



ESD REPORT

ECOLOGICALLY SUSTAINABLE DEVELOPMENT

(Early Design Stage / SSD-95802958)

166-174 Blaxland Road, Ryde NSW 2112

Approx. 114-unit Residential Flat Building

Report No. EC 5924-ESD
Compilation Date: 04/06/2026
Prepared By: Manuel Basiri
Taylor Smith Consulting

SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

SEARS

STATE SIGNIFICANT DEVELOPMENT

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Ecologically Sustainable Development (ESD)

166-174 Blaxland Road, Ryde NSW 2112

Prepared under instructions from

Sasco Property

By

Manuel Basiri

Taylor Smith Consulting

info@taylorsmith.com.au

T: 02 9890 8002

PO Box 5044 Kingsdene NSW 2118

<https://work.gemma.app/QuoteRequest/TaylorSmithC>

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Manuel Basiri

BCA Section J DTS Consultant
J1V3 Computer Energy Modeller
B.Sc – M.Sc – MIEAust 3137731
AACS 4334621
DMN Accredited Assessor 12/1462
NABERS Accredited Assessor 20316
Office Energy / Water / Embodied Carbon
Software Competency;

- Design Builder / Energy Plus
- Better Building
- HERO



Grace Colville

Sustainability Consultant
Thermal Comfort Modeller
B.A - BASIX / NatHERS / ESD

Software Competency;

- BASIX
- HERO



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1.0 INTRODUCTION AND PURPOSE

This preliminary Environmental Sustainable Development (ESD) Report has been prepared to outline the sustainability objectives and environmental performance considerations associated with the proposed state significant multi-unit residential development at 166-174 Blaxland Road, Ryde NSW 2112. The report identifies opportunities to integrate Ecologically Sustainable Development principles into the design process, with a focus on improving energy and water efficiency, reducing environmental impacts, enhancing occupant comfort, and supporting long-term building performance.

The assessment has been undertaken with reference to relevant New South Wales planning legislation, sustainability frameworks, and industry best-practice guidelines, including applicable BASIX, NCC, and local planning requirements. This report establishes a framework for incorporating sustainability initiatives throughout the ongoing development of the project and supports the planning approval process by demonstrating the project's commitment to environmentally responsible design outcomes.

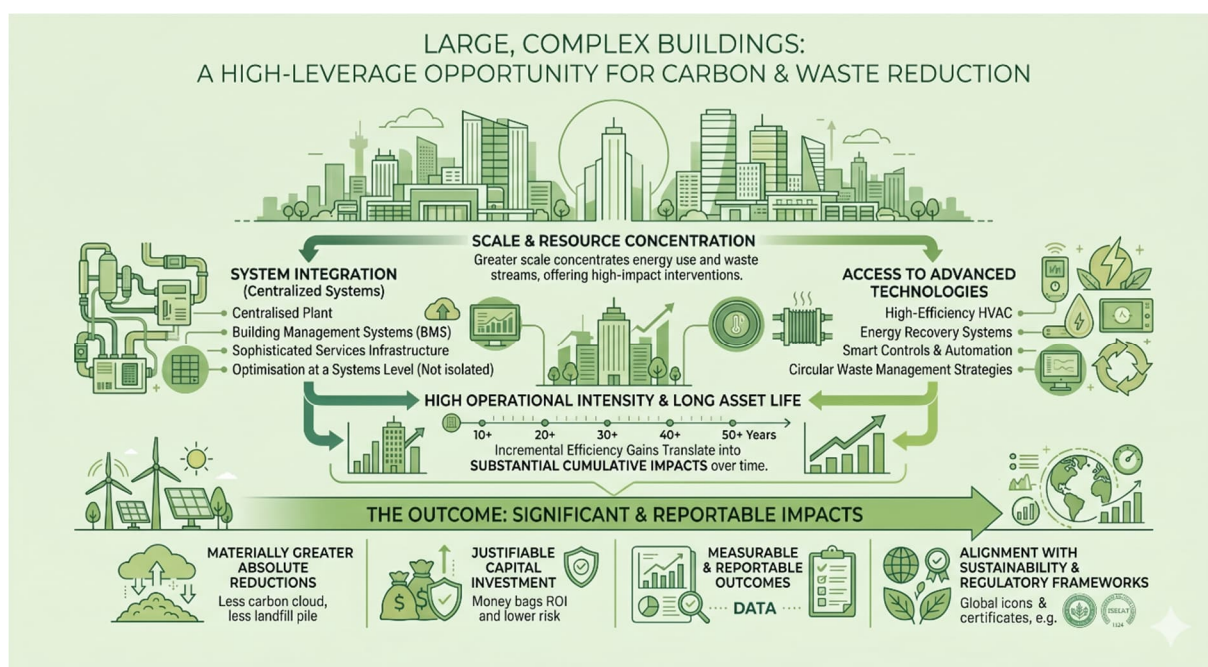
1.1 PURPOSE OF THIS REPORT

The preliminary Environmental Sustainable Development (ESD) Statement has been prepared to demonstrate how sustainability principles will be considered in the proposed development throughout the design process. The statement provides an initial overview of the project's environmental performance and identifies key opportunities to incorporate sustainable design measures that respond to the site context, relevant planning controls, and applicable sustainability frameworks.

This preliminary ESD Statement establishes a foundation for the ongoing development of the project, that will be refined during subsequent design stages. It is intended to assist the consent authority in understanding the project's overall commitment to sustainability and to ensure that ESD considerations are embedded within the design as it progresses toward detailed documentation and construction.

Australia's current national climate change obligations under international climate agreements, primarily the United Nations Framework Convention on Climate Change and the Paris Agreement, require it to set, implement, and progressively strengthen national emissions reduction targets through Nationally Determined Contributions (NDCs). Australia has committed to reducing emissions by 43% below 2005 levels by 2030 and achieving net zero by 2050, with

these targets embedded in domestic law via the Climate Change Act 2022. It must regularly report emissions data, progress, and policies through a transparent UN framework, while also pursuing adaptation strategies and contributing to international climate finance and cooperation. Although the agreements do not impose fixed penalties for failing to meet targets, they create binding procedural obligations such as reporting and increasing ambition over time alongside strong diplomatic and reputational pressures. Collectively, these requirements ensure Australia actively participates in global efforts to limit warming while maintaining flexibility in how it achieves its commitments. This ESD report serves as one of the regulatory instruments in service of the broader national and international climate obligations and ambitions of the Commonwealth of Australia.



Large, Complex Buildings present a distinct and high-leverage opportunity to deliver meaningful carbon and waste reduction outcomes, primarily due to their scale, system integration capacity, and access to advanced technologies. Unlike smaller buildings, they typically incorporate centralised plant, building management systems, and sophisticated services infrastructure, enabling optimisation at a systems level rather than through isolated interventions. This allows for the deployment of high-efficiency HVAC, energy recovery, smart controls, and circular waste management strategies that achieve materially greater absolute reductions. In addition, their higher operational intensity and longer asset life cycles mean that incremental efficiency gains translate into substantial cumulative impacts over time. Consequently, significant buildings are not only better positioned to justify the capital investment required for decarbonisation measures, but also to generate measurable, reportable outcomes aligned with broader sustainability and regulatory frameworks.

1.2 SCOPE OF ESD ASSESSMENT

This Ecologically Sustainable Development (ESD) Report provides an assessment of the proposed development against relevant sustainability objectives, statutory requirements, and industry best-practice frameworks applicable within New South Wales.

The scope of the ESD assessment encompasses the planning, design, and (where relevant) operational phases of the development. It identifies opportunities to improve environmental performance, reduce resource consumption, and enhance resilience to climate change, while remaining adaptable to a wide range of development types and scales.

The assessment has been undertaken with reference to key legislative and policy frameworks, including the Environmental Planning and Assessment Act 1979, the Environmental Planning and Assessment Regulation 2000, the State Environmental Planning Policy (Sustainable Buildings) 2022, and the National Construction Code 2022, as well as recognised sustainability rating systems such as Green Star and National Australian Built Environment Rating System (NABERS), and, where applicable, any local council sustainability guidelines.

