ESD Report for SSDA

The Works Stage 2a

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Contents

Revision History

Revision	Project	Description	Author	Checked By	Date
1.0	P067004	ESD Report for SSDA	Payal Aggarwal	Luke Williams	12th November 2025
2.0	P067004	ESD Report for SSDA_Update	Payal Aggarwal	Luke Williams	17th December 2025

1 Introduction

This Ecologically Sustainable Design (ESD) report has been prepared by Aspire Sustainability Consulting to accompany a State Significant Development Application (SSDA) which seeks development consent for the construction of four (4) residential flat buildings, providing a total of 206 x residential apartments (including 57 affordable housing apartments).

The SSDA is referred to as the Stage 2a Built Form SSDA (SSD-83789711). The Stage 2a Built Form SSDA implements the second built form stage of the urban renewal of the former Corrimal Coke Works site. The project will deliver vibrant and contemporary residential-led urban renewal, which celebrates the site's industrial history and leverages its highly accessible and strategic location in proximity to Corrimal town centre and local amenities and services. The proposal will deliver high amenity residential dwellings of various sizes and typologies, including a dedicated affordable housing building.

The Stage 2a Built Form SSDA is submitted concurrently with a separate (but interrelated) Stage 2-4 civil works SSDA (SSD-86131212), which comprises the construction of the Central Park, the Southern Park, and roads, drainage and stormwater infrastructure, and paper subdivision.

This report outlines the sustainable design initiatives proposed for the development, demonstrating a commitment to achieve Secretary's Environmental Assessment Requirements (SEAR's) along with other regulatory frameworks as described in the following subsections.

This Stage 2a Built Form SSDA was declared as State Significant Development (SSD) in the State Significant Development Declaration Ministerial Order (No 10) 2025 (dated 30 June 2025) at Clause 5(1)(n) in Schedule 1 (Amendment SSD Declaration Order 2025 (No 5)).

1.1. Sustainable Design Frameworks

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

- National Construction Code (NCC) 2022 Section J Compliance (via J1V3 Performance Solution);
- State Environmental Planning Policy (SEPP) 2022: Sustainable Buildings;
- NSW Environmental Planning and Assessment Regulations 2022;
- Building Sustainability Index – Standards for residential development (BASIX) 2022;
- SEARs Action Schedule (SSD-83789711); &
- Wollongong Development Control Plan (DCP) 2009.

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

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

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

The Sustainable Buildings SEPP is aligned with National Construction Code & NSW Net Zero Policy which will help in delivering buildings that are more energy efficient, produce less GHG emissions and inform future benchmarks. It should be noted that the Sustainable Buildings SEPP is a framework that sets minimum performance requirements for projects in NSW.

1.1.3. Building Sustainability Index (BASIX)

BASIX is the primary framework applied to Class 2 portions of developments in addition to their associated common areas. Minimum performance requirements regarding the building fabric, appliances (energy and water efficiency) and central building systems must be achieved.

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

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

2.1 Standards for BASIX development and BASIX optional development	
Schedule 1 sets out the standards that apply to BASIX development referred to in paragraphs (a) and (b) of the definition of ***BASIX development*** in the *Environmental Planning and Assessment Regulation 2021*.	
1.	Schedule 2 sets out the standards that apply to: a BASIX development referred to in paragraph (c) or (d) of the definition of ***BASIX development*** in the *Environmental Planning and Assessment Regulation 2021*, & BASIX optional development if the development application or the application for a complying development certificate was accompanied by a BASIX certificate.
2.	The standard specified in Schedule 2, section 4 extends to a swimming pool or spa that has a capacity of less than 40,000L if the swimming pool or spa is part of development referred to in paragraph (c) of the definition of BASIX development in the Environmental Planning and Assessment Regulation 2021.
3.	A standard specified in Schedules 1 or 2 does not apply to development involving a heritage item or in a heritage conservation area to the extent that the Planning Secretary is satisfied that the development is not capable of achieving a standard because of other development controls that apply.
4.	Development consent must not be granted to development to which the standards specified in Schedules 1 or 2 apply unless the consent authority is satisfied the embodied emissions attributable to the development have been quantified.
2.2 Standards not affected by environmental planning instruments or development control plans	**Addressed in:**
1.a. A competing provision of an environmental planning instrument or development control plan, whenever made, is of no effect to the extent to which the provision aims to reduce consumption of mains-supplied potable water or greenhouse gas emissions related to the use of— i. a building, or ii. the land on which a building is located, or	Section 4, 10 & 11.
1.b. A competing provision of an environmental planning instrument or development control plan, whenever made, is of no effect to the extent to which the provision aims to improve the thermal performance of development,	Section 4 & 10.
1.c. A competing provision of an environmental planning instrument or development control plan, whenever made, is of no effect to the extent to which the provision aims to quantify and report on the embodied emissions attributable to development.	Section 4 & 7.
Schedule 1 Standards for erection of BASIX buildings and change of use to BASIX buildings	**Addressed in:**
2. Energy use	Section 4.
1. The standard is that the amount of greenhouse gas emissions resulting from the use of energy attributable to an occupant of the development over a year must be less than the baseline, by at least the percentage specified in Table 1 for the development.	
3. Water use	Section 4.
1. The standard is that the average daily amount of mains-supplied potable water use attributable to an occupant of the development over a year must be less than the baseline, by at least the percentage shown on the *Water Use Map* for the land on which the development will be carried out.	
4. Application of Part	Section 4.
1. The standard represents the maximum amount of energy that may be used to heat and cool a dwelling to a comfortable temperature, measured in megajoules per square meter of the conditioned floor area of the dwelling over a year.	

