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Net Zero Statement

Crescent Parklands DPG Project 38 Pty Ltd

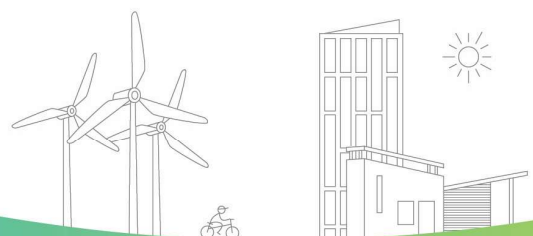
To be built at 1 Crescent Street, Holroyd NSW 2142

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1. Cover Letter and certification

Efficient Living has been engaged by Tiberius (Holroyd) Pty Ltd to prepare a Net Zero Statement (NZS) to support the State Significant Development Application (SSD-70283710) for Crescent Parklands.

The NZS is required for the office floor space component (2,475 sqm GFA) of the proposal as it is considered 'large commercial development' under the Sustainable Buildings SEPP (office development over 1,000 sqm floor space).

This statement outlines the approach for the office floor space activities to be able to operate as 'net zero emissions' in operation.

Contact

Prepared By:

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The design considers passive and active measures to reduce energy use and greenhouse gas emissions, while creating a pathway toward net zero compliance as per SEPP Clause 35C.

The office floor space component of the project has been designed to be serviced by all electric appliances and systems. Scope 1, on-site fossil fuel, related carbon emissions are therefore eliminated, and Scope 2 emissions can be eliminated by contracting supply of renewable electricity.

Disclaimer

This report has been prepared in accordance with the agreed scope of work between Efficient Living and Tiberius (Holroyd) Pty Ltd. Efficient Living has acted diligently and employed all reasonable care in the preparation of this report. The information contained within is based upon the documents and information, accepted in good faith as being true and accurate, provided by the client, architects, and consultants. Should amendments occur to the documents referenced in this report, this may require an update.

2. Mechanical Engineer's Certification

I, as a qualified mechanical engineer, have reviewed the technical content of this Net Zero Statement and confirm its adherence to net zero criteria outlined under the State Environmental Planning Policy (Sustainable Buildings) 2022. This certification validates that the strategies and assumptions detailed in this report are accurate and feasible as per the current design intent of the Crescent Parklands redevelopment.

I have reviewed the statement and certified that it meets the technical accuracy and compliance standards required by the NSW SEPP for net zero operations.

Certified by:

Mechanical Engineer: Steven Cassells (NER, RPEQ, CEng, MSc, BEng, MCIBSE, MIEAust.)

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3. Introduction

This Net Zero Statement has been prepared on behalf of Tiberius (Holroyd) Pty Ltd in association with a State Significant Development Application (SSDA) for a proposed mixed-use development at 1 Crescent Street, Holroyd (the site).

The report responds to matters raised by the Department of Planning, Housing and Infrastructure (DPHI), Cumberland City Council, other State government authorities /agencies, utility service providers and the community during public exhibition of SSD-70283710.

The report also assesses the proposed amendments to the original proposal, including changes to the following:

Stage A – Mixed use podium, Buildings 1 to 3 and supporting infrastructure

Stage B – Buildings 4 and 5 and supporting infrastructure

Stage C – Buildings 6 and 7 and supporting infrastructure

The proposed changes extend beyond minor refinements which can be accommodated via a Submissions Report. As a result, a combined Submissions and Amendment Report has been prepared and consent sought from DPHI to amend the SSDA as per section 37 of the Environmental Planning and Assessment Regulation 2021 (the Regulation).

To understand the cumulative impact of the above design refinements, the project description has been updated to reflect the proposed amendments to the scheme as originally lodged with DPHI for assessment.

4. Project Summary

The vision for the project is to deliver a new mixed-use precinct that fosters a dynamic live-work-play lifestyle. This precinct will feature a diverse range of housing options, including affordable housing, all complemented by expansive public open spaces. Retail and commercial uses will also be integrated, establishing a new, local destination that encourages community engagement and interaction.

The proposal seeks approval for an SSDA for a mixed-use precinct with public open spaces comprising the following components:

- Site establishment works, tree removal, site preparation, earthworks and excavation, services augmentation, and remediation works.
- Development of seven residential buildings comprising four shop top housing buildings and three residential flat buildings as outlined below:
 - Buildings 1-3 are integrated with an eastern mixed-use podium building, while Building 4 is situated above mixed residential / commercial space, offering shop-top housing.
 - Buildings 5-7 consist of residential flat buildings.
- Delivery of 15% of the total floor space as affordable housing to be distributed across each of the 7 residential buildings, or within a consolidated building proposed proportionately as buildings are developed.
- Approximately 134,208 m² total floor space comprising:
 - A total of 2,496 m² retail GFA and approximately 2,710 m² commercial GFA.
 - 1,374 residential apartments
 - Communal amenity facilities for residents.
 - Building services areas.
- Activation of Crescent Street through a mix of amenity areas and pockets of open space.
- Shared car parking for Buildings 1 to 3 and the commercial and retail tenancies within the podium.
- Shared car parking for Buildings 4 to 7 within the above ground parking structures adjoining Buildings 4 to 5 and 6 to 7.
- Landscaping and accompanying place making works including:
 - Public open space, hard and soft landscape works.
 - Ground and rooftop communal open space.
 - Publicly accessible through-site links.
 - At grade car parking for the park, forecourt and retail areas.
 - Vehicle access via a new internal publicly accessible road and vehicle accessway.
 - New pedestrian footpaths and access arrangements to the site.
 - Café tenancy within park-side structure.
- Staged completion of a public park.
- Associated works involving the widening of Crescent Street and upgrades to the Crescent Street and Woodville Road intersection.

