposal Net Zero Statement

3. State and Local strategies and policies

Key State ESD related strategies and policies

Sustainable Buildings SEPP 2022

For residential development the proposal will need to at least meet the requirements of the BASIX conditions for thermal performance, energy/carbon reductions and potable water reductions.

- BASIX thermal performance average NatHERS 7 star
- BASIX Energy outcome of at least 62%
- BASIX Water outcome of at least 40%

The non-residential component of the development requires:

- A Net Zero Statement for the Hotel proposal
- A NABERS Agreement to Rate (Energy 4 star, Water 3 star) for the hotel proposal
- Consideration of embodied emissions including a NABERS Embodied Emissions Materials Form
- Consideration of Chapter 3 general sustainability requirements

Housing SEPP—NSW Apartment Design Guide

The objectives, design criteria and design guidance will need to be considered especially in relation to design criteria including:

- Sunlight to habitable rooms (70% of apartments to receive 2 hours, <15% receive no sunlight)
- Apartment and room sizes, window requirements, room depths for habitable rooms, balcony provision and size

Greater Newcastle Metropolitan Plan

The Greater Newcastle Metropolitan Plan requires sustainability to be considered in the following strategies:

- **Strategy 10 – Create Better Buildings and Great Places:** Requires development to incorporate climate-responsive design, energy efficiency, and urban greening as integrated elements of building and place design, rather than treating sustainability as an afterthought.
- **Strategy 12 – Enhance the Blue and Green Grid and Urban Tree Canopy:** Councils are required to identify local blue and green



corridors and continue rehabilitation programs, with a target that 90% of homes be within a 10-minute walk of open space.

- **Strategy 14 – Improve Resilience to Natural Hazards:** Requires councils to incorporate flood, coastal erosion, sea level rise, bushfire, and extreme heat risks into local planning strategies, ensuring development sequencing avoids high-risk land and infrastructure is planned with climate change projections in mind.
- **Strategy 15 – Plan for a Carbon Neutral Greater Newcastle by 2050:** The plan sets a 2050 carbon neutral target with goals and actions for greening the city, encouraging renewable energy, energy-efficient buildings, reduced car dependency, and the transition of former industrial land toward low-carbon industries.

NSW Government Net Zero Plan

The NSW Government targets (NSW Climate Change Policy Framework—Net Zero Plan) for 70% reduced emissions by 2035 and net zero by 2050 should also shape the ESD initiatives for the proposal.



National Construction Code (NCC) Section J Energy Efficiency

Section-J of the National Construction Code 2019 focuses on “energy efficiency of buildings”. Section J is a minimum performance target for standard buildings and specifies minimum performance targets known as deemed-to-satisfy (DTS) requirements, for building fabric and services.

Section J performance requirements are relevant for the common areas proposed in a residential, Class 2 apartment development and for Class 6 retail floor space proposed.

NCC 2022 Section J also requires provision of space and electrical infrastructure planning to allow future uptake of electric vehicle chargers, battery systems and PV arrays (if not already provided).

Newcastle DCP 2012

Sections B6 and C12 of the DCP requires steps for built form to reduce urban heating impacts, encourage urban greening including tree canopy outcomes. More broadly the DCP has a purpose (note 7) to deliver development that is of a high design standard and energy efficient.

4. Energy efficiency and low carbon emissions

Passive design Initiatives to reduce energy use

With thoughtful planning, a well-designed building can be passively heated, cooled, and ventilated for most of the year in temperate NSW climates. This approach minimizes reliance on mechanical heating, ventilation, and air-conditioning (HVAC) systems, which are only needed when outside temperatures are too extreme to be controlled passively.

Proposed outcome meeting compliance and industry standards

- NatHERS average ratings of minimum 7 stars for apartments (minimum c.6 stars for individual apartments) meeting BASIX thermal performance requirements
- Approximately 76% of apartments achieve solar access requirements exceeding the ADG benchmark of 70%
- Apartments at 12 storeys and above not subject to ADG cross ventilation controls—but include measures to support natural ventilation
- Co-living, hotel and retail spaces to meet or exceed NCC S1 building envelope requirements and ventilation requirements

Strong NatHERS ratings for apartments

Strong passive design will translate into strong measured thermal performance outcomes in NatHERS modelling. The project has achieved a weighted average of NatHERS 7 stars for apartments (minimum 6 stars per apartment) meeting the upgraded requirements of the Sustainable Buildings SEPP 2022..

Compliance with NCC 2022

The project will comply with the latest NCC 2022 Section J inclusions for building fabric and energy requirements. These requirements are relevant for all co-living, hotel, retail and communal building areas that are proposed for mechanical space conditioning.

The hotel component of the proposal will be supported by a future NABERS Energy rating outcome of minimum 4 stars.

Solar Access

The floor plate designs for the building has been designed to maximise solar access. Solar access provides daylight which means electric lights can be left off during the day but also provide passive heating during the winter months, meaning that the heating system has less work to do, and less energy is consumed heating the spaces.

76% of apartments will receive more than 2hrs of solar access between 9am-3pm exceeding the guidelines (minimum requirement of 70% apartments) in accordance with the Apartment Design Guide.