1.1.4. SEAR's & Wollongong DCP 2009 Controls & Objectives

The following table references sections within the report where compliance is demonstrated with applicable SEAR's (SEARs Action Schedule (SSD-83789711)) and DCP requirements.

Table 2: SEAR (SEARs Action Schedule (SSD-83789711)) ESD Controls & Objectives

15. Ecologically Sustainable Development (ESD)	Addressed in:
• 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.	Sections 6-13.
• 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.	Not part of ESD Scope.

Table 3: DCP ESD Controls & Objectives

3.1 Climate Change Adaptation and Mitigation		Addressed in:
a)	Ensure development incorporates climate friendly design, energy efficiency and emission reductions to increase resilience and reduce environmental impact	Sections 6-13.
b)	Encourage and enable a transition to a low waste and emissions lifestyle.	Section 6.
c)	Promote urban cooling and minimise the heat island effect.	Section 8.
d)	Support the health of occupants by designing buildings to perform well in hot and extreme weather events.	Section 8 & 10.
3.2 Waste Reduction		**Addressed in:**
a)	Promote the use of sustainable building materials and reduce construction and operational waste.	Section 6.
b)	Encourage recycling and collection of organics to reduce emissions.	Section 6.
3.3 Biodiversity Protection		**Addressed in:**
a)	Protect the unique biodiversity of the Wollongong Local Government Area.	Section 13.
b)	Enhance urban forest by appropriate selection and siting of native flora.	Section 13.
3.4 Water Sensitive Urban Design		**Addressed in:**
a)	Deliver sustainable and environmentally sensitive water management practices, including rainwater harvesting, permeable surfaces and efficient stormwater treatment, to reduce potable water consumption and improve water quality and urban cooling.	Section 13.
3.5 Sustainable Transport		**Addressed in:**
a)	Support the reduction of car trips and car dependance and encourage the use of sustainable transport such as active travel and public transport.	Section 9.
b)	Encourage sustainable mixed-use transport orientated development.	Section 9.
c)	Prioritise active transport (walking and cycling) and access to public transport to facilitate a shift away from private vehicle use.	Section 9.
d)	Support the transition to electric vehicles, e-mobility and other low carbon transport options.	Section 9.

3.6 Energy Efficiency and Renewables	Addressed in:
a) Support development that demonstrates a high level of energy efficiency through energy sourcing, storage and equitable access by occupants.	Section 10.
b) Maximise energy efficiency in development and use renewable energy sources to transition away from fossil fuels.	Section 10.
c) Minimise the demand placed upon the existing electricity network through the use of locally generated renewable energy and storage in new development.	Section 10.
3.7 Community Health, Quality of Life, Amenity and Social Well-Being	**Addressed in:**
a) Encourage and promote developments that are socially optimal and support resilience, health, and the wellbeing of communities through: i. improvement to indoor air quality. ii. equitable access to low emission energy systems and appliances. iii. measures to reduce the negative impacts of heat. iv. accessible and inclusive for people with all levels of ability.	Section 12.
3.8 First Nations Knowledge and Care of Country	**Addressed in:**
a) Consider Aboriginal knowledge, cultural values and sustainable land management practices during the project design phase.	Not part of ESD scope.

1.1.5. Section 193 Principles of Ecologically Sustainable Development, NSW Environmental Planning and Assessment Regulation 2021

- The principles of ecologically sustainable development are the following:
  - the precautionary principle;
  - inter-generational equity;
  - conservation of biological diversity and ecological integrity; &
  - improved valuation, pricing and incentive mechanisms.
  - 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; &
  - An assessment of the risk-weighted consequences of various options.
- The principle of inter-generational equity is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.
- The 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 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;
  - 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; &

- 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.

Principles of Section 193 ecologically sustainable development, NSW environmental planning and assessment regulation 2021 have been addressed by the development through the following initiatives:

1.1.5.1 The precautionary principle:

As per SEAR condition number 16, BDAR waiver was lodged with Department on 31 October 2025. By adopting energy efficiency initiatives, water conservation measures, enhanced indoor environmental quality, sustainable building practices and resilient design, the development will not have significant or lasting impact on the surrounding environment.

1.1.5.2 Inter-generational equity:

The development proposes to address inter-generational equity by incorporating measures of sustainable development to reduce environmental impact and promote health and wellbeing of occupants.

By adopting energy and water efficiency measures, sustainable materials, enhanced indoor environment quality and reduced ecological impact, the proposed development is participating in preserving the availability of natural resources for future generations.

