



WARRAWONG REDEVELOPMENT

ESD Development Planning Report



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1. Project Overview and Document Purpose

It is estimated that by 2060, the total building stock of the planet will need to double to accommodate population growth and urbanisation¹. With cities being responsible for driving over 60 percent of humanities annual carbon footprint², it is essential that cities and major development drive innovative approaches to drastically cut their emissions footprint across all dimensions including materials, mobility, energy use, personal consumption, and waste. A trajectory to Net Zero by 2050 infers the immediate need to cut emissions by at least 50 percent compared to 2005 levels.

In addressing a Net Zero goal, cities must act across many dimensions of design, construction, and operation. Achieving emissions reduction contributes to not only to impact reduction but also addresses climate resilience, water and resource conservation whilst addressing cost-of-living pressures and improving community health and social connection.

As a major mixed-use development, Warrawong Plaza is well placed to demonstrate a leadership role in the Illawarra by approaching sustainability with a holistic, whole-of-life lens to design, construction, leasing, residential ownership, and centre operational management. The assets owners, Elanor Investors are a major force in institutional real estate and have a progressive stance on sustainability. Their ESG strategy has a heavy emphasis on environmental and emissions efficiency as well as responding to climate vulnerability. It is within this lens that the ESD strategy for the Warrawong redevelopment is framed to adopt practice, initiatives and processes which are forward looking – that is, crafted within the planning context of 2025+.

Purpose of this document:

The purpose of this ESD Planning report is to define the key sustainability themes, as well as describe a range of specific principals and goals to be investigated and progressed through the process of the redevelopment. The document is intended to establish the ESD planning and assessment framework by which all future development applications are to respond and be assessed against.

A performance-based approach has been selected for the project to provide the greatest flexibility to achieve efficient, low-cost pathways to leading sustainability. The performance approach is also designed to support technological break-through and regulation over time. A high degree of emphasis will be placed on ensuring that all applications observe the assessment and reporting methods and requirements to provide consistency and efficiency to the approval process.

Structure of the Document:

- Vision and development objectives (section 2) – provides context to the future state achieved from a sustainability standpoint from the proposed objectives outlined.
- Planning context (section 3) – provides a brief statement of the prevailing and near-term salient State planning policies and the progressive position adopted.
- Key ESD themes (section 4) – provides context to the key ESD themes of focus and rationale for the same.
- Key ESD principles and performance (section 5) – outlines more project specific design principles to be observed and definition of performance goals appropriate to this stage of planning.

¹ David Ness, (2020) "Growth in floor area: The blind spot in cutting carbon," Emerald Open Research , 2020, 2:2, doi.org/10.35241/emeraldopenres.13420.3.

² NSW Net Zero Cities Action Plan, Oct 2022

2. Vision and Development Objectives

As a large brownfield redevelopment site in the heartland of Wollongong, the sustainability vision for the Warrawong redevelopment project is to achieve outcomes which can be delivered well, and which provide surety of outcomes over the long-term. To achieve impact mitigation for the physical infrastructure itself as well as operational performance by all stakeholders into the future, in a manner consistent with the needs of the planet and Net Zero by 2050. An emphasis on reducing operating costs and exposure to climate change and carbon mitigation, inflationary risks of water, fuel and energy prices is a strong emphasis.

The future Warrawong redevelopment will be a place where residents readily understand the health and wealth benefits arising from living, working, shopping, and playing in a place which has leading levels of sustainability features, design, and functionality. The community is actively engaged in the on-going performance of Warrawong redevelopment and enjoy the tools provided which enable them to be active in social activities, events, monitoring and communicating success stories to a wide-ranging audience.

The community embrace and are proud of the clear sustainability public place features and their interpretation, which are thoughtfully designed of recycled, sustainable materials and which are purpose designed to be easily refreshed and renewed for future generations. Social networks and community health is strong and vibrant through careful and leading design of walking, cycling, public transport and events infrastructure. It will be a tangible demonstration of progress to support Net Zero goals.

3. Planning Context to 2023 to 2030

Planning Today 2023

Whilst the existing statutory planning framework (the Wollongong Local Environmental Plan 2009 and Wollongong Development Control Plan 2009) is now dated and does not align well with contemporary sustainability expectations or the ambitions of this project, Wollongong City Council have more recently commenced action towards better addressing climate change and broader sustainability goals. In August 2019, Wollongong City Council declared a climate emergency requiring urgent action by all levels of government and has subsequently developed *Sustainable Wollongong 2030 – A Climate Health City Strategy (2020)*, a *Climate Change Mitigation Plan (2020)* and *Climate Change Adaptation Plan (2022)*. Together, these documents set out Council's own pathway to Net Zero by 2030, alongside actions Council intends to take to achieve to Net Zero across the entire LGA by 2050. The Mitigation Plan identifies land use planning and development as a key process in achieving Net Zero, noting the constraints imposed by a multi-level regulatory planning and construction system where not all elements are within control. A key outcome of the Mitigation Plan is the identified need to update the sustainability provisions of the DCP, which were last updated in 2016, however, this has not yet occurred. In this context, it is appropriate to set out a project-specific sustainability framework for future development, noting that the scale and nature of the project provides opportunities for this project to set a positive benchmark for sustainable, mixed-use development within the Illawarra.