Co-living floorplates include north facing communal areas providing long periods of solar access. Over 70% of co-living apartments also face east and west providing improved solar access.

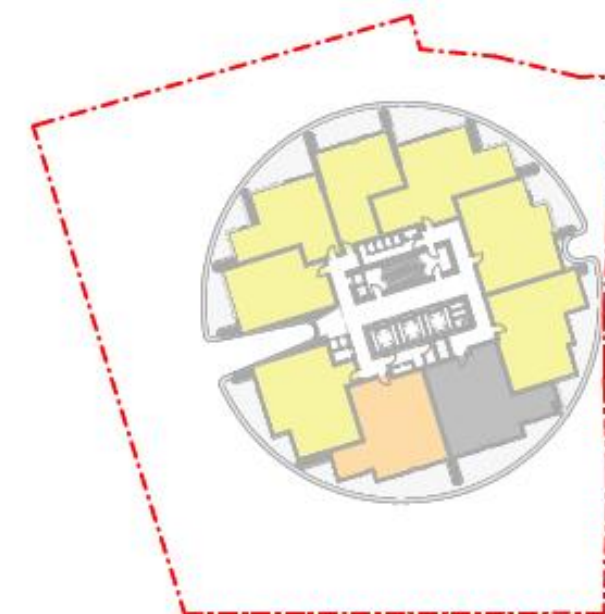
Natural Ventilation

Apartments are located on level 12 and above meaning that the ADG cross ventilation control is not relevant (relevant to levels 1-9). Natural ventilation will be supported by operable sliding doors in habitable rooms typically open to balconies to all apartments. The façade is also articulated to each apartment helping to vary wind pressures in the microclimate increasing the potential for natural air movement through apartments.

Co-living rooms will benefit from > c. 10% of floor space operable sliding door openings compared to an NCC requirement of 5%. Opportunities to naturally ventilate the common areas will be further investigated as the design progresses.

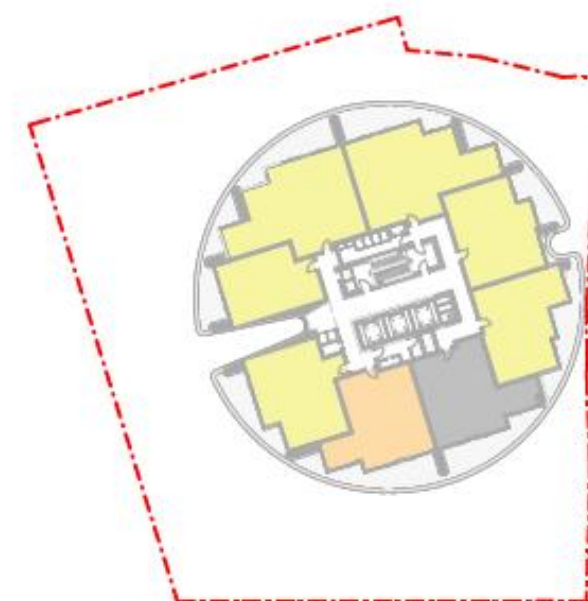
Natural light access

The building slots created in the tower section of the building will provide natural light access to the cores for the residential apartment and co-living areas. This will reduce the need for artificial lighting to these communal areas.



LEVEL 14

Typical Levels 12-17 - 78% solar access outcomes—ADGs



LEVEL 30

Typical Levels 18-36—75% solar access outcomes—ADGs

4. Energy efficiency and low carbon emissions

Service and appliance initiatives to reduce energy use and carbon emissions

Proposed outcome meeting or exceeding industry standards

- All electric building operations for residential and co-living spaces—transition to all electric for hotel spaces (cooking services)
- BASIX Energy saving outcome of 65 versus minimum benchmark of 62
- Higher efficiency A/C and hot water services with COPs and EERs above 3.5

An all electric building supporting net zero carbon emissions in operation

The major residential components of the building will be serviced with all electric equipment making net zero carbon emission operational immediately achievable.

To operate as net zero three core sources of renewable electricity will be required, including:

- An onsite solar/PV array supplying energy primarily to common area and service demands
- A renewable electricity purchase agreement by the building operator/embedded network operator—an option for this outcome will be investigated to test commercial viability

The small exception to 'all electric' services may be limited gas supply to commercial cooktops in the hotel and potential food and beverage retail areas.

A Net Zero Statement to ensure Net Zero operation for the hotel spaces by 2035 is provided with this submission.

Hot Water Systems

Domestic hot water systems can be responsible for 10-15% of total apartment and mixed use building CO2 emissions.

Centralised electric heat pump systems will be utilised for hot water

provisions with a high level of insulation for the hot water ring main throughout the building so that the 'system COP' remains high.

The coefficient of performance (COP) for the heat pump unit in this system should be greater than 2.5 compared to a traditional gas boiler system with coefficient of performance less than 1.

Any pool or spa heating services for the hotel will also be through electric heat pumps.

Air conditioning services

With strong passive design, reflected in a minimum 7 star average NatHERS rating, space conditioning is responsible for about 5-15% of total apartment building CO2 emissions.