1.1.5.3 Conservation of biological diversity and ecological integrity:

The site features retained trees and extensive landscaping thereby aid in maintaining the ecological value of the site. As per SEAR condition number 16, BDAR waiver was lodged with Department on 31 October 2025.

1.1.5.4 Improved valuation, pricing, and incentive mechanisms:

The proposed development will consider various sustainability initiatives to be integrated into the valuation of assets and services.

- Head Contractor engaged throughout the entire project completion will implement and comply with an Environmental Management Plan and Environmental Management System aligned with the NSW Environmental Management Systems Guidelines or equivalent standards. This ensures that the team is responsible for environmental impacts caused due to project construction and introduce measures to promote sustainable strategies.
- The project team will consider using recycled and responsibly sourced materials where possible. A minimum of 90% construction and demolition waste will be diverted from landfills. Additionally, the developer/occupants will bear costs associated with operational energy, waste management, water consumption, refurbishment etc. This approach reflects that the developer/occupants pay for the entire life cycle of the project which includes construction, use, refurbishment and end of life.
- The project will consider ESD initiatives highlighted in this report as sustainability goals. This includes the below initiatives but not limited to:
  - Investing in efficient water systems to reduce potable water use and associated costs; &
  - Incorporating energy-efficient design features that lower long-term carbon emissions and operational cost.

Through these integrated mechanisms, the project aligns with the objectives of improved valuation, pricing, and incentive frameworks, supporting both environmental protection and economically efficient outcomes.

1.2. Aim of Report

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

2 Project Description

The Stage 2a Built Form SSDA seeks consent for the following:

- Construction of four (4) residential flat buildings, providing a total of 206 x residential apartments (including 57 x affordable housing units). The unit typologies, per residential flat building, are as follows:
  - Building 2.1 - 30 x apartments (8 x one-bedroom, 17 x two-bedroom, and 5 x three-bedroom units);
  - Building 2.2 - 57 x affordable housing apartments (3 x one-bedroom, 27 x two-bedroom, and 27 x three-bedroom units);
  - Building 2.3 - 59 x apartments (16 x one-bedroom, 31 x two-bedroom, and 12 x three-bedroom units); &
  - Building 2.4 - 60 x apartments (12 x one-bedroom, 32 x two-bedroom, and 16 x three-bedroom units).
- Construction of three (3) separate single-level basements as follows:
  - Basement 01 (to service Building 2.1)
    - 41 x residential car parking spaces;
    - 6 x visitor car parking spaces;
    - Bicycle parking spaces;
    - Motorcycle parking spaces; &
    - Waste and recycling storage areas.
  - Basement 02 (to service Building 2.2)
    - 34 x residential car parking spaces;
    - 11 x visitor car parking spaces;
    - Bicycle parking spaces;
    - Motorcycle parking spaces; &
    - Waste and recycling storage areas.
  - Basement 03 (to service Building 2.3 and Building 2.4)
    - 151 x residential car parking spaces;
    - 24 x visitor car parking spaces;
    - Bicycle parking spaces;
    - Motorcycle parking spaces; &
    - Waste and recycling storage areas.
- Creation of a series of deep soil areas and communal open space areas (including lawns and play areas, BBQ areas, and seating spaces) and accessible open space areas within Stage 2a.

Figure 1: Site Layout

2.1. Information Sources

- National Construction Code (NCC) 2022 Section J Compliance (via J1V3 Performance Solution);
- State Environmental Planning Policy (SEPP) 2022: Sustainable Buildings;
- NSW Environmental Planning and Assessment Regulations 2022;
- Building Sustainability Index – Standards for residential development (BASIX) 2022;
- SEARs Action Schedule (SSD-83789711);
- Wollongong Development Control Plan (DCP) 2009;
- Architectural drawings: SSDA: 05/11/25;
- Landscape drawings: SDRP Drawings 19/06/25;
- Wet Fire Spatial: 15/07/25; &
- Water Cycle Management Strategy: July 2025.

3 National Construction Code (NCC) 2022 Section J Compliance

3.1 NCC 2022 Section J9 Provisions

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

Table 4: J9D4 Requirements (EV Infrastructure)

Building Class	Infrastructure Requirements	% of Car Parking Spaces	Future Charging Requirements
Class 2 (Residential)	Sized to support future installation of 7kW (32A) Type 2 chargers	100%	Capable of delivering a minimum 12kWh from 11pm to 7am daily

Solar PV (J9D5)

J9D5 requires electrical infrastructure and free roof area for future installation of PV to 20% of the roof area or an equivalent generation capacity elsewhere on-site.

4 BASIX (Class 2 Units & Common Areas)

BASIX reports (1826443M_02, 1826446M_02 & 1826444M_02) have been generated that contain water, energy, thermal performance and material requirements for all the buildings to consider and implement in design.

Refer to Appendix B for BASIX Thermal Requirements Summary Table. Scores achieved are outlined below.

Table 5: BASIX Scores

	Building 2.1 Score		Building 2.2 Score		Building 2.3 & 2.4 Score	
	Target	Achieved	Target	Achieved	Target	Achieved
Water	40	40	40	41	40	41
Energy	61	61	60	60	60	60
Thermal Performance	Pass	Pass	Pass	TBC	Pass	TBC
Materials	N/A	N/A	N/A	N/A	N/A	N/A

The following Sections provide an overview of the sustainable design features considered for implementation across the site.