This report addresses, where applicable:

- Compliance with relevant statutory planning controls, sustainability policies, and energy efficiency provisions.
- Integration of ESD principles into the design and delivery of the development.
- Key environmental performance areas, including energy, water, materials, indoor environmental quality, waste, and emissions.
- Climate change mitigation and adaptation strategies
- Alignment with recognised benchmarks, rating tools, and best-practice guidelines.

The scope of assessment is primarily based on available project information at the time of reporting, which may include concept designs, architectural drawings, and consultant inputs. As such, the assessment represents a high-level evaluation of ESD opportunities and performance outcomes and may be subject to refinement as the design progresses.

Where specific targets, ratings, or commitments are nominated, these are indicative and intended to guide the development toward improved sustainability outcomes. Detailed modelling, verification, and certification (where applicable) are expected to be undertaken in subsequent design stages.

This report is intended to support planning approval processes and provide a framework for integrating ESD outcomes throughout the lifecycle of the development.

2.0 PROJECT DESCRIPTION

The proposed development at 166–174 Blaxland Road, Ryde NSW 2112 comprises a multi-residential apartment development consisting of approximately 114 apartments across two building forms. The development includes a 10-storey front building addressing Blaxland Road and a 4-storey rear building located toward the rear of the site. Four basement levels are proposed to accommodate vehicle parking, servicing, and associated building infrastructure. The project has been designed to provide a contemporary residential development that responds to the surrounding urban context while incorporating environmentally sustainable design initiatives relating to energy efficiency, water conservation, indoor environmental quality, and resource management.

2.1 SITE LOCATION AND CONTEXT

The subject site is located at 166–174 Blaxland Road, Ryde NSW 2112, within the City of Ryde local government area, approximately 13 kilometres north-west of the Sydney CBD. The site occupies a prominent position along Blaxland Road, a key arterial corridor that provides connectivity to surrounding centres including Top Ryde, North Ryde, West Ryde, and Gladesville. The surrounding locality is characterised by a mix of residential flat buildings, mixed-use developments, established low-density residential dwellings, and supporting commercial and community infrastructure. Nearby amenities include the Top Ryde City shopping precinct, public transport services, educational facilities, recreational open space, and the Ryde Aquatic Leisure Centre. The site benefits from strong access to the broader Sydney road network via Devlin Street, Victoria Road, and the A3 corridor, supporting regional connectivity and public transport accessibility. The broader Ryde locality is undergoing continued urban renewal and increased residential density, particularly along major transport corridors such as Blaxland Road.

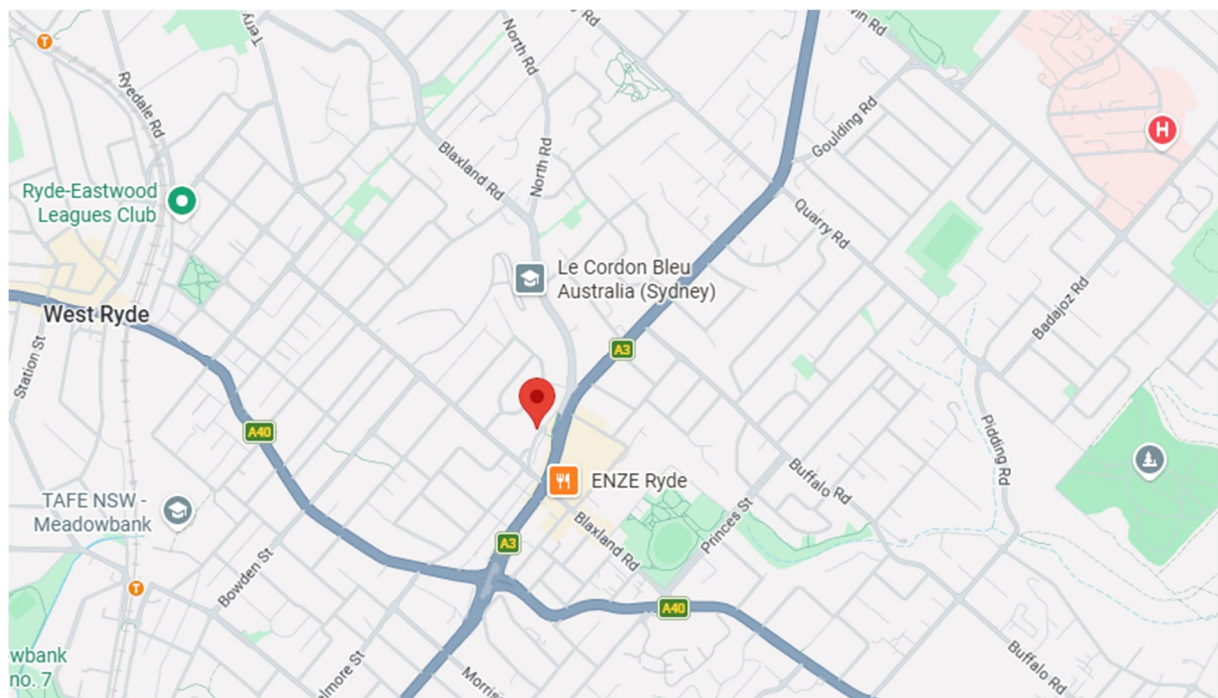
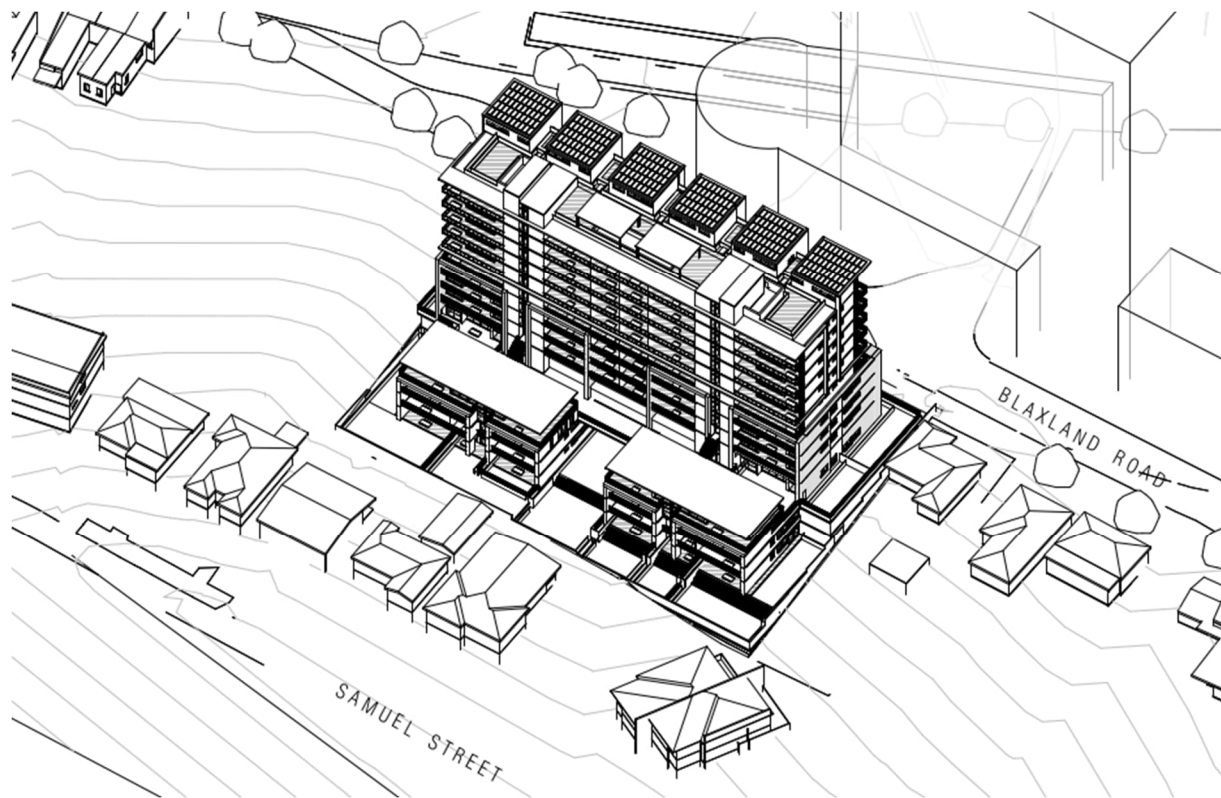


Figure 1: Site Location for 166-174 Blaxland Road, Ryde NSW 2112

2.2 DEVELOPMENT OVERVIEW

The proposed development at 166–174 Blaxland Road, Ryde NSW 2112 comprises a contemporary multi-residential apartment development incorporating approximately 100 residential apartments across two separate building forms. The development includes a 10-storey front building oriented toward Blaxland Road and a 4-storey rear building positioned toward the rear of the site, providing a transition in scale to surrounding residential interfaces.