Space conditioning services for the hotel component of the development could be expected to make up more than 40% of total energy demand.

All air conditioning systems will target a higher efficiency cooling mode EER of >3.5 and heating COP of >3.5. These outcomes will be provided by:

- Individual outdoor condenser units per apartment and co-living room (set into the building columns)
- Centralised VRV/VRF systems servicing the hotel

Appliances

Appliances and related other electrical demand average approximately 35% of total CO2 emissions in a modern apartment building.

The following star ratings are targeted for key domestic appliances subject to final clarification of BASIX requirements.

- Dishwashers - minimum 4 star (exceeding BASIX 3 star requirement)
- Clothes Dryers - **minimum 8 star condenser/heat pump dryers** (supporting avoidance of separate ducting requirements under NCC 2022 required for non-condensing dryers)

Lighting

Lighting can use up to 10% of an apartment building's electricity consumption, therefore efficient luminaires and lighting control systems are critical in order to optimise the building's energy efficiency. The following measures will be implemented:

- LED lighting to be investigated for apartments, co-living and hotel rooms with a target of 20-30% reduction in energy demand compared to NCC minimum compliance.
- Common area lighting to have motion and daylight sensors with further zoned lighting controls for car park areas. Opportunities have been explored to enable daylight access to Residential & Co-living cores reducing dependency on artificial lighting
- We note that the NABERS 4 star energy target for the hotel spaces will act to reinforce more energy efficient lighting solutions

Lifts

Lift use can be responsible for over 10% of total apartment building CO2 emissions.

The lifts will incorporate PMS motor and regenerative drive technology.

Car park ventilation

Common area ventilation can be responsible for over 10% of apartment building CO2 emissions.

Car park mechanical ventilation will be CO monitored/controlled and utilise energy efficient variable speed fans.

Other ventilation, such as to switch rooms, plant rooms and communal bathrooms, will be either interlocked to light switching or controlled through a building management system.

Common area services

Opportunities for natural ventilation of common areas will be further targeted in future design development.

4. Energy efficiency and low carbon emissions

Electric transport services

Electric transport

Electric vehicles are anticipated to experience high adoption over the coming decades (Electric Vehicle Council target 50-60% of new vehicle sales by 2030). When serviced with renewable electricity this mode of transport provides an effective net zero in operation outcome for travel.

Provision for electric cars is the major item to consider followed by power access and storage for the fast growing use of e-bikes and e-scooters.

Electric vehicle provisions

Final detailed electrical system design will cater for a high uptake of electric cars and bikes.

Consistent with NCC 2022, dedicated distribution boards to support EV charging on each basement level will be provisioned together with an active load management system that allows future connection of all parking spots within an achievable total electrical demand level for the project.

100% of residential car parking spots will require charging infrastructure provision while 20% of hotel related spots, only 10 spots planned for staff, will require charging infrastructure provision. Hotel charging capacity will also require power to provide 48kWh overnight compared to residential of 12 kWh.

Consideration of a charger provision and tariff system/model, so that individual apartments are provided with an accurate electricity bill for their usage, is also recommended. This service is most often provided by specialist EV charging entities.

Any shared car service parking spots and service provider procurement should also plan for shared EVs to further provide zero net carbon outcomes for car based transport.

E-bike and e-scooter provisions

Provision of standard GPOs with access from bike storage racks and other storage areas (potentially for e-scooters) will be provided to facilitate charging of these mobility devices.

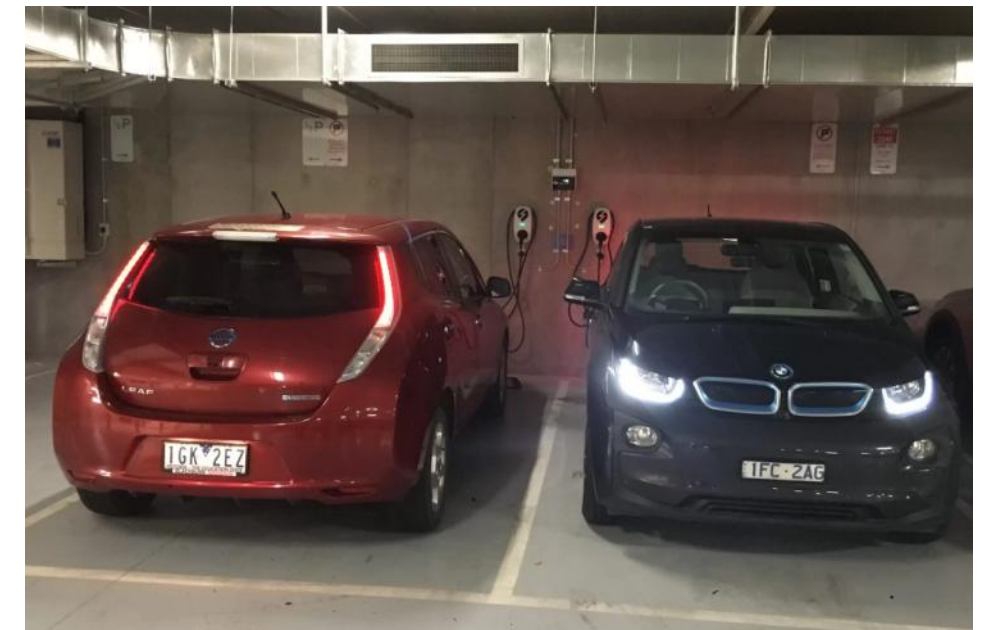
The future of Electric Vehicle batteries integrated with building electricity demand

Batteries in EVs theoretically store enough energy to run a typical apartment for 5-7 days. Technology is under development to allow the energy in EV batteries to be accessed by homes, and potentially apartment buildings, to help reduce peak demand and otherwise supplement demand throughout the day as required.