5 Ecologically Sustainable Design

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

6 Construction and Waste Management

To ensure sustainable construction practices throughout construction and building operation, the following initiatives will be considered:

Table 6: Design Initiatives to be Considered for Construction and Waste Management

Initiative	Design Response	Comments
Divert waste from landfill.	Waste Contractor to divert >90% of construction waste by weight from landfill.	Head Contractor to include waste diversion requirements in Waste Contractor scope.
Responsible management systems.	Implementing an Environmental Management System in line with ISO 14001.	Head Contractor to ensure effective implementation of EMS throughout construction.
Reduce impacts caused due to construction activities.	Construction Environmental Management Plan (CEMP) to set environmental performance targets.	Head Contractor to ensure effective implementation of CEMP throughout construction.
Operational waste management and segregation.	OWMP to be created including provisions of waste segregation for glass, plastic, cardboard and organic waste.	An OWMP will be created as per SEAR's condition No. 17.

Figure 2: Various waste streams to be considered as part of waste segregation strategy.

7 Sustainable Materials

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

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

Table 7: Design Initiatives to be Considered for Sustainable Materials

Initiative	Design Response	Comments
Using responsibly sourced materials.	Selection of timber with FSC certification.	Architect to consider FSC timber where possible.
	Selection of steel from ISO 14001 certified manufacturer.	Project team to ensure requirements for ISO 14001 certified steel manufacturers are prioritised during procurement process.
	Selection of PVC products in line with Best Practice Certificate.	Project team to explore the potential to select Best Practice PVC products.
Reduced embodied emissions due to building materials.	Use of recycled content in products where appropriate. For example, using concrete with fly ash.	Project team to ensure requirements for recycled products are included in design where practical.
	Selection of major building elements that have Environmental Performance Declarations (EPD's) or third-party certificates.	Architect to consider specifying products with EPDs/third party certificates.
Use of Low GWP refrigerants.	Use of air conditioning systems with refrigerants that have a low Global Warming Potential will be explored.	Mechanical Consultant to confirm low GWP refrigerants are suitable for use in proposed HVAC systems.

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

8 Climate Change Adaptation

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

Table 8: Design Initiatives to be Considered for Climate Change Adaptation

Initiative	Design Response	Comments
Reduce potable water use.	Rainwater tank to reduce potable water consumption of the development and reduce strain on central water infrastructure.	Central water tank provisions of 30kL has been allocated as per BASIX requirements for this development to assist with reducing potable water consumption. Refer to Basement 1 plan from Architectural Drawings Set Issued for (05/11/25).
Increased MSSB capacity for effective HVAC systems in case of increased temperatures.	Increasing capacity of mechanical and electrical distribution boards to accommodate an increase in building electrical loads associated with a warming climate.	Mechanical Consultant to consider MSSB capacity that can accommodate increase to peak loads as a result of future climate warming.
Offering areas of respite during extreme weather events	Providing large green spaces with dense tree canopy trees to provide natural shading.	Refer to Landscape drawings SDRP Drawings 19/06/25 for green terraces and landscaping.
Resilient infrastructure in case of extreme weather conditions	Ensuring the development is constructed in accordance with recognised standards regarding wind tolerance and impacts from hail/strong winds.	Project team to ensure requirements for resilient infrastructure are considered in accordance with AS standards.

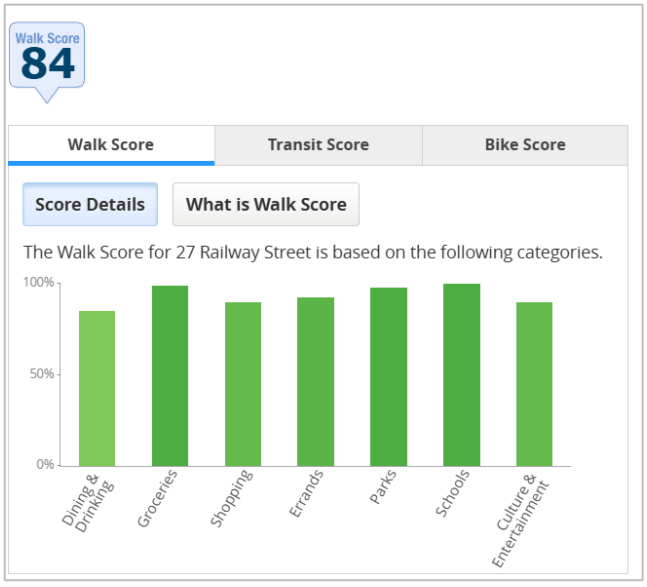
9 Transport

The development is located in within Wollongong and has a walk score of 84 and is well connected with public transports. Refer to Figure 4 for detailed breakdown of walk score and amenities surrounding the project.