Large Commercial Development under the Sustainable Buildings SEPP

The project includes floor space expected to be allocated to office uses of approx. 2,710 sqm.

The Sustainable Buildings SEPP requires a Net Zero Statement for a development application for large commercial developments (offices with a net lettable area of at least 1,000sqm, hotel or motel accommodation with at least 100 rooms and services apartments). The following ESD measures support the ability for the office component of the proposal to operate with net zero carbon emissions in operation by 2035.

5. On site Fuel Usage

The design for the office tenancies has been optimized to operate without use of fossil fuels by proposing a fully electric operation. Key strategies include:

- **All-Electric Operations for office tenancies:** The buildings have been designed to operate as 'all electric' across all office tenancies, ensuring that each tenant can contribute to a fossil fuel-free environment (with renewable electricity supply) without modifications to core systems. This includes space heating & cooling, hot water, lighting etc.
- **Electric cooking:** Any internal kitchen requirements related to office tenancies will be proposed with induction cooktops and electric ovens. Induction cooking offers better energy efficiency and performance than gas while eliminating on-site gas infrastructure.

6. Energy Efficient Strategies

Building Envelope

The building envelope will be designed to enhance thermal performance and minimize energy loss by complying with the latest NCC 2022 Section J inclusions for building fabric and energy requirements.

- **High-Performance Insulation:** Walls, roofs, and floors will incorporate high-R-value materials to reduce heating and cooling demands.
- **Efficient Glazing and Shading:** High-performance, double-glazed windows with external shading devices will minimize solar gain, especially on western and northern facades.
- **Airtight Construction:** Enhanced sealing around windows, doors, and other envelope penetrations ensures minimal air leakage.

HVAC and System Efficiency

The HVAC system will utilize high-efficiency electric air conditioners with ACOPs targeted at 3.5 or above in the procurement process. System selection will be carried out in detailed design stages. Other potential enhancements to the systems include:

- **Smart Control Systems:** Motion sensors, occupancy-based lighting, and HVAC controls will reduce energy use during low-occupancy periods.
- **High-Efficiency Lighting and Appliances:** LED lighting throughout, efficient layout design, and high-star-rated appliances will be specified to reduce operational energy requirements. At detailed design, a lighting design specification for commercial floorspace will be incorporated seeking to provide LUX outcomes for activities consistent with AS1680 rather than targeting exceedance of these standards (through application of additional efficiency mechanisms).
- **Energy Monitoring & Management:** The commercial tenancies will employ energy monitoring system with sub-metering in accordance with the latest NABERS requirements to be able to assess and improve the energy rating of the base building and whole building in accordance with the Commercial Building Disclosure.
- **Advanced Energy management and demand response systems:** Implement smart energy management systems that monitor and optimize energy use based on real-time data, weather conditions, and occupancy levels. Demand response strategies can reduce peak energy demand and provide additional grid stability, minimizing dependency on external energy sources that may rely on fossil fuels.

Hot Water Efficiency:

Hot water will be provided by localised electric boilers, reducing demand on the electricity grid during peak periods. Additionally, hot water pipes will be insulated, and low-flow fixtures installed to reduce overall hot water energy demand.

NABERS Energy 5.5 Star Agreement to Rate:

We note that a NABERS Agreement to Rate for office spaces, of NABERS Energy 5.5 stars, will be submitted with the development application supporting above industry average energy efficiency outcomes.

7. Renewable Energy Generation and Storage

- **On-site Renewables:** The development will designate identified roof areas that can accommodate future (PV) systems with a potential capacity of over 250kW, much of which would be in addition to the anticipated requirement of c 100kW servicing residential uses under Sustainable Building SEPP BASIX requirements.
- **Energy Storage Solutions:** Infrastructure provisions will be made under NCC2022 Section J to allow future installation of battery storage.
- **Off-Site Renewable Energy Commitment:** Future building owners/operators will be able to secure renewable electricity power purchase agreements for base building supply. These contracts often offer lower electricity purchase costs and would be required to achieve Net Zero in operation for the office spaces.
- **All-Electric Vehicle (EV) Charging Infrastructure:** Office space car parking provision will benefit from NCC2022 Section J infrastructure requirements to ensure that EV charging spots benefit from a minimum supply of energy during the day and also that a minimum percentage of spots is capable of installing a Type 2, 7kW, charger.

8. Energy Consumption and Emissions Calculator

Annual Energy Use Projections:

As the detailed design of the commercial/ office tenancies isn't available and final selection of mechanical and electrical equipment is yet to be finalized, a comprehensive energy model is not currently available.

However, based on projected energy use data from NABERS Reverse calculator for Office, an annual consumption of approximately 447,719 kWh of electricity is benchmarked (refer Appendix B). These estimates reflect a typical operational profile for a 2710sqm office (NABERS Whole Building) with centralized hot water, services, and associated amenities.

Greenhouse Gas Emissions Calculations:

Projected greenhouse gas emissions are calculated based on Scope 1 (direct emissions from fossil fuels), Scope 2 (indirect emissions from purchased electricity), and Scope 3 (other indirect emissions). Using Australia's National