The software controlling the management of the car battery, through a 'two way' charging connection, would allow for a proportion of the battery power (say 50%) to be utilised for building energy management. The owner of the EV would be compensated for this service.

When fully developed this energy management system may be able to greatly reduce the buildings peak demand and therefore help reduce the required substation size requirements for 'all electric' buildings.

The final detailed electrical system design and fitout will consider incorporation of sourcing power from EV chargers through to the main switchboard for the apartment building.



Example of EV charging provision image from <https://evse.com.au/blog/apartmentevcharger/>



Modern buildings are providing charging options for e-bikes and e-scooters

4. Energy efficiency and low carbon emissions

Renewable energy sources and energy management

Proposed outcome meeting compliance and meeting or exceeding industry standards

- An initial solar/PV array of 30kW will be provided meeting the BASIX commitment for the proposal.
- Provisions have been made for roof space and electrical infrastructure to allow for future expansion of the system to c.80-95kW subject to delivery by future building managers
- Future options available for a renewable electricity contract for base building and EV charging power
- Provision for future battery system integration

Incorporation of solar/PV arrays

An initial PV array of 30kW in size will be delivered to service the residential apartments. This outcome is consistent with the BASIX commitment and contributes to the BASIX Energy score of 65 versus compliance of 62.

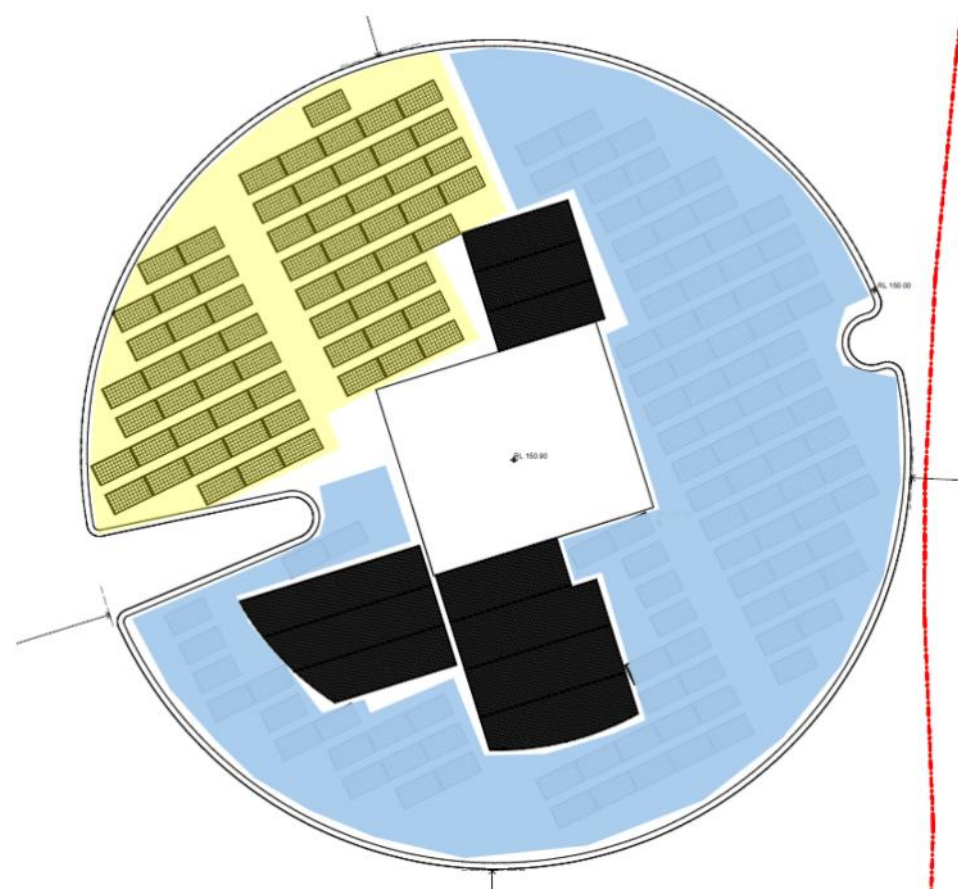
Additional roof area has been identified that can accommodate future expansion of the PV array system to c. 80-95kW with the additional stages aimed to service co-living and/or hotel demand. This approach is consistent with SDRP responses. Electrical infrastructure provision will be in place to support this expansion. Future building managers of the co-living and hotel uses will carry out the detailed design and delivery of future stages according to needs.