During the detailed design phase, the following initiatives will be explored:

Table 9: Design Initiatives to be Considered for Sustainable Transport Facilities

Initiative	Design Response	Comments
Promoting sustainable transport initiatives.	Provision of EV vehicles parking	Electrical Consultant to ensure requirements for EV vehicle charging are adopted in line with Wollongong DCP &/or J9D4 NCC 2022.
	Provisions of bicycle parking facilities for occupants.	Bicycle parking facilities have been provided to the occupants.



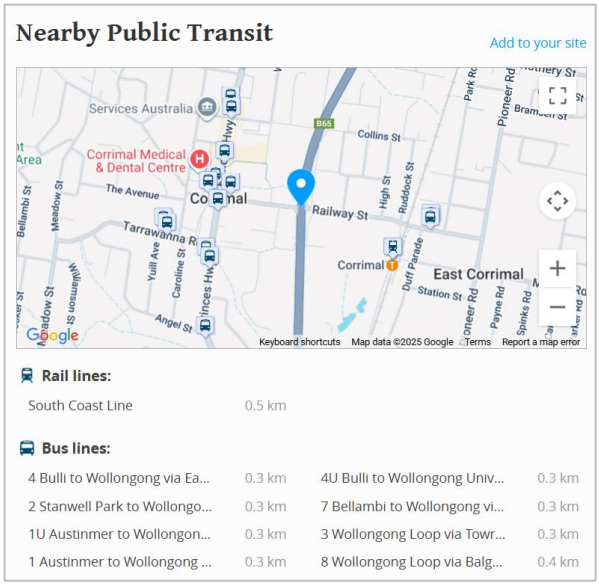


Figure 4: Walk and Transit Score of the development

10 Passive Design & Energy Efficiency

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

Table 10: Design Initiatives to be Considered for Passive Design

Initiative	Design Response	Comments
Incorporating passive design techniques to reduce heating, ventilation and cooling requirements.	A light to medium colour façade lowers internal temperatures by minimising the heat being transferred through the building fabric.	Light and medium colours have been specified to a large portion of the facades across the development (Refer to elevations from Architectural Set 05/11/25).
	Horizontal shading and recessed windows help in reducing heat loads.	Refer to architectural floor plans (05/11/25) confirming shading extent.
	Thermal mass utilised where possible, helping to smooth out daily temperature peaks and troughs.	Thermal mass in concrete will contribute to an improvement in annual energy consumption.
	Suitably performing glazing to facades, protecting from hot ambient air during summer whilst allowing heat to be kept inside during winter	Refer to Section Appendix B for glazing performance values suitable for development's location.

Table 11: Design Initiatives to be Considered for Energy Efficiency

Initiative	Design Response	Comments
Reduce energy consumption.	Adopting efficient HVAC systems.	Mechanical Consultant to specify HVAC systems with improved efficiency compared to MEPS.
	Metering in line with minimum performance standards to track and monitor energy consumption.	Electrical Consultant to provide energy meters in accordance with NCC 2022 Section J9D3.
	Exceeding minimum energy efficiency provisions within NCC 2022 Volume 1.	Please refer to Section 3 for NCC 2022 Section J provisions.
	Provision of energy efficient LED lighting throughout with appropriate motion & daylight controls.	Project team to ensure efficient LED lighting & suitable controls are adopted in design.
	Incorporating ceiling fan to reduce cooling requirements.	Refer to Appendix B for units with ceiling fan requirements.
On-site renewable energy to reduce the load on central grid.	Solar PV systems installed throughout site to provide a portion of the sites power, whilst reducing peak power demands.	A total of 55kW PV system is required. Refer to Appendix B for PV size per building.

11 Water

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

Table 12: Design Initiatives to be Considered to Reduce Water Consumption

Initiative	Design Response	Comments
Reduce potable water use.	Installing fixtures and fittings in line with best practice guidelines recommended by Green Star Buildings rating tool.	Architect to select sanitary fixture in line with GBCA best practice WELS ratings.
	Rainwater tank to reduce potable water consumption of the development and reduce strain on central water infrastructure.	Central water tank provisions of 30kL has been allocated as per BASIX requirements for this development to assist with reducing potable water consumption. Refer to Basement 1 plan from Architectural Drawings Set Issued for (05/11/25).
	Use of air-cooled heat rejection HVAC systems	Air cooled HVAC system specified.
	Water dispersed from the sprinkler system to be enclosed in a closed loop system.	Fire system with drain down valves on each floor to allow for floor-by-floor testing (Wet Fire Spatial 15/07/25)
Reduced water consumption.	Inclusion of low water use plant species and use of drip irrigation for landscape irrigation.	Garden area has been designated for indigenous or low water use species (Landscape drawings SDRP Drawings 19/06/25 and Appendix B for landscaped areas).

Table 13: Recommended Water Efficiency of Fixtures & Appliances

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

Figure 5: WELS Water Rating Label

12 Enhanced Indoor Environment Quality

The development will explore the following initiatives to improve occupant health and well-being withing the built environment:

Table 14: Design Initiatives to be Considered to Enhance Indoor Environment Quality

Initiative	Design Response	Comments
Reduced exposure to toxins	Adopt low VOC carpets, paints, adhesives and sealants.	Architect to select products with low VOC content.
	Select engineered wood with low formaldehyde content.	Architect to select engineered wood with low formaldehyde content in design.
Elimination of indoor pollutants.	All pollutants from kitchen and enclosed carparks should be directed to outside.	Mechanical Consultant to ensure requirements for dedicated kitchen and carpark exhaust are as per AS1668 standard.
Eliminating the risk associated with legionella disease.	Adopting air cooled HVAC systems eliminated the risk associated with legionella disease when cooling towers are installed on site.	Air cooled HVAC system specified, eliminating risk of legionella.