The proposal also includes four basement levels accommodating vehicle parking, bicycle parking, building services, storage areas, waste management facilities, and associated servicing infrastructure. Communal open space and landscaped areas are proposed throughout the development to enhance residential amenity, urban greening, and environmental performance outcomes.

The development has been designed with consideration to environmentally sustainable design principles, including energy efficiency, passive solar access, water conservation, indoor environmental quality, sustainable material selection, and waste minimisation. The proposal seeks to contribute positively to the ongoing urban renewal of the Ryde locality while delivering improved residential housing supply in proximity to transport, services, and employment centres.



Figure 2 : CURZON + PARTNERS 3D Rendering of development South-East Elevation

2.3 KEY PROJECT PARAMETERS

Parameter	Description
Project Address	166–174 Blaxland Road, Ryde NSW 2112
Development Type	Multi-residential apartment development
Proposed Dwellings	Approximately 114 apartments
Basement Levels	4 proposed basement levels
Land Use	Residential flat building
Communal Open Space	Landscaped communal areas proposed
Sustainability Objectives	Energy efficiency, water conservation, waste reduction, improved indoor environmental quality, and sustainable material selection
Local Government Area (LGA)	City of Ryde Council

3.0 STATUTORY FRAMEWORK & REFERENCE STANDARDS

This report has been prepared with reference to the relevant statutory planning framework, environmental legislation, and sustainability standards applicable within New South Wales. The assessment considers the requirements of the Environmental Planning and Assessment Act 1979, the State Environmental Planning Policy (Sustainable Buildings) 2022, the National Construction Code (NCC), Secretary’s Environmental Assessment Requirements (SEARs), and recognised industry sustainability frameworks including Green Star and NABERS.

The report outlines how Ecologically Sustainable Development (ESD) principles have been incorporated into the proposed development through measures relating to energy efficiency, water conservation, materials selection, emissions reduction, indoor environmental quality, and climate resilience. It also identifies the relevant compliance pathways, sustainability benchmarks, and performance objectives that inform the design and support alignment with current planning policy and best-practice environmental outcomes.

3.1 NSW PLANNING FRAMEWORK

This report has been prepared regarding the NSW planning framework, including the Environmental Planning and Assessment Act 1979 and associated regulations, policies, and guidelines.

- Identify how the proposed development responds to the objectives of the NSW planning system, including the promotion of orderly and sustainable development, environmental protection, and social and economic wellbeing.
- Demonstrate consistency with relevant State, Regional, and Local planning strategies and sustainability objectives, where applicable.
- Outline how Ecologically Sustainable Development (ESD) principles are integrated into the planning, design, and operational phases.
- Describe how the development considers land use compatibility, resource efficiency, and environmental constraints in accordance with applicable planning controls.

3.2 SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARs)

This report addresses the Secretary's Environmental Assessment Requirements (SEARs) under the category of Ecologically Sustainable Development (ESD), with reference to relevant project documentation. This regulation targets the substantial benefits and opportunities associated with optimisation and improvement available exclusively to large and complex construction projects and buildings as previously explained in this report.

- Describe how the principles of ESD (as defined in Clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) are incorporated into the design and operational phases of the development.
- Provide a framework demonstrating how the development adopts national best-practice sustainable building principles to improve environmental performance and minimise ecological impact. This should include consideration of waste minimisation, futureproofing, sustainable and low-carbon materials, energy and water efficiency, and renewable energy integration.
- Include an integrated water management approach, detailing alternative water sources, potable and non-potable uses, and water-sensitive urban design measures.
- Demonstrate how environmental design is addressed in accordance with relevant NSW Government guidelines and industry best practice.
- Provide preliminary consideration of building performance in response to climate change, including risk mitigation strategies and reference to recognised benchmarks such as Green Star Performance.
- Include an assessment against a recognised ESD rating system (e.g. Green Star or equivalent).

- Provide a statement outlining how the development responds to projected climate change impacts, including those identified by CSIRO, and alignment with current NSW SEARs expectations.

3.3 STATE ENVIRONMENTAL PLANNING POLICY (SUSTAINABLE BUILDINGS) 2022

This report addresses the requirements of the State Environmental Planning Policy (Sustainable Buildings) 2022.

- Demonstrate how the proposed development meets applicable provisions relating to energy efficiency, water use, thermal performance, and embodied emissions, where relevant.
- Identify applicable compliance pathways (e.g. BASIX, NABERS, or other relevant mechanisms) and outline how these requirements are achieved.
- Describe design measures to reduce operational energy demand, greenhouse gas emissions, and potable water consumption.
- Outline incorporation of passive design principles, efficient building systems, and sustainable material selection.
- Summarise certification, documentation, and compliance requirements to be addressed at relevant project stages.

3.4 NATIONAL CONSTRUCTION CODE (NCC) VOLUME 1 – SECTION J

This report considers the energy efficiency provisions of the National Construction Code 2022, specifically, Volume 1, Section J Energy Efficiency.

- Identify the applicable NCC building classification and climate zone and outline relevant Section J requirements.
- Demonstrate how the design achieves compliance with building fabric, glazing, sealing and services efficiency provisions.
- Describe the approach to energy efficiency through Deemed-to-Satisfy and/or Performance Solution pathways.
- Provide a summary of energy modelling or J1V3 assessments, where applicable.
- Outline integration of efficient building services, including HVAC, lighting, and control systems, to support improved performance outcomes.

3.5 GREEN STAR / NABERS COMMITMENT SUMMARY FRAMEWORKS

This report considers the application of recognised sustainability rating systems, including Green Building Council of Australia's Green Star and the National Australian Built Environment Rating System, NABERS.

- Identify any targeted Green Star and/or NABERS commitment agreement ratings and the rationale for their selection.
- Describe how the development aligns with rating tool criteria, including energy, water, materials, indoor environment quality, and emissions.
- Outline key design strategies implemented to achieve targeted rating outcomes.
- Summarise modelling, benchmarking, and verification processes required to support certification.
- Describe how operational performance will be monitored and managed (particularly for NABERS).
- Where certification is not pursued, demonstrate how the principles and benchmarks of these frameworks inform the design to achieve best-practice ESD outcomes.

3.6 – Sustainable Buildings SEPP – Residential Development Requirements (Requirements subject to BASIX/NatHERS assessment)

Component		Requirement	Report
1	BASIX	- Minimum Energy Target: 60% - Minimum Water Target: 40% - Introduction and optimum use of renewable energy sources - Introduction and optimum use of recycled water sources	 BASIX[®] Certificate Building Sustainability Index www.basix.nsw.gov.au Multi Dwelling Certificate number [REDACTED] This certificate confirms that the proposed development will meet the NSW government's requirements for sustainability, if it is built in accordance with the commitments set out below. Terms used in this certificate, or in the commitments, have the meaning given by the document entitled "BASIX Definitions" dated 10/09/2020 published by the Department. This document is available at www.basix.nsw.gov.au Secretary [REDACTED] Date of issue [REDACTED] To be valid, this certificate must be submitted with a development application or lodged with a complying development certificate application within 3 months of the date of issue. NSW GOVERNMENT
2	NatHERS	- Individual apartment NatHERS ratings no less than 7 stars - Average apartment NatHERS rating of 7 stars - Satisfying BASIX Individual heating and cooling load caps according to the current version of the BASIX thermal comfort protocol	 7.0 NATIONWIDE HOUSE ENERGY RATING SCHEME ENERGY RATING
3	BCA Section J / DTS / J1V3	- Energy Efficiency Provisions - Computer modelling using recognised software by skilled energy assessors - Lighting Calculator for all Common Areas and Basements	 Section J Report Includes: • Energy Modelling • Building Assessment • Compliance Pathway • Recommendations

4.0 APPLICATION OF ESD PRINCIPLES

This section demonstrates how the principles of Ecologically Sustainable Development (ESD), as defined under Clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 have been applied to the proposed development.