Planning 2025-2030

As noted above, current statutory planning policy at the Local level for ESD are outdated and as such this planning proposal suggests a more appropriate alignment of performance to be drawn from NSW State Planning policy and development controls including: NSW Net Zero Cities Action Plan; NSW Electric Vehicle Strategy; NSW Waste and Sustainable Materials Strategy; Infrastructure NSW Decarbonising Infrastructure Delivery and their related programs.

The planning approval horizon is important to consider. This planning report is forward looking and the principles and initiatives outlined consider requirements such as; BASIX mandatory embodied carbon performance; mandatory whole-life carbon emissions quantification and mitigation with the possible use of complimentary NABERS embodied carbon metrics. The objective of which is to align new development with the Wollongong City Council, NSW Government and Australian Government Net Zero by 2030-2050 goals.

Within this context the project planning will adopt both a principles as well as evidence-led performance controls for a number of key climate related impact areas such as operational and embodied carbon emissions; on-site renewable energy; on-site EV support infrastructure; water efficiency performance potential as well as more principle design driven goals of passive design; urban greening; application of AI and smart-technology for site vehicle emissions mitigation (and related car space new construction mitigation), as well as circular economy.

4. Key ESD Themes to be addressed.

Within this context the project planning will adopt both principle as well as evidence-led performance controls for several key climate related impact areas such as operational and embodied carbon emissions; on-site renewable energy; on-site EV support infrastructure; water efficiency performance potential.

Table 4.1 – ESD theme definition and scope

Topic	Definition and scope
Climate Resilience	<p>Climate resilience is the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.³</p> <p>For Warrawong, this will require a range of climate modelling to assess risks to comfort for stakeholders across the seasons, assessment of impact on “greening / landscape” resilience, consideration of the performance of built form for heat, wind, rain and storms and responding with a considered and appropriate design performance response.</p> <p>A key project goal is to mitigate future risks to health, costs and wellbeing associated with changes in weather arising from Climate Change.</p>
Carbon Emissions Footprint	<p>The total amount of carbon dioxide equivalent emissions related to the redevelopment across the whole of its life cycle.</p> <p>In relation to the project, the carbon emissions footprint to be considered and actioned will extend across scope 1, 2 and 3 emissions for all uses across the project for all emissions sources arising from; materials of construction, progress of construction, the fitout of all function use types (retail, community, residential, urban infrastructure); operational end-use; mobility related emissions as well as waste.</p> <p>The key performance principles include wholesale whole of life emissions measurement in planning and design; setting of evidence-based performance metrics for all use types. The level of performance targeted to be consistent with the NSW State Net Zero plan and are to be evidenced post completion. Ongoing emissions footprint through the operational phase to be considered and implemented as far as practical.</p>
Green City and Environment	<p>The use of landscape and planting to enhance comfort and ecological values passively and actively for people and local fauna to its maximum possible extent. The key principle for the project is to maximize to the greatest extent the passive comfort value of landscape for all public and private elements as well as visual values to surrounding neighborhoods to maximize visual values.</p>
Society	<p>Society in the context of the project will be to use whole-life and life cycle modelling to evidence ESD design and performance initiatives to support decision making to deliver a preferably whole life cost. The performance goal will be to deliver preferential affordability for all project stakeholders including community, retailers, residents as well as Elanor themselves.</p>

³ Centre for Climate and Energy c2es.org

Mobility	Enabling and investigating a broad range of opportunities to maximize low emission / no emission mobility for all stakeholders.
Circular Economy	The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible. Within this context the development will prioritize reuse, dematerialization in design and construction and seek to maximise stakeholders to repurpose / recycle / adapt to the greatest extent possible.
Water	The development will investigate, identify and prioritise the potential to move towards water self-sufficiency for the long-term. The multiple uses within the development can be water intense and so whole-life modelling will be used to provide evidence to guide design and operational decisions with the goal of sufficiency with cost effectiveness also considered. Consider incentive mechanisms for all stakeholders to encourage sustainable water use.
Leadership	<p>Design decision making supported by best-in-class whole-life impact and cost modelling to validate delivery of preferred “affordability” for all stakeholders.</p> <p>Engagement with community, government, and industry stakeholders on the benefits of whole-life modelling to deliver preferable sustainable performance from an economic and environmental perspective.</p>

5. Key Sustainability Design Principles and Performance Initiatives

Table 5.1 provides a matrix of specific sustainability performance initiatives and goals to be investigated and considered for inclusion by all elements and stages of the development to achieve the overall Net Zero vision.

Future planning stages will involve the development of specific performance controls associated with each topic and initiative outlined in table 5.1.