Please refer to the roof diagram provided on this page.

Potential future purchase of renewable electricity to help achieve Net Zero

The developer of the proposal will investigate the potential to secure a longer term renewable electricity power purchase agreement (which may be delivered through an embedded network operator) for the hotel and co-living base building services.

The developer will also provide education/information (in handover



Tower roof—Yellow shaded area nominated for delivery of 30kW (c. 60 panel) PV array aligned to BASIX commitment for residential apartments. Blue shaded area provisioned for future expansion to possible 80-95kW total size subject to detailed design and delivery by future hotel and/or co-living building managers.

Black shaded areas indicate ventilation louvre areas provisioned for plant level below.

documents at the first Owners Corporation AGM) on potential purchase options for renewable electricity to service the residential base building services.

These handover documents will provide details of providers of Green Electricity and also options to join any available longer term Renewable Electricity Power Purchase Agreement.

Building energy management

Building systems will be set up with sufficient sub meters to allow detailed monitoring of consumption patterns and equipment performance.

Investigation of a centralised battery system and 'grid interactive' building

In the next stage of detailed design development, an area will be identified in the basement in close proximity to the main switchboard to allow potential installation of multiple batteries in the future—as now required in NCC 2022.

The building operator/embedded network operator will ultimately determine if a shared community battery is worthwhile given the specific demand profile, and PV production profile,

Ultimately the potential to utilise 'two way' EV batteries linked to the building system (discussed on the preceding page) will determine if a stationary battery system is also warranted.

Ultimately the interaction of the power supplied by the PV array, incorporation of battery storage, and tailored power purchase agreement with a suitable electricity retailer, would allow the building to maximise internal use of PV array energy supply whilst leveraging the onsite battery storage to reduce reliance on the grid in peak periods.

4. Energy efficiency and low carbon emissions

Summary of operational carbon emission reduction measures

Boundary and Scope of carbon emissions considered

- The most relevant boundary for considering CO₂ reduction measures are the activities carried out in building operations—for residential and hotel activities
- Scope 1 CO₂ emissions for the proposal include those from any onsite gas used for commercial cooktops in the hotel
- Scope 2 CO₂ emissions, the major source of emissions, come from electricity sourced to power building systems and appliances
- Significant Scope 3 CO₂ emissions, embodied carbon in key buildings materials and carbon emissions related to cars stored in the building for transport are also considered—reduction measures are discussed in Section 7 of this report.

Operational carbon emissions—energy use

Passive design

- NatHERS average rating of c 7.stars
- Future compliance with NCC 2022 Section J for hotel, co-living, communal and retail areas

Energy efficient systems and appliances

- Electric heat pump unit for centralised HW COP target > 2.5 (system)
- Air conditioning with min COP 3.5 and EER 3.5
- Energy efficient appliances—ratings as indicated

Provisions for electric transport—EVs and other options

- NCC 2022—100% of residential car spaces, and 20% of hotel spaces, will be provisioned for Type 2 EV charging capability with additional provisions for e bike charging

Operational carbon emissions—energy source

On-site renewable electricity

- An initial solar/PV array of 30kW will be provided meeting the BASIX commitment for the proposal.
- Provisions have been made for roof space and electrical infrastructure to allow for future expansion of the system to c.80 -95kW subject to delivery by future building managers

Offsite renewable electricity

- Developer will investigate a renewable electricity PPA for the hotel and co-living services (may be through a embedded network operator)
- Developer will provide education and options for the Owners Corporation to secure a renewable electricity contract

Operational carbon emissions—energy management

- Energy metering in place to allow monitoring and optimisation of core systems
- Provision for future battery storage if feasible to manage peak and also consideration of how future EV battery integration may occur

Carbon Emissions by End-Use — Residential Apartments

10 Dangar Street, Wickham | BASIX Energy Score: 65 | Proposal

END-USE	KG CO ₂ /YR	% OF SCORE	
DWELLING END-USES			
● Appliances (whitegoods)	160,084	22.7%	
● Other portable appliances	88,567	12.6%	
● Cooking	73,656	10.5%	
● Hot water	69,790	9.9%	
● Cooling	51,027	7.2%	
● Heating	48,247	6.9%	
● Lighting	29,270	4.2%	
● Ventilation	11,297	1.6%	
COMMON AREAS			
● Lifts	84,765	12.0%	
● Common area ventilation	70,326	10.0%	
● Common area lighting	16,980	2.4%	
RENEWABLE ENERGY OFFSET			
● Alternative energy (PV / cogen)	-27,778	-3.9%	
Total assessed emissions	676,231	96.0%	

Benchmark: 1,934,083 kg CO₂/yr | BASIX target: 734,952 kg CO₂/yr | Proposed: 676,231 kg CO₂/yr | Headroom below target: 8.0%

Summary of operational Scope 1 and 2 CO₂ emission contributors sourced from NSW BASIX analysis for residential apartment component of proposal

5. Water efficient design

Integrated Water Management plan

Water resources will be managed to deliver three clear objectives for the redeveloped site as an integrated water management plan.