4.1 PRECAUTIONARY PRINCIPLE

The precautionary principle requires that where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used to delay appropriate mitigation measures.

- A risk-based approach has been adopted to identify potential environmental impacts at an early stage and implement appropriate mitigation measures where practicable.
- Conservative design assumptions have been applied where uncertainty exists, particularly in relation to climate change, resource availability, and long-term performance.
- Passive design measures and inherently low-impact strategies have been prioritised to reduce environmental risk.
- Resilient and adaptable systems have been incorporated to respond to potential future environmental conditions.
- ESD initiatives will be subject to ongoing review and refinement as the design progresses and additional information becomes available.

4.2 INTER-GENERATIONAL EQUITY

Inter-generational equity requires that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations.

- The development is designed to minimise long-term environmental impacts, including greenhouse gas emissions, resource consumption, and waste generation.
- Durable, adaptable, and flexible design solutions have been incorporated to extend asset life and reduce the need for future redevelopment.
- Efficient use of energy, water, and materials has been prioritised to conserve natural resources.
- Climate-responsive and future-proofing measures have been incorporated, informed by projections from the Commonwealth Scientific and Industrial Research Organisation.
- Design decisions consider whole-of-life performance and lifecycle impacts.

4.3 CONSERVATION OF BIOLOGICAL DIVERSITY AND ECOLOGICAL INTEGRITY

This principle requires the conservation of biological diversity and maintenance of ecological integrity.

- Existing ecological values and environmental constraints have been identified and considered in the design.
- Potential impacts on native flora, fauna, and habitats are avoided, minimised, or mitigated where present.
- Landscape design incorporates native and climate-resilient species to support biodiversity outcomes.

- Green infrastructure measures are incorporated where appropriate to enhance ecological performance.
- Water-sensitive urban design measures are integrated to improve stormwater quality and reduce impacts on receiving environments.
- Opportunities to enhance ecological connectivity and urban greening have been considered.

4.4 IMPROVED VALUATION, PRICING, AND INCENTIVE MECHANISMS

This principle requires that environmental factors are appropriately considered in the valuation of assets and services.

- Lifecycle costing has been considered in the selection of materials, systems, and design strategies to balance capital and operational expenditure.
- Resource-efficient design measures have been prioritised to reduce ongoing energy, water, and maintenance costs.
- The development aligns with recognised sustainability frameworks, including Green Star and National Australian Built Environment Rating System, to support measurable performance outcomes.
- Opportunities for incentives and funding mechanisms that support sustainable outcomes have been considered where applicable.
- Environmental performance will be supported through appropriate monitoring, reporting, and benchmarking measures.

5.0 PRELIMINARY SUSTAINABILITY INITIATIVES

This section outlines preliminary sustainability initiatives identified for the proposed development, based on the project's current design stage. The strategies described are indicative and intended to guide the integration of Ecologically Sustainable Development (ESD) principles, with further refinement anticipated during subsequent design development.

5.1 ENERGY EFFICIENCY

This section provides a high-level overview of energy-related design opportunities, including passive design responses, building fabric optimisation, and efficient building systems. It also identifies potential opportunities for on-site renewable energy integration to reduce operational energy demand and associated greenhouse gas emissions.

Objectives include:

- To improve the efficient use of energy, by ensuring development demonstrates design potential for ESD initiatives at the planning stage.
- To reduce total operating greenhouse gas emissions during construction, commissioning and lifespan of the Proposed Development.
- To reduce energy peak demand through particular design measures (e.g., appropriate building orientation, shading to glazed surfaces, optimise glazing to exposed surfaces, space allocation for solar panels and external heating and cooling systems).

ESD Initiatives for Energy Efficiency

	Initiative	Proposed Strategy
1	Passive Solar Orientation	- Northwest glazing setback (2.4m): The recessed northwest-facing glazing is designed to reduce direct exposure to low-angle sun, which is typically associated with higher heat gain and increased cooling demand in summer. By setting glazing back approximately 2.4 meters, the design creates a self-shading effect that limits solar penetration during peak heat periods while still allowing access to daylight and outward views. This passive shading strategy improves overall thermal performance of northwest-facing apartments, contributing to reduced reliance on mechanical cooling systems and improved occupant comfort. - Louvre balustrades (Northwest apartments): Louvre-style balustrades are incorporated into southwest-facing apartments to provide an additional layer of external shading. These elements are designed to filter direct solar radiation while maintaining visual permeability, daylight access, and outward views. The adjustable or fixed louvre configuration assists in reducing glare and moderating internal heat gain during summer months, while still allowing beneficial daylighting in winter periods. - Approx. 30% east-facing living spaces: The building layout has been designed to orient approximately half of the primary living areas toward the east, reducing exposure to intense western afternoon sun, which is a key driver of peak indoor temperatures in summer. East-facing orientation allows for softer morning sunlight and generally cooler thermal conditions during occupied evening periods. - These passive design initiatives align with the City of Ryde Net Zero Emissions Pathway, which supports reductions in operational greenhouse gas emissions through climate-responsive building design and improved energy efficiency. The measures also support the objectives of the Ryde Resilience Plan 2030 by improving resilience to heatwave conditions and reducing peak energy demand associated with cooling loads during extreme temperature events.

2	External Shading Strategies	- Northwest glazing setback (2.4m): The recessed glazing to northwest-facing façades is a key passive external shading strategy, designed to reduce direct exposure to low-angle sun. The 2.4m setback creates a deep façade recess that provides self-shading to window openings during peak solar periods, significantly limiting unwanted solar heat gain. - Louvre balustrades: Louvre balustrades are incorporated as integrated external shading elements to southwest-facing apartments. These balustrades function as a semi-permeable shading screen, filtering direct solar radiation before it reaches the glazing while maintaining daylight access and ventilation potential. - The integration of passive shading strategies supports the City of Ryde's commitment to improving urban resilience and reducing emissions associated with residential energy consumption. These initiatives contribute to broader Council objectives relating to climate adaptation, improved thermal comfort, and reduced dependence on fossil-fuel-based energy infrastructure.
3	Opportunities for Natural Ventilation	- The building design has been optimized to maximize opportunities for natural and crossflow ventilation, supporting improved indoor air quality and reduced reliance on mechanical cooling systems. The layout and apartment configurations facilitate effective air movement through habitable spaces, with a strong proportion of units achieving dual aspect conditions where possible. The design exceeds the Apartment Design Guide (ADG) benchmark for natural ventilation, achieving approximately 68% of apartments with effective natural ventilation compared to the 60% minimum requirement. - This enhanced performance supports passive cooling by enabling air exchange between external façades, particularly in apartments with opposing or offset openings. The increased availability of cross-ventilation improves thermal comfort during shoulder and warmer periods, reduces peak internal temperatures, and contributes to lower operational energy demand associated with air conditioning use.
4	Heating and Cooling Systems	- The development will incorporate energy-efficient ducted air conditioning systems within each apartment, designed to provide effective and flexible thermal comfort year-round. The systems will be configured to allow for zoned temperature control, enabling occupants to condition only occupied areas rather than entire dwellings. This approach supports improved operational efficiency by reducing unnecessary energy consumption associated with conditioning unused spaces. - In addition, all bedrooms will be provided with ceiling fans to promote occupant comfort during warmer periods and reduce reliance on mechanical cooling. The provision of ceiling fans will enable occupants to utilise low-energy air movement as an alternative to air conditioning under suitable conditions, contributing to lower operational energy demand and improved energy efficiency outcomes. - The provision of zoned control, ceiling fans, and high-efficiency system selection will assist in reducing overall operational energy demand when compared to non-zoned or less efficient systems. The design will be coordinated to ensure systems are appropriately sized for apartment layouts and will be supported by passive design measures throughout the building to further minimise heating and cooling loads where appropriate.