Table 5.1 – Project Performance Principles and Initiatives

Topic	Project Performance Principles and Initiatives
Climate Resilience	<ul style="list-style-type: none"> Implement the modeling and evaluation of, and integrate performance needs in passive and or active design controls from and urban design, infrastructure and building standards that deliver climate resilience (i.e., storm / wind / temperature / precipitation / resource security) during development and into future occupation. (i.e., climate modelling to evidence risk / impact / mitigation measures both passive and active).
Carbon Emissions Footprint	<ul style="list-style-type: none"> Adopt a whole life approach to emissions quantification and performance to align with Net Zero goals with an evidence led approach. Mandatory assessment of the whole development Upfront materials and operational carbon footprint and implementation of mitigation performance aligned to prevailing best-in-class performance intensity by development element (i.e., residential / infrastructure / mixed-use / other). The use of prevailing International Standard method of measurement tools including but not limited to reporting and evaluation to be incorporated into all requirements. The application of circular economy principles to the consideration of the existing site infrastructure and potential within the redevelopment. Develop a framework for identification of possible re-use or re-purposing of existing site materials carbon footprint. The application of passive design principles (supported with modelling) to support whole life emissions reduction (i.e., energy efficiency) and the development of passive and active performance controls to ensure delivery in line with NSW planning targets. Investigate the potential to reduce residential car parking provisions linked to implementation of “smart/on-demand” parking technologies to enable 24-hour utilization of retail parking driving utilization without carbon footprint and supporting related housing affordability goals. Investigate maximizing the deployment of EV charging infrastructure to public and private parking spaces to support and align with the NSW Government transport 2030 goals of 30% EV sales in NSW. Prepare whole site / development cost benefit yield evaluation for on-site Solar PV with possible battery storage to establish the scope for achieving Net Zero by 2050 with all end-use energy considered. Extend energy efficiency controls – consistent with NSW Government targets to all functional uses including: retail tenants / commercial / community / infrastructure base building and uses.

Green City and Environment	<p>Green Infrastructure to be embedded to the maximum extent practical for public realm, solar PV support and private spaces.</p> <ul style="list-style-type: none"> Investigate a whole-site and local precinct cost-benefit for stormwater retention / reuse. Cost benefit evaluation of on-site retain / reuse / recycle versus managed off-site and environmental water reuse potential. Demonstrate and evidence approaches. Consider the broader local flora and fauna context and maximise the potential of landscape design to mimic local endemic conditions.
Society	<ul style="list-style-type: none"> Demonstrate community social and economic benefits using whole-life cycle cost modelling related to Net Zero goals the uplift gained by site stakeholders for the adopted performance measures. Prioritise community and visitor health and wellbeing through inclusion of wellbeing principles in the development including those related in BASIX. Create new public spaces within the site which provide opportunities for public interaction and gathering for sustainability purposes and outcomes.
Mobility	<ul style="list-style-type: none"> Implement the transport related initiatives noted in Emissions above. Seek urban design solutions which improve and prioritise walking, cycling and other non-private transport options. Seek to integrate maximum scope of bicycle and E-bike infrastructure including end-of-trip for site employees, seeking alignment and enhancement of Wollongong City Council's UCI Bike City initiative.
Circular Economy	<ul style="list-style-type: none"> Investigate the scope for adaptive reuse / retention of existing site structures. Seek to implement dematerialization controls for all retail fitouts including removal of "de-fit" clauses. Investigate the opportunities for on-site facility for residential and commercial "end of life swap / reuse" or partnerships to facilitate circular economy. Investigate sustainable mechanisms for waste mitigation including mandating compositable retail packaging / limiting or requiring take-back packaging for all retail and commercial operations. Investigate mechanisms to maximise sustainable on-site green waste / composting facilities for residential towers linked to garden maintenance operations. Implement mandatory retail tenancy and residential kitchen design with 3rd "green" bin within food prep areas to support maximum composting on-site. Consider implementing local partnerships to support.
Water	<ul style="list-style-type: none"> An integrated water cycle and water demand assessment to establish the lowest life cycle cost and consumption for potable water. Mandatory evaluation of the whole life performance of water vs air-based cooling systems for commercial and retail to demonstrate the implemented design direction. Impact aspects to model include water supply, carbon footprint and cost on a whole-life basis to validate the need for on-site water reuse. Apply to the maximum extent passive water sensitive urban design (WSUD) principles, for all public realm urban landscape.

Leadership	<ul style="list-style-type: none"> • New site stormwater infrastructure and urban planning to incorporate water sensitive urban design.
Leadership	<ul style="list-style-type: none"> • Apply all principles, investigation and initiatives across the entire development including all uses of residential, commercial, retail and community. • Investigate broadscale community engagement in the design and delivery of key sustainability initiatives with the goal of delivering an exceptional example of long-term – stakeholder driven sustainable community. • Seek to maximise community investment across the core sustainability themes.

Refer to Ethos Urban planning report for visualization of the key sustainability initiatives.