- Reduce the demand for potable water through water efficient fixtures and an alternative water supply
- Reduce negative stormwater volume impacts within and leaving the site (please refer to the project Stormwater Management Plan (SMP))
- Reduce negative stormwater quality impacts within and adjacent to the site (please refer to the SMP)

Proposed outcome meeting compliance and meeting or exceeding industry standards

- A BASIX Water outcome of 40 has been achieved meeting benchmark
- High efficiency fixtures and appliances installed across apartment, co-living and hotel rooms
- Rainwater tank supply mainly for landscape irrigation uses

Water Efficient Fixtures and Fittings

Water efficiency in the project will be underpinned by efficient fixtures and fittings in apartments, co-living rooms and hotel rooms and bathrooms and common areas.

The following WELS water rating targets will be used in the top quartile of efficiency:

- Shower roses—flow rates of 6-7.5L/min 4 star
- Toilets 4 star
- Kitchen and bathroom taps 5 star
- Dishwashers >5 star
- Washing machines 4 star (where relevant)

Rainwater Tank

The project will incorporate rainwater storage. Total storage capacity of 5,000L will be targeted with a roof catchment of c. 600 sqm. The rainwater tank will supply irrigation of green landscape areas.

Water Sensitive Urban Design

Water efficient plant selection

Landscaped areas will utilise predominantly native and/or low water demand plant species. Plants will also be chosen on the basis of specific microclimates expected post the effects of the built form on sun/shade, wind and access to natural rainfall.

Water efficient irrigation methods

Irrigation of softscape areas will be driven by passive irrigation for deep soil areas. Any soft landscape areas in need of regular irrigation will be equipped with under surface drip irrigation to avoid evaporation losses and ensure moisture is directed to root areas.

Please refer to the Landscape Plan by Land+Form.



WELS shower label certifying 6.5 L flow rate—consistent with this proposal

6. Climate change resilience

Future proofing

Proposed outcome meeting compliance and meeting or exceeding industry standards

- Future detailed design of building drainage and systems to be reviewed for performance in extreme weather events (rainfall, storm, heat) - Newcastle Council FPL adopted allowing for Sea Level Rise (SLR) and rainfall events
- Over 75% of horizontal surfaces to minimise urban heating effects
- Heat reflection from building to street level mitigated through façade design elements/overhangs and lower level canopy and soft landscape.

Climate Change Resilience

An initial review of climate change impacts over the next 50 years for this location indicate greater extreme events particularly in relation to rainfall, storms and heat wave. Impacts can be direct, for example rainfall ingress to the building, or indirect, for example expected higher maximum temperatures, longer and hotter heat events, increased rainfall intensity leading to increased flooding (East Coast Cluster Report, Climate Change in Australia).

The following design measures will be implemented in the next stage of detailed design development to improve climate change resilience:

- Equipment and building drainage design assessed to ensure effective operation and protection in increased storm, hail and extreme short term rainfall events—flood storage included in basement design
- Landscape design and plant selection to survive an increased number of heat wave days, and dryer winter periods
- HVAC design thresholds to function properly with higher average temperatures and a higher number of heat wave days

Heat Resilience

Over 75% of total site horizontal surfaces (excluding the area of proposed PV arrays) have been targeted for low urban heating outcomes (consistent with GBCA recommendations) including:

- Green softscape outcomes at ground level and Level 6 and 7 podium areas.
- Greatly improved tree canopy, and building form providing shade to hard surfaces helping to mitigate absorption of solar radiation/ urban heating effect
- Final colours for the roof, podium hard surfaces and ground level hardscape surfaces will be specified to achieve low solar absorptance/high solar reflectivity.
 - Roof initial SRI target of minimum 81
 - Unshaded hardscapes initial SRI of target minimum 35-40



Ground level public domain, level 6 (illustrated above) and level 7 communal areas will include canopy, green landscape and hardstand surfaces of light/medium colours to avoid urban heating effect

Highly reflective glazed facades can have a large influence on the ground level microclimate by pushing solar radiation down to this level.

- Balcony overhangs and shade structures in the proposal contribute to reduce this effect (especially compared to a more flush office building façade)
- The landscape plan incorporates street level softscape/canopy to the easterly, northerly and westerly aspects will help mitigate downward reflection of solar radiation from the façade to the street



The building façade generally avoids heavy faces of glazing that reflect solar radiation to hard surfaces on the street below—non reflective façade finishes, and avoidance of glazed balustrading, help mitigate this effect

7. Sustainable materials and waste avoidance

Targeting more sustainable materials, responsible construction and ‘circular’ economy outcomes

The project will investigate procurement options for materials with lower embodied carbon and lower environmental impacts.

These initiatives are consistent with the requirements of the Sustainable Buildings SEPP 2022 (Chapters 2 and 3) where residential and non-residential development need to quantify and then establish initiatives to reduce embodied carbon emissions.

It is proposed that the relevant tender phase include a requirement for submissions to provide material options that would achieve the target outcomes and clarify differences in relation to increased cost and/or increased uncertainty of supply. Based on this analysis the project proponent will be able to make an informed decision on the feasibility to implement a reduced embodied emission and responsible materials strategy.