5	Proposed Renewable Energy Systems	- The development proposes the inclusion of a shared rooftop solar photovoltaic (PV) system with an approximate capacity of 40kW, designed to generate renewable electricity on-site and reduce reliance on grid-supplied energy. This system will be located on the rooftop where optimal solar exposure is available, maximizing energy generation efficiency throughout the day. - The proposed shared arrangement allows generated electricity to be distributed across multiple apartments and common building services, supporting a reduction in overall operational energy demand and associated greenhouse gas emissions. By offsetting daytime electricity consumption, particularly from common area loads and base building services, the system contributes to improved building energy performance and reduced reliance on fossil-fuel-based electricity. - While battery storage is not proposed at this stage, the system is designed to optimize direct on-site consumption during peak solar generation periods, improving overall self-consumption efficiency. The inclusion of rooftop PV supports broader sustainability objectives by integrating renewable energy generation into the building fabric, enhancing long-term operational performance and contributing to compliance with relevant ESD and energy efficiency targets.
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5.2 WATER EFFICIENCY

This section outlines preliminary water efficiency measures and strategies to reduce potable water consumption. It also identifies opportunities for rainwater harvesting, reuse, and integration of water-sensitive urban design principles where applicable.

Objectives include:

- To reduce the impact of stormwater run-off.
- To improve the water quality of stormwater run-off.
- To achieve best practice stormwater quality outcomes.
- To incorporate the use of water sensitive urban design, including stormwater re-use

ESD Initiatives for Water Efficiency

	Initiative	Proposed Strategy
1	Water Efficiency Fixtures and Fittings	- The development will utilise the NSW BASIX assessment tool to demonstrate compliance with the applicable minimum water reduction targets. Water-efficient fixtures and fittings, including low-flow taps, showerheads, and efficient appliances with appropriate WELS ratings, will be incorporated throughout the development to reduce potable water consumption and improve overall water efficiency. These measures will be integrated into the architectural and hydraulic design to support a practical and sustainable water management outcome.

2	Rainwater Tank	- The development will include a rainwater harvesting system to reduce reliance on potable water and improve overall water efficiency. A rainwater tank in the order of 10 m³ or greater (subject to hydraulic design) is proposed, with collected water intended for non-potable uses such as irrigation (subject to final hydraulic design). The system will be integrated into the building services design to maximise reuse opportunities and support sustainable water management outcomes.
3	Recycled Water End Uses	- The proposed rainwater harvesting system will capture and reuse stormwater runoff for non-potable applications, including landscape irrigation, external garden hose taps, and car washing facilities. This strategy will reduce reliance on mains potable water and support improved on-site water efficiency outcomes. - The reuse strategy prioritises irrigation demand across landscaped areas to support plant health and reduce potable water consumption, while also providing supplementary water for external cleaning purposes. - These measures align with the objectives of the Ryde Urban Forest Strategy and Ryde Biodiversity Plan by supporting urban greening, vegetation resilience, and long-term landscape sustainability within the Ryde LGA.

4	Stormwater Management	- The proposed stormwater management strategy has been developed in accordance with the Integrated Water Management Plan (IWMP) prepared for the development and is designed to comply with Ryde City Council requirements, Australian Rainfall and Runoff, AS/NZS standards, and relevant best-practice engineering principles. - Stormwater will be managed through a fully integrated approach addressing water quantity, water quality, and erosion and sediment control across both construction and operational phases of the development. - Stormwater conveyance and quantity management will be achieved through a designed pit and pipe network that collects and conveys runoff to a formal legal point of discharge via council's existing stormwater infrastructure within the adjoining drainage easement. The system is designed to accommodate the 20-year Average Recurrence Interval (ARI) minor storm event without surcharge and the 100-year ARI major storm event without uncontrolled discharge to adjoining properties. - To manage peak flows, an On-Site Detention (OSD) system is proposed, with a required storage volume of approximately 45 m³ based on hydraulic modelling. The OSD system will attenuate stormwater flows so that post-development discharge rates do not exceed the permissible site discharge criteria (5-year ARI), with controlled release via an orifice and overflow weir arrangement. - Stormwater quality treatment will be achieved through a Water Sensitive Urban Design (WSUD) treatment train, incorporating Stormwater360 Stormfilter cartridges and associated treatment devices. This system is designed to treat runoff prior to discharge and achieve compliance with Council's pollutant reduction targets, including the removal of gross pollutants, total suspended solids, total phosphorus, and total nitrogen. Treatment is supported by MUSIC modelling, which demonstrates that the proposed system achieves or exceeds all required environmental performance targets. - Erosion and sediment control measures will be implemented in accordance with <i>Managing Urban Stormwater – Soils and Construction</i> (Landcom). These measures include sediment fencing along site boundaries, construction vehicle wheel wash and shaker grid systems at site exits, and protection of existing drainage infrastructure inlets. These controls will be maintained throughout construction to minimise sediment transport, prevent downstream water contamination, and protect surrounding properties. - Overall, the proposed stormwater strategy delivers a controlled, compliant, and environmentally responsible drainage solution that improves water quality outcomes, manages peak flows, and mitigates construction-phase impacts, while integrating with existing council infrastructure. - These initiatives support the Ryde Biodiversity Plan through improved water quality outcomes and reduced impacts on downstream receiving environments. The integrated stormwater management approach also aligns with the Ryde Resilience Plan 2030 by improving resilience to increasing storm intensity and flood-related climate risks.
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5.3 INDOOR ENVIRONMENTAL QUALITY

This section considers opportunities to enhance indoor environmental quality, including access to daylight, natural ventilation, and occupant comfort. It also identifies key considerations relating to thermal comfort, indoor air quality, and overall occupant wellbeing.

Objectives include:

- To achieve a healthy indoor environment quality for the wellbeing of building occupants, including the provision of fresh air intake, cross ventilation, and natural daylight.
- To achieve thermal comfort levels with minimised need for mechanical heating, ventilation and cooling.
- To reduce indoor air pollutants by encouraging use of materials with low toxic chemicals.
- To reduce reliance on mechanical heating, ventilation, cooling and lighting systems.
- To minimise noise levels and noise transfer within and between buildings and associated external areas.

ESD Initiatives for IEQ

	Initiative	Proposed Strategy
1	Daylight Access	- The proposed development has been designed to maximise daylight access to habitable rooms through careful building siting, apartment planning, and the incorporation of generous open space interfaces. Residential apartments are arranged along the site perimeter and oriented toward external façades, allowing primary living areas and bedrooms to achieve direct access to natural daylight. The design incorporates substantial setbacks, landscaped boundary zones, and a centrally located communal open space to maintain clear solar access corridors and minimise obstruction between built forms. - The building layout separates residential wings around open-air circulation and communal areas, enabling increased façade exposure and opportunities for cross-ventilation and daylight penetration. Habitable rooms are generally located adjacent to windows and external walls, reducing reliance on borrowed light and improving internal environmental quality. The central communal open space and widened internal separation distances further enhance daylight distribution to lower-level apartments and shared circulation spaces. - The proposed basement and podium configuration consolidates vehicle access and parking below the primary residential levels, allowing the upper residential floors to maintain improved solar orientation and uninterrupted façade access. Landscaped setbacks and open space areas along the site boundaries also assist in reducing overshadowing impacts and improving daylight availability to adjoining dwellings and communal spaces. - Collectively, these design measures support improved occupant amenity, reduce dependence on artificial lighting during daytime hours, and contribute to the overall environmental performance of the development in accordance with best-practice ESD principles. - These design measures support improved occupant wellbeing and residential liveability outcomes consistent with the objectives of the Ryde Resilience Plan 2030 relating to health, comfort, and community resilience.
2	Natural Ventilation and Indoor Air Quality	- The proposed development has been designed to promote natural ventilation and improved indoor air quality through effective apartment orientation, generous window provision, and open building separation. Apartments are generally located along external façades with operable windows to habitable rooms, allowing access to fresh air and natural airflow. - A high proportion of apartments incorporate dual frontage or corner layouts, enabling cross-ventilation through openings on multiple sides of the dwelling. This supports passive cooling, improves occupant comfort, and reduces reliance on mechanical ventilation and air conditioning systems. - The design maximises window areas to living rooms and bedrooms to enhance both ventilation and daylight access. Open communal spaces, landscaped setbacks, and separation between building elements further assist in maintaining airflow throughout the development and improving overall indoor environmental quality. - These passive design measures support healthier indoor environments, reduced energy consumption, and improved residential amenity in accordance with best-practice ESD principles.