13 Land Use & Ecology

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

Table 15: Design Initiatives to be Considered to Improve Land Use and Ecology

Initiative	Design Response	Comments
Enhancing local levels of biodiversity.	Indigenous plants & trees allow for deep planting help improve ecological value of the site.	Garden area has been designated for indigenous or low water use species (Landscape drawings SDRP Drawings 19/06/25 and Appendix B for landscaped areas).
	Existing trees to be retained	Refer to landscape drawings SDRP Drawings 19/06/25 for retained trees.
Reduce the urban heat island effect.	Light and medium colour schemes to external surfaces.	Light and medium colours have been specified to a large portion of the facades across the development (Refer to elevations from Architectural Set 05/11/25).
Elimination of stormwater pollutants.	Utilising stormwater and Water Sensitive Urban Design (WSUD) features in line with Wollongong of DCP 2009.	As confirmed in water cycle management strategy (July 2025) requirements to reduce peak stormwater discharge post development are aligned Wollongong of DCP 2009.
Reduced peak stormwater discharge post development.	Utilising stormwater and Water Sensitive Urban Design (WSUD) features in line with Wollongong of DCP 2009.	As confirmed in water cycle management strategy (July 2025) requirements to reduce stormwater pollutants are aligned Wollongong of DCP 2009.
Minimising external light pollution	Outdoor lighting to be designed in accordance with a recognised standard	Project team to fulfill requirements for external lighting as per AS/NZS 4282:2019.

14 Conclusion

This report presents a comprehensive sustainability strategy tailored to the development, occupants, local community and biodiversity. By addressing key sustainable measures discussed in Section 5 of the report, the development will be able to achieve ESD targets and objectives set by the SEPP Policy, SEARs and local councils as outlined in Section 1.1 of the report.

Throughout design development, detailed investigations will be carried out based on feasibility for achieving the sustainability measures to further refine the ESD strategy for the development, providing an exceptional example of sustainable design to the Corrimal community and beyond.

Appendix A: Useful Resources for Detailed Design Investigation

1. **Australian Carbon Credit Unit Scheme:** Incentivizes individuals and businesses to undertake projects that lower emissions or capture and store carbon by purchasing offsets.
   Australian Carbon Credit Unit Scheme | Clean Energy Regulator
2. **Best Practice PVC**: Guidelines developed to minimize the environmental and health impacts associated with the manufacture and end-of-life management of PVC products used in buildings.
   Responsible Products Framework | Green Building Council of Australia
3. **Environmental Product Declarations (EPD)**: Standardized documents providing transparent and comparable information about the life-cycle environmental impact of products.
   EPD Search | EPD Australasia
4. **Forest Stewardship Council (FSC)**: A global non-profit organization that sets standards for responsible forest management, ensuring that products come from responsibly managed forests.
   Home | Forest Stewardship Council
5. **Global GreenTag**: A third-party, green product rating and certification system underpinned by scientific and life cycle assessment processes.
   Global GreenTag. The world's best eco products. Certified.
6. **Good Environmental Choice Australia (GECA)**: An independent, not-for-profit ecolabel certification for products and services that meet rigorous environmental, human health, and ethical impact criteria.
   Sustainability & Environmental Certification Program - GECA
7. **Green Star:** Developed by the Green Building Council of Australia (GBCA), Green Star is an environmental rating system that evaluates the sustainability performance of buildings and communities.
   Home - Green Building Council of Australia
8. **Large-scale Generation Certificates:** LGCs are tradable certificates issued to eligible large-scale renewable energy power stations, reflecting the amount of renewable energy generated or offset by the facility.
   Large-scale generation certificates | Clean Energy Regulator
9. **National Australian Built Environment Rating System (NABERS)**: A national initiative that measures and compares the environmental performance of Australian buildings, covering energy efficiency, water usage, waste management, and indoor air quality.
   Home | NABERS
10. **Small-scale Technology Certificates (STCs)**: Part of Australia's Small-scale Renewable Energy Scheme, STCs are tradable certificates that represent the environmental benefits of renewable energy systems, such as solar panels and solar water heaters.
    Small-scale Renewable Energy Scheme | Clean Energy Regulator
11. **Your Home:** It is an independent resource for designing, constructing, or renovating homes with a focus on energy efficiency, comfort, affordability, and future adaptability.
    | YourHome
12. **Water Efficiency Labelling and Standards (WELS) Scheme**: An Australian government initiative that labels products for water efficiency, helping consumers make informed choices and encouraging manufacturers to produce water-efficient products.
    Water Rating | Australian Government
13. **World Steel Association:** An international trade body representing steel producers, national and regional steel industry associations, and steel research institutes.
    Home - worldsteel.org