Proposed outcome meeting compliance and meeting or exceeding industry standards

- Seek options for lower embodied carbon emissions in the most impactful materials
- Target procurement options for reduced human health impact materials
- Preference for key materials with Environmental Product Declarations and/or sustainability certifications
- EMS preferred, and EMP required for head building contractor (ISO 14001)
- Construction and demolition waste to landfill avoidance of net 90%

Reduced embodied carbon materials

Steel, concrete and aluminium are the three leading material contributors to a building's embodied carbon footprint, collectively accounting for more than 70% of upfront embodied emissions in a typical commercial building (Lendlease, cited in GBCA Reducing Upfront Carbon at Scale, 2022). Upfront embodied carbon — the emissions locked in before a building is occupied — represents

approximately 25% of a building's total whole-of-life carbon footprint (GBCA, 2022).

The targets, typical measures, and example suppliers to be investigated in the construction process: are outlined in the table below.

Reduced human health impact materials

Selection of interior materials will require minimisation of volatile organic compound (VOC) emissions, with particular attention to formaldehyde and other compounds associated with poor indoor air quality.

Target materials will include:

- Paints and coatings: All internal paints and coatings to target a maximum total VOC content of 16 g/L for flat interior wall paints and 100 g/L for non-flat coatings, consistent with the GBCA's referenced limits under AS/NZS 1580.
- Adhesives and sealants: All adhesives, sealants, and primers used in interior applications to target VOC content below 50 g/L for general-purpose adhesives and 250 g/L for construction adhesives (consistent with Green Star IEQ thresholds).
- Flooring and carpet: All carpet and resilient flooring products to

hold current certification under the Carpet Institute of Australia's Environmental Certification Scheme, or equivalent, demonstrating compliance with VOC emission limits.

- Composite wood and panel products: All composite wood products — including particleboard, MDF, plywood, and laminated timber — to target formaldehyde-free
- Insulation: All thermal and acoustic insulation used in interior applications to target formaldehyde binder free.

Table: Key embodied emissions materials and targets for improved procurement outcomes for each material

Material	Target	Key Initiatives	Example EPD /Source
Concrete	Target ≥30% reduction vs AusLCI baseline	SCM substitution (fly ash/GGBFS); structural optimisation; ≥30% manufactured sand as recycled aggregate	Holcim ECOPact, Adbri Futurecrete, Boral Envirocrete — EPD Australasia
Steel	Target EPD-based — GWP declared; EAF production	Preferred Electric Arc Furnace (EAF) with up to ≥90% re-cycled scrap; Material Circularity Indicator (MCI) score disclosed;	InfraBuild EPDs — EPD Australasia
Aluminium	Target EPD-based — GWP ≤8 kg CO ₂ e/kg	≥50% post-consumer recycled content; renewable-energy smelting preferred; mechanical fixing connections for future disassembly	Hydro CIRCAL, Capral — EPD Australasia

7. Sustainable materials and waste avoidance

Environmental Product Declarations — Measured and Reduced Long-Term Impacts

Environmental Product Declarations (EPDs) provide independently verified, standardised life cycle assessment data for building products, enabling transparent comparison of environmental performance across the full product life cycle — from raw material extraction through manufacture, transport, installation, use, and end of life. As a minimum the project will tender for options on key materials with EPDs, targeting concrete, steel and aluminium.

Preferred EPD requirements include:

- Verification standard: All EPDs should be independently verified and (registered with EPD Australasia)
- Product-specific data: Product-specific EPDs (rather than industry-average or sector EPDs) are required for concrete, structural steel, aluminium facade and cladding elements
- Life cycle scope: EPDs must declare, as a minimum, the Global Warming Potential (GWP) at Stages A1–A3 (cradle to gate). Where end-of-life credits are claimed (Stage D), the basis for those credits must be clearly stated and independently verified.
- Circularity disclosure: For steel and aluminium products, EPDs must disclose recycled content (pre- and post-consumer) and, where available, the Material Circularity Indicator (MCI) score to demonstrate readiness for future reuse or recycling.

Separately, for internal fit out materials and project timber use it is recommended that options are required in the tender for materials with independent certification of environmental impacts, such as GECA labelling, and FSC certification for timber used in the construction process.

Responsible construction and waste avoidance

Responsible construction

It is preferred that the head building contractor has an environmental management system consistent with AS/NZS ISO 14001 and commits to develop a Construction Environmental Management Plan for the project to be advised to all sub contractors (this may be conditioned by Council in the DA process).

Construction and demolition waste recycling

The development targets a minimum 90% average diversion of construction and demolition (C&D) waste from landfill across all stages of the works, including demolition (if applicable), excavation, and construction. This target applies to the total waste stream by mass and exceeds leading practice benchmarks established by the NSW EPA.

The following commitments will be implemented through a Construction Waste Management Plan (CWMP) prepared prior to commencement of works:

- Waste avoidance: Procurement practices will be optimised to reduce over-ordering and packaging waste, including prefabrication and off-site manufacturing where practicable to minimise on-site waste generation.
- Waste segregation: Separate waste streams will be maintained on site — ie: timber, metals, concrete/masonry, mixed recyclables, and residual waste — to maximise recovery and recycling rates.
- Diversion target: A minimum 90% diversion from landfill will be tracked by mass using weighbridge dockets and waste contractor receipts.