3	Acoustic Considerations	- The proposed development has been designed to respond to the acoustic conditions associated with Blaxland Road through a combination of building planning, apartment orientation, and façade treatments informed by the architectural layout and acoustic assessment recommendations. The building configuration positions a substantial portion of communal open space, internal circulation areas, and building services between the primary road interface and residential apartments, assisting in reducing direct traffic noise exposure to habitable rooms. - Apartment layouts have been carefully arranged to support improved acoustic amenity, with many bedrooms and quieter residential spaces oriented toward internal landscaped areas, side setbacks, and communal open spaces where possible. The separation of the residential wings and the incorporation of recessed lobby and circulation zones further assist in buffering noise transmission from external sources. - Road-facing façades will incorporate enhanced acoustic glazing and high-performance window and door seals to minimise airborne noise ingress from surrounding traffic movements. Where apartments are directly exposed to the road frontage, upgraded façade and building envelope treatments will be implemented to maintain acceptable internal noise levels and occupant comfort in accordance with the acoustic assessment recommendations. - The podium and basement parking configuration consolidates vehicle movement and servicing functions below the primary residential levels, assisting in separating traffic-related activity from occupied residential spaces. Landscaped setback areas and building articulation along the site boundaries also contribute to reducing reflected noise impacts and improving overall residential amenity. - Collectively, these measures will support a high standard of internal acoustic comfort and residential liveability while responding appropriately to the site's urban arterial road context.
4	Thermal Comfort Targets	- The development will be designed to achieve appropriate levels of thermal comfort in accordance with the minimum requirements of the Nationwide House Energy Rating Scheme (NatHERS) for residential apartment buildings. The design will target compliance with relevant benchmark performance standards to ensure acceptable internal thermal conditions are achieved year-round. - Passive design principles will be incorporated into the building form and façade design, including appropriate orientation, glazing selection, shading strategies, and thermal insulation to reduce reliance on mechanical heating and cooling systems. These measures aim to optimise indoor comfort levels while improving overall building energy performance. The final design will be refined through detailed NatHERS modelling to confirm compliance and identify opportunities for further performance improvements where feasible. - These measures align with the City of Ryde Net Zero Emissions Pathway through reductions in operational energy demand and support climate-responsive residential development outcomes.
5	Glazing	- The development will incorporate glazing selections that support compliance with minimum energy efficiency requirements, including those outlined under NatHERS and relevant BASIX commitments. Glazing performance will be optimised through the selection of appropriate thermal performance ratings, including consideration of U-values, solar heat gain coefficients, and visible light transmission. - The façade design will balance daylight access with thermal control, with higher-performance glazing to be utilised where required, particularly on more exposed elevations such as those facing Blaxland Road. This will assist in reducing unwanted heat gain and heat loss, improving internal thermal comfort, and reducing reliance on mechanical heating and cooling systems. Final glazing specifications will be confirmed during detailed design to ensure compliance with applicable energy efficiency targets and to support overall ESD outcomes.

5.4 MATERIALS EFFICIENCY

This section outlines indicative strategies for the selection and use of sustainable materials. Consideration is given to reducing embodied environmental impacts through material efficiency, durability, and the use of low-impact or responsibly sourced materials.

Objectives include:

- To minimise the environmental impacts of materials used by encouraging the use of materials with a favourable lifecycle assessment.
- Use of materials with small embodied emission content.
- Use of materials with recycled content.

ESD Initiatives for Materials

	Initiative	Proposed Strategy
1	Recycled or Reused Materials	- The development will incorporate sustainable material management practices through the reuse of excavated material generated on-site. Where suitable, cut and fill earthworks will be balanced to maximise the reuse of excavated soils within the site, reducing the need for imported virgin fill material and minimising construction waste generation. - This approach supports resource efficiency by reducing material transport requirements, associated embodied carbon emissions, and disposal to landfill. All reused materials will be assessed for suitability in accordance with relevant engineering and geotechnical requirements to ensure compliance with structural and environmental standards. This strategy contributes to improved sustainability outcomes through reduced material consumption and more efficient site earthworks management. - In addition to material reuse initiatives, the project will seek opportunities during detailed design and procurement to incorporate sustainable and lower-carbon construction materials. Potential measures include the specification of concrete containing supplementary cementitious materials (SCMs), recycled-content steel products, responsibly sourced timber, and materials with verified environmental credentials such as Environmental Product Declarations (EPDs), where feasible and commercially practical. - Preference will also be given to locally sourced materials where appropriate to reduce transport-related emissions and support resource efficiency objectives. Consideration of embodied carbon reduction opportunities throughout the material selection process will assist in minimising the development's lifecycle environmental impacts. - These initiatives align with the City of Ryde Net Zero Emissions Pathway through reductions in embodied emissions associated with material production, transport, and construction activities, while also supporting broader Council sustainability objectives relating to resource efficiency, waste minimisation, and sustainable procurement.

5.5 WASTE MINIMISATION

This section identifies key considerations for minimising waste during both construction and operation. It outlines opportunities to support waste reduction, recycling, and appropriate waste management practices through design and planning measures.

Objectives include:

- To promote waste avoidance, reuse and recycling during the design, construction and operation stages of development.
- To ensure durability and long-term reusability of building materials.
- To ensure sufficient space is allocated for future change in waste management needs, including (where possible) composting and green waste facilities

ESD Initiatives for Waste Minimisation

	Initiative	Proposed Strategy
1	Minimisation of Construction Waste	- A comprehensive Construction and Demolition Waste Management Strategy will be implemented throughout demolition, excavation and construction phases to minimise waste generation, maximise material reuse and recovery, and reduce landfill disposal. Construction waste management measures will align with the requirements of the City of Ryde Council DCP 2014, the NSW Better Practice Guide for Resource Recovery in Residential Developments (2019), NSW EPA Waste Classification Guidelines and the NSW Waste Avoidance and Resource Recovery (WARR) Strategy. Construction materials will be selected with consideration to durability, adaptability, recycled content and end-of-life recyclability. Prefabricated and pre-cut materials will be prioritised where feasible to reduce offcuts and over-ordering. - Packaging waste will be minimised through bulk purchasing, supplier take-back schemes, reusable pallets and returnable packaging systems. Opportunities for adaptive reuse and deconstruction will be considered during demolition works to maximise recovery of reusable building elements including timber, doors, windows, fittings and structural materials. Site-specific waste avoidance initiatives will include accurate material ordering, reuse of formwork, minimisation of unnecessary excavation, planned work staging, reduction of PVC products, use of low VOC materials and selection of fittings and furnishings with recycled content. Excavated material will be reused onsite where practical, including reuse of clean spoil and topsoil for landscaping and backfilling. Any sandstone encountered may be reused within the development or recovered offsite. Dedicated source-separated waste storage areas and skip bins will be established onsite for timber, plasterboard, concrete, bricks, scrap metal and general waste to maximise recycling outcomes. Additional receptacles will be provided for hazardous materials including batteries, fluorescent tubes and smoke detectors. Waste storage areas will be flexible and adjusted throughout construction to suit staging requirements while maintaining safe access, visual amenity and environmental protection measures. - Construction waste facilities will incorporate weather protection, secure storage, drainage controls, spill prevention measures and appropriate signage. Waste areas will be located to avoid interference with vehicle sight lines and to facilitate efficient collection access. Skip bins will be clearly labelled, colour coded and monitored daily to prevent overflow. Waste collection and transport will be undertaken by licensed contractors, with all waste directed to appropriately licensed recycling or disposal facilities. Hazardous materials management procedures will be implemented throughout demolition and excavation works. Any asbestos or contaminated material identified onsite will be removed by licensed contractors and disposed of at appropriately licensed facilities in accordance with NSW EPA and SafeWork NSW requirements. Contaminated stockpiles will be minimised, covered and isolated from stormwater systems, with all transport vehicles securely covered during transit. - All site personnel and contractors will undertake site-specific waste management induction training covering waste separation, legal obligations, spill response procedures, litter management, hazardous waste handling and environmental responsibilities.