Appendix B: BASIX Thermal Requirements Summary Table

Aspire Sustainability Consulting BASIX Specifications P067004 | Building 2.1 Corrimal Coke Works, Railway Street Corrimal NSW 2518	**Certificate No:** **Target**	**Project Score**	**Compliance**
Water	40	40	Pass
Energy	61	61	Pass
Thermal Comfort	Pass		Pass
Material	N/A		N/A

Minimum Glazing Performance Requirements: Typical Glazing for All Levels

Performance (Total System)	**Description**	**Comment**	**Location**
≤U4.10 | SHGC0.47±5%	Double Glazed, Light Tint / Clear	Awning Glazing & Hinged Doors Glazing	All Units unless specified otherwise
≤U3.60 | SHGC0.49±5%	Double Glazed, Light Tint / Clear	Fixed, Sliding Door & Double Hung Glazing	All Units unless specified otherwise

Minimum Insulation Performance Requirements:

Construction Element	**Additional Insulation**
Concrete Roof *Medium Colour Roof*	Waterproof membrane
	≥R2.50 with reflective backing facing cavity/ceiling void ≥20mm Units: All other units on Level 3 apartment ceilings to roof above & 2.1G01, 2.1G03, 2.1G05, 2.1206, 2.1207 where exposed above
External Walls *Brick Veneer/FC Cladding/Metal Cladding/Hebel - Light/Medium/Dark Colour (as shown on elevations)*	≥R2.50
Floor Slab *Suspended Slab over Unconditioned spaces and Exposed Air*	≥R1.00 in direct contact with Slab Soffit Units: 2.1G01, 2.1G02, 2.1G04, 2.1G03, 2.1G05, 2.1G06, 2.1108, 2.1201
Internal Walls	No Insulation
Intertenancy Walls & Walls to Corridor, Lifts & Fire Stairs	RVaries *Per Acoustic Specification*
Floor Coverings	Tile to Wet Rooms | Carpet and Underlay to Bedrooms | Timber to All Other Areas
Ceilings	Plasterboard Ceilings
Ceiling Penetrations	No RCPs provided with current assessment. Following assumptions have been made: - 1 x LED Downlight allocated per 5m^2 - 1 x Exhaust Fan per wet area and kitchen
Ceiling Fans	1 x 1200mm ceiling fan required to Kitchen & Living: 2.1104, 2.1105 No Ceiling Fan required for remaining units.

Other Modelling Assumptions

All modelled downlights are assumed to be Sealed LEDs, with insulation clearance of 150mm to either side of fixture | All glazing where there is fall risk to have window restrictors installed.

Summary of Requirements: Common Areas

Category	**Item**	**Comment**
Water	Fixtures	No common shower | No common toilets | No common taps
	Appliances	No common laundry facility
	Landscape - Common	224.1m^2 Common area lawn (TBC) | 224.1m^2 Common area garden including 112.05m^2 Area of indigenous or low water use species (TBC)
	RW Tank	10kL RW tank | Served by 488m^2 roof area (50% of avaliable roof area), 0m^2 impervious area and 0m^2 planter box area | Serving 448.2m^2 common landscape (TBC) and 0 car wash bay
	Fire Sprinkler System	Re-use of fire system test water is not required
	Pool	No Pool
Energy	Lighting Type	LED required throughout
	Lighting Control	*Please refer to BASIX Report for detailed requirements*
	Ventilation	
	Lifts	Gearless traction with VVVF motors required
	Hot Water	Central Hot Water: Electric instantaneous | R0.6 Piping insulation internal and external to building
	Spa	No Spa
	Pool	No Pool
	Solar PV	10kW PV required
	Other	No BMS | No indoor or outdoor drying line | No common laundry | No common clothes dryer

Summary of Requirements: Residential Dwellings

Category	**Item**	**Comment**
Water	Fixtures	4 star showers (>4.5 but <=6 L/min) | 4 star toilets | 5 star taps kitchen taps | 5 star taps bathroom taps | No HW recirculation on demand
	Appliances	5 star dishwasher | 4 star clothes washer (required to be installed to at least 5 x 3-Bed Units) | Remaining units: No clothes washer specified
Energy	Exhaust Fans	Kitchen, Laundry & bathroom fans individually ducted to façade or roof | manual on/off
	HVAC	Central cooling system: Variable refrigerant volumn units | Electric driven compressor | Air cooled condenser | COP 3.5-5.5 Central heating system: Variable refrigerant volumn units | Electric driven compressor + Air sourced evaporator | COP 3.5-5.5
	Lighting	Sealed LED lighting throughout
	Hot Water	Central Hot Water: Electric instantaneous
	Appliances	Induction cooktop & electric oven | 3.5 star dishwasher specified | 2 star dryer specified
	Other	No Indoor clothes drying line provided | No Outdoor Private clothes drying line provided

Aspire Sustainability Consulting BASIX Specifications		**Certificate No:**	
P067004 | Building 2.2 Corrimal Coke Works, Railway Street Corrimal NSW 2518	**Target**	**Project Score**	**Compliance**
Water	40	41	Pass
Energy	60	60	Pass
Thermal Comfort	Pass		Pass
Material	N/A		N/A