Designing in Waste Sorting and Storage Facilities

The project will provide adequately sized waste storage areas in the basement with separation of major waste streams aligned to City of Newcastle services.

We note the positive inclusion of a separate waste management area for food organic wastes that will avoid this waste going to landfill and creating unwanted methane emissions impactful to climate change.

A separate waste streaming area for e-waste should also be considered for occasional removal as required.

A Waste Management Plan will be developed for the project guiding the final sizing and location of facilities and providing a guide to future building operators.

8. Consultant Declaration

PROJECT DETAILS	
PROJECT NAME	
Application number	SSD-89869959
Address of subject land	10 Dangar Street, Wickham
APPLICANT DETAILS	
Applicant name	UPG Wickham Pty Ltd
Applicant address	Level 1, 180-186 Burwood Road, Burwood, NSW 2134
REPORT DETAILS	
Name of report this declaration relates	Ecologically Sustainable Development (ESD) Report for SSD- 89869959
Report reference no.	2502208
Report date	27 March 2026
Company name (inc. ABN / ACN)	Efficient Living Pty Ltd
Author name	Troy Daly
Author qualifications	Green Star Accredited Professional, Master of Urban and Regional Planning, Bachelor of Economics
Author address	Shop 6, 1/5 Collaroy St, Collaroy NSW 2097
DECLARATION BY CONSULTANT	
Name	Troy Daly
Registration no.	GBCA Contact ID 113992 as GSAP
Organization registered with	Green Building Council of Australia
Declaration	The undersigned declares that the Ecologically Sustainable Development Report for SSD- 89869959 : - has been prepared in accordance with the following policy, guidelines, or legislative requirements; - To address SEARs issued for SSD 89869959 and relevant in force NSW State planning legislation including the Sustainable Buildings SEPP; - contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the ESD Report relates; - does not contain information that is false or misleading subject to the limitation of final project information noted on page 1 of the report and any assumption notes throughout the report; - identifies and addresses the relevant Planning Secretary's environmental assessment requirements (SEARs) for the project; - identifies and addresses the relevant statutory requirements for the project, including any relevant matters for consideration in environmental planning instruments to which the ESD Report relates; - contains a consolidated summary of the proposed or necessary mitigation measures - should be read in conjunction with the Efficient Living Pty Ltd provided NatHERS and BASIX certification for the project.
Signature	
Date	31/3/2026



Key abbreviations/glossary

ESD: Ecologically Sustainable Development or often Environmentally Sustainable Development

COP: 'Co-efficient of performance' used to measure conversion of electrical energy into heating or cooling energy

GFA: Gross floor area

ACOP: 'Annualized co-efficient of performance' also used to measure conversion of electrical energy into heating or cooling energy but typically adjusted for local climate conditions

NatHERS: National Home Energy Rating Scheme—note only refers to thermal performance of the home

BASIX: Building Sustainability Index measuring thermal, total energy and water efficiency in the home—part of the Sustainable Buildings SEPP 2022

EV: Electric vehicle

PV/solar array: Solar panels using photo voltaic technology to convert solar radiation into electricity

IEQ: Indoor environmental quality usually referring to air, noise and light quality in the building

DA/SSDA: Development Application/ State Significant Development Application'

SEPP: State Environmental Planning Policy

LEP: Local Environmental Planning Policy

DCP: Development Control Plan

CC: Construction certificate

SEAR: Secretary's Environmental Assessment Requirement issued to support a SSDA

ADG: NSW Apartment Design Guide setting apartment design standards in the NSW Housing SEPP

VOC: 'Volatile organic compound' that is a chemical gas release from typically internal building surfaces and materials

HVAC: Heating, ventilation and air conditioning—also includes cooling processes

Section J: The energy efficiency section requirements of the National Construction Code

GBCA: Green Building Council of Australia—the owner of Green Star ratings for buildings and communities

NABERS: National Australian Built Environment Rating Scheme—providing ratings from actual water and energy consumption in buildings

WELS: Water efficiency labelling and standards scheme

GEMS: Greenhouse and Energy Minium Standards

MEPS: Minimum Energy Performance Standards (under GEMS)

SRI: Solar reflectance index used to measure reflection of solar radiation (and therefore heat)

EPD: Environmental Product Disclosure providing transparent information on environmental impacts

Emission scopes – A mechanism for classifying different sources of carbon/GHG emissions used in carbon accounting. There are three 'scopes'

Scope 1 covers direct emissions from on-site fuel combustion (e.g. diesel, natural gas and LPG).

Scope 2 covers indirect emissions from the consumption of purchased electricity, steam, heating and cooling.

Scope 3 covers indirect emissions from activities not owned or controlled by the reporting organisation, including production of fuels, electricity transmission losses, embodied carbon in construction and maintenance (including materials and products) tenant energy consumption, waste treatment, water treatment and travel to/from the building.

(adopted from Net Zero Technical Note—DPE 2023)



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