2	Waste Diversion Targets	- The development has been designed to achieve high levels of waste diversion from landfill during both demolition/construction and ongoing operation, consistent with the objectives of the NSW Waste Avoidance and Resource Recovery Strategy. Based on detailed waste generation modelling, approximately 89% of demolition waste and 99% of construction waste generated by the project is anticipated to be diverted from landfill through reuse, recycling and resource recovery initiatives, significantly exceeding the NSW WARR Strategy target of 80% diversion for construction and demolition waste streams. - Demolition waste streams including concrete, bricks, metals, timber, tiles and green waste will be separated for reuse or recycling through licensed resource recovery facilities. Concrete and masonry materials will be crushed and reused as aggregate or road base, metals will be recycled through scrap metal processors, green waste will be mulched or composted, and suitable timber products will be reused or processed for secondary applications. Excavated material and clean spoil will be reused onsite where practical or transferred for beneficial reuse as clean fill. Residual waste streams that cannot be economically or safely recovered will be directed to approved landfill facilities. - Construction waste management procedures will prioritise source separation and material recovery through dedicated waste streams for concrete, bricks, metals, plasterboard, timber and packaging materials. Opportunities for onsite reuse of materials will be maximised to reduce transport impacts and disposal volumes. Recycling and disposal pathways will utilise established NSW recycling infrastructure including nearby licensed resource recovery facilities. During operation, the development will incorporate dedicated waste streams for general waste, co-mingled recycling, Food Organics and Garden Organics (FOGO), bulky waste, electronic waste and specialised recyclable materials. Source separation facilities will be integrated throughout the building to maximise recovery rates and minimise contamination. - Recycling materials will be collected separately from general waste, while FOGO infrastructure has been incorporated to support future Council organics collection services and reduce organic waste sent to landfill. - Ongoing waste diversion outcomes will be supported through resident education programs, signage, building management oversight, contamination monitoring and regular review of waste generation volumes and collection frequencies. Waste management systems will remain adaptable to changing operational requirements and future recycling opportunities. - These measures support the City of Ryde's broader sustainability objectives relating to circular economy principles, resource recovery, and reductions in emissions associated with landfill disposal and material consumption.
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3	Operational Waste	- The proposed development will incorporate a comprehensive operational waste management system designed in accordance with the requirements of the City of Ryde Council Development Control Plan 2014 and the NSW Better Practice Guide for Resource Recovery in Residential Developments (2019). The operational waste management strategy has been developed to support efficient waste handling, maximise resource recovery, minimise landfill disposal and maintain high standards of amenity, hygiene and environmental performance for residents and surrounding properties. - The development is expected to generate approximately 13,680L/week of general waste, 13,680L/week of recycling and 2,850L/week of FOGO waste across approximately 114 residential apartments within two residential building cores. To accommodate these waste streams, the development will provide 6 x 1100L general waste bins collected three times weekly, 8 x 1100L recycling bins collected twice weekly, and 22 x 140L FOGO bins collected weekly. Additional 1100L service bins will be maintained beneath chute systems during collection periods to ensure uninterrupted operation. Each residential apartment will include dedicated internal storage space for source-separated general waste, recycling and FOGO receptacles to encourage waste separation at the point of generation. A centralised chute-based waste disposal system will be provided for general waste, with recycling and FOGO bins located adjacent to chute rooms on residential levels. - General waste will discharge into 1100L bins positioned on linear track systems within basement chute discharge rooms sized to accommodate at least two days of waste generation capacity. Dedicated waste management infrastructure will include basement chute discharge rooms, a central residential bin holding room, bulky waste storage facilities and designated e-waste collection areas. Waste rooms will be designed to comply with the Ryde DCP and relevant Australian Standards and will incorporate mechanical or natural ventilation systems, washable and durable wall and floor finishes, epoxy-coated floors, graded drainage connected to sewer, hot and cold washdown facilities, lighting, pest control provisions and secure access arrangements. - Waste room walls, ceilings and floors will utilise smooth, non-absorbent and light-coloured finishes to improve hygiene, visibility and ease of cleaning. Waste collection operations will be coordinated by the Building Manager or Waste Caretaker, who will be responsible for monitoring bin capacities, transporting bins to collection areas, cleaning waste rooms and bins, coordinating bulky waste collections, managing contamination and maintaining waste equipment. - Mechanical aids including bin lifters and bin moving devices will be used to minimise manual handling risks associated with transporting full bins from basement levels to the ground-floor collection point. Dedicated bulky waste storage areas will be provided in accordance with Council sizing requirements to facilitate the temporary storage and organised collection of oversized residential waste items including furniture, mattresses and whitegoods. Separate e-waste collection facilities will also be provided to support appropriate recycling of electronic items and prevent contamination of general waste streams. - Comprehensive resident education and signage programs will be implemented throughout the development to support correct waste separation and minimise contamination. Signage will be prominently displayed on bins, chute doors and within waste rooms and will provide clear instructions regarding acceptable materials, chute operation and disposal procedures. Educational material will also be provided to residents regarding recycling, FOGO, bulky waste and hazardous household waste disposal requirements. - Pollution prevention measures including secure waste rooms, prevention of bin overfilling, washdown facilities, drainage controls and prompt spill clean-up procedures will be implemented to minimise stormwater contamination, odour and litter impacts. The waste management system will remain adaptable to changing occupancy levels, waste generation patterns and future Council waste servicing requirements.
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	- The inclusion of FOGO infrastructure and ongoing resident education initiatives supports Council's long-term waste minimisation and sustainability objectives while improving adaptability to future recycling and resource recovery programs across the Ryde LGA.
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5.6 TRANSPORT SUSTAINABILITY

This section provides an overview of site accessibility and opportunities to support sustainable transport modes. Consideration is given to walking, cycling, public transport access, and potential infrastructure to reduce reliance on private vehicles.

Objectives include:

- To ensure that the built environment is designed to promote the use of walking, cycling and public transport, in that order.
- To minimise car dependency.
- To promote the use of low emissions vehicle technologies and supporting infrastructure.

ESD Initiatives for Transport Sustainability

	Initiative	Proposed Strategy
1	Proximity to Public Transport	- The site is highly accessible to public transport, located approximately 100m from major bus interchange facilities adjacent to Top Ryde Shopping Centre. This interchange forms part of the broader Ryde transport network, providing frequent services to key employment centres including Macquarie Park, Chatswood, the Sydney CBD, and surrounding suburban hubs. The high level of service frequency and network connectivity supports a strong alternative to private vehicle use. Direct pedestrian access via existing footbridges further enhances safety and convenience, reinforcing the suitability of public transport as a primary mode of travel for residents. - These locational advantages align with the City of Ryde Sustainable Transport Strategy, which seeks to reduce transport-related greenhouse gas emissions and improve uptake of sustainable and active transport modes across the local government area.
2	Walking and Cycling Connections	- The development benefits from strong pedestrian connectivity within the established urban centre of Ryde. Two existing pedestrian footbridges provide direct access to Top Ryde Shopping Centre, which acts as a major retail, dining, and service hub for the area. The surrounding street network also provides connections to nearby parks, community facilities, and local centres. While Ryde is a car-oriented suburb in parts, the immediate precinct offers a high level of walkability, enabling residents to access daily services without reliance on private vehicles and supporting increased uptake of active transport modes such as walking and cycling.

3	Infrastructure for Sustainable Transport	- The development will provide 21 bicycle parking spaces to support cycling as a practical and sustainable transport option. This provision exceeds the minimum bicycle parking requirement under the applicable Development Control Plan (DCP) by 6 spaces, demonstrating a commitment to encouraging active and sustainable transport choices. These facilities are intended to support short-distance travel to nearby destinations, including Top Ryde Shopping Centre, local parks, and surrounding amenities. - In addition, Electric Vehicle (EV) charging infrastructure will be incorporated within the basement car park to support the increasing adoption of low-emission vehicles across the Ryde area. The provision of EV charging facilities will assist in future-proofing the development and encouraging the transition towards lower-emission transport options, particularly given the area's proximity to major employment centres such as Macquarie Park and the continued growth of higher-density residential development within Ryde. - These initiatives align with the objectives of the City of Ryde Sustainable Transport Strategy, which promotes low-emission vehicle technologies, active transport infrastructure, and reduced reliance on private fossil-fuel-based transport as part of Council's transition toward a more sustainable and resilient transport network.
4	Reduction of Car Dependency	- The site's location within the Top Ryde strategic centre significantly reduces reliance on private vehicle ownership. Immediate access to high-frequency bus services, combined with walkable connections to one of the largest retail and lifestyle precincts in the Ryde LGA, enables residents to meet most daily needs within proximity. The surrounding area also benefits from ongoing urban consolidation and infrastructure investment, including improved public transport links across Northern Sydney. Together with bicycle parking and EV charging provisions, the development supports a modal shift away from private car dependency toward more sustainable and efficient transport choices.

6.0 COMPLIANCE WITH SEARs

The following table provides a summary of the proposed development's compliance with the Secretary's Environmental Assessment Requirements (SEARs) in relation to Ecologically Sustainable Development (ESD). This table is intended to be completed and updated at the conclusion of the report to clearly demonstrate alignment with the relevant requirements.

6.1 SEARs COMPLIANCE SUMMARY TABLE

SEARs Requirement Report	Section Reference	Compliant	Partially Compliant	Not Applicable	Comments
Incorporation of ESD principles (Clause 7(4), Schedule 2 of the Environmental Planning and Assessment Regulation 2000) into design and operation	Section 4	☒	☐	☐	The report incorporates all ESD principles through passive design, resource efficiency, climate resilience, lifecycle thinking, and environmental management strategies.
Application of best-practice sustainable building principles informed by a materiality assessment	Sections 3 & 5	☒	☐	☐	The development applies best-practice ESD strategies across all key disciplines and references Green Star, NABERS, BASIX, NCC Section J, and SEPP (Sustainable Buildings) 2022.
Integration of waste minimisation and resource efficiency measures	Section 5.5	☒	☐	☐	Waste strategies include source separation, reuse of materials, recycling, FOGO readiness, bulky waste management, and alignment with NSW WARR objectives.
Consideration of sustainable and low-carbon materials	Section 5.4	☒	☐	☐	Preliminary strategies include reuse of excavated material and recycled content opportunities; detailed low-carbon material selection and embodied carbon analysis is yet to be developed.
Energy efficiency measures and reduction of greenhouse gas emissions	Section 5.1	☒	☐	☐	Energy strategies include passive design, shading, cross ventilation, efficient HVAC, rooftop PV, and compliance pathways under BASIX, NatHERS, and NCC Section J.
Water efficiency and water-sensitive urban design (WSUD) measures	Section 5.2	☒	☐	☐	Measures include BASIX fixtures, rainwater reuse, OSD, and WSUD treatment systems supported by MUSIC modelling to meet Council targets.
Integration of renewable energy technologies (where feasible)	Section 5.1	☒	☐	☐	A 40kW rooftop solar PV system is proposed to offset operational electricity demand and reduce greenhouse gas emissions.

Development of an integrated water management approach (alternative water sources and end uses)	Section 5.2	☒	☐	☐	Integrated water strategy includes rainwater harvesting, non-potable reuse, stormwater detention and treatment, and erosion/sediment controls in line with WSUD principles.
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7.0 CONCLUSION

This Ecologically Sustainable Development (ESD) Report has been prepared to provide a high-level assessment of the proposed development's alignment with relevant statutory requirements, policy frameworks, and recognised sustainability principles applicable within New South Wales.

The report demonstrates how ESD principles have been considered and integrated into the planning and design process, with reference to key legislative and regulatory frameworks, including the NSW planning system, applicable State Environmental Planning Policies, the National Construction Code, and recognised sustainability rating tools. It also identifies a range of preliminary sustainability initiatives and design strategies intended to inform ongoing design development.

At this stage of design, the ESD initiatives outlined in this report are indicative and will be further developed and refined as the project progresses. The intent is to progressively embed sustainability outcomes across all key areas of design, including energy efficiency, water management, materials selection, indoor environmental quality, waste minimisation, transport accessibility, and climate resilience.

Overall, the proposed development has the opportunity to achieve improved environmental performance through the considered application of ESD principles, best-practice design strategies, and alignment with recognised sustainability benchmarks. Ongoing design development will continue to focus on reducing environmental impacts, improving resource efficiency, and enhancing long-term operational performance.

Subject to further design development and detailed technical assessment, the development is considered capable of achieving a level of environmental performance consistent with contemporary ESD expectations and relevant NSW planning requirements.

8.0 GLOSSARY OF TERMS

Term	Definition
BASIX	Building Sustainability Index; a NSW Government scheme that sets minimum requirements for water efficiency, thermal comfort, and energy performance in residential development.
Climate Resilience	The ability of a development to respond and adapt to projected climate conditions, including temperature increases and extreme weather events.
Embodied Carbon	The greenhouse gas emissions associated with the lifecycle of building materials, including extraction, manufacturing, transport, and installation.
Energy Efficiency	The reduction of energy consumption through design, systems, and operational strategies while maintaining performance.
Environmental Planning and Assessment Act 1979	The primary legislation governing land use planning and development assessment in New South Wales.
Environmental Planning and Assessment Regulation 2000	Supporting regulation to the Act, including provisions relating to Ecologically Sustainable Development (ESD) principles.
ESD (Ecologically Sustainable Development)	Development that integrates environmental, social, and economic considerations to meet present needs without compromising future generations.
ESD Report / Statement	A document that outlines a development's environmental performance and sustainability initiatives across areas such as energy, water, materials, and waste.
Green Star	A sustainability rating system developed by the Green Building Council of Australia to assess environmental design and performance.
Greenhouse Gas Emissions	Emissions of gases such as carbon dioxide (CO ₂) associated with energy use and material production that contribute to climate change.
Indoor Environmental Quality (IEQ)	The quality of indoor conditions within a building, including daylight, natural ventilation, thermal comfort, and occupant wellbeing.

Inter-generational Equity	An ESD principle requiring that the environment is maintained or enhanced for the benefit of future generations.
Materiality Assessment	A process used to identify and prioritise key sustainability issues relevant to a project.
National Construction Code (NCC)	Australia's primary set of technical building requirements, including energy efficiency provisions under Section J.
NABERS	National Australian Built Environment Rating System; a rating system used to measure the operational environmental performance of buildings.
Passive Design	Design strategies that use natural elements such as sunlight and ventilation to reduce reliance on mechanical systems.
Precautionary Principle	An ESD principle stating that lack of full scientific certainty should not delay measures to prevent environmental harm.
Renewable Energy	Energy generated from naturally replenished sources such as solar or wind.
SEARs (Secretary's Environmental Assessment Requirements)	Project-specific environmental assessment requirements issued to guide the preparation of environmental impact assessments.
State Environmental Planning Policy (Sustainable Buildings) 2022	NSW planning policy establishing sustainability requirements for building design, including energy and water efficiency.
Thermal Comfort	The condition in which occupants feel satisfied with the indoor temperature and environmental conditions.
Waste Minimisation	Strategies to reduce waste generation during construction and operation.
Water Efficiency	The reduction of potable water uses through efficient design and systems.
Water Sensitive Urban Design (WSUD)	An approach to urban design that integrates water management, including stormwater, reuse, and water quality improvement.

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