Minimum Glazing Performance Requirements: Typical Glazing for All Levels

Performance (Total System)	**Description**	**Comment**	**Location**
≤U4.10 | SHGC0.47±5%	Double Glazed, Light Tint / Clear	Awning Glazing & Hinged Doors Glazing	All Units unless specified otherwise
≤U3.60 | SHGC0.49±5%	Double Glazed, Light Tint / Clear	Fixed, Sliding Door & Double Hung Glazing	All Units unless specified otherwise

Minimum Insulation Performance Requirements:

Construction Element	**Additional Insulation**
Concrete Roof *Medium Colour Roof*	Waterproof membrane
	≥R4.00 with reflective backing facing cavity/ceiling void ≥20mm Units: 2.2502 ≥R2.50 with reflective backing facing cavity/ceiling void ≥20mm Units: All other units on Level 5 apartment ceilings to roof above & 2.2G01, 2.2G03, 2.2G04, 2.2G06, 2.2G07, 2.2301, 2.2302, 2.2303, 2.2306, 2.2307, 2.2308, 2.2309, 2.2310, 2.2211, 2.2401, 2.2402, 2.2405, 2.2406, 2.2407 where exposed above
External Walls *Brick Veneer/FC Cladding/Metal Cladding/Hebel - Light/Medium/Dark Colour (as shown on elevations)*	≥R2.50
Floor Slab *Suspended Slab over Unconditioned spaces and Exposed Air*	≥R2.00 in direct contact with Slab Soffit Units: 2.2G03, 2.2G04 ≥R1.00 in direct contact with Slab Soffit Units: All other units on Ground Floor, 2.2104, 2.2204, 2.2407
Internal Walls	No Insulation
Intertenancy Walls & Walls to Corridor, Lifts & Fire Stairs	RVaries *Per Acoustic Specification*
Floor Coverings	Tile to Wet Rooms | Carpet and Underlay to Bedrooms | Timber to All Other Areas
Ceilings	Plasterboard Ceilings
Ceiling Penetrations	No RCPs provided with current assessment. Following assumptions have been made: - 1 x LED Downlight allocated per 5m^2 - 1 x Exhaust Fan per wet area and kitchen
Ceiling Fans	1 x 1200mm ceiling fan required to Kitchen & Living: 2.2G03, 2.2G04, 2.2502 No Ceiling Fan required for remaining units.

Other Modelling Assumptions

All modelled downlights are assumed to be Sealed LEDs, with insulation clearance of 150mm to either side of fixture | All glazing where there is fall risk to have window restrictors installed.

Summary of Requirements: Common Areas

Category	**Item**	**Comment**
Water	Fixtures	No common shower | No common toilets | No common taps
	Appliances	No common laundry facility
	Landscape - Common	407.6m^2 Common area lawn (TBC) | 407.6m^2 Common area garden including 203.8m^2 Area of indigenous or low water use species (TBC)
	RW Tank	10kL RW tank | Served by 427m^2 roof area (50% of avaliable roof area), 0m^2 impervious area and 0m^2 planter box area | Serving 815.2m^2 common landscape (TBC) and 1 car wash bay
	Fire Sprinkler System	Re-use of fire system test water is not required
	Pool	No Pool
Energy	Lighting Type	LED required throughout
	Lighting Control	*Please refer to BASIX Report for detailed requirements*
	Ventilation	
	Lifts	Gearless traction with VVVF motors required
	Hot Water	Central Hot Water: Electric instantaneous | R0.6 Piping insulation internal and external to building
	Spa	No Spa
	Pool	No Pool
	Solar PV	20kW PV required
	Other	No BMS | No indoor or outdoor drying line | No common laundry | No common clothes dryer

Summary of Requirements: Residential Dwellings

Category	**Item**	**Comment**
Water	Fixtures	4 star showers (>4.5 but <=6 L/min) | 4 star toilets | 5 star taps kitchen taps | 5 star taps bathroom taps | No HW recirculation on demand
	Appliances	5 star dishwasher | No clothes washer specified
Energy	Exhaust Fans	Kitchen, Laundry & bathroom fans individually ducted to façade or roof | manual on/off
	HVAC	Central cooling system: Variable refrigerant volumn units | Electric driven compressor | Air cooled condenser | COP 3.5-5.5 Central heating system: Variable refrigerant volumn units | Electric driven compressor + Air sourced evaporator | COP 3.5-5.5
	Lighting	Sealed LED lighting throughout
	Hot Water	Central Hot Water: Electric instantaneous
	Appliances	Induction cooktop & electric oven | 3.5 star dishwasher specified | 2 star dryer specified
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External Walls *Brick Veneer/FC Cladding/Metal Cladding/Hebel - Light/Medium/Dark Colour (as shown on elevations)*	≥R2.50
Floor Slab *Suspended Slab over Unconditioned spaces and Exposed Air*	≥R2.00 in direct contact with Slab Soffit Units: 2.2G03, 2.2G04 ≥R1.00 in direct contact with Slab Soffit Units: All other units on Ground Floor, 2.2104, 2.2204, 2.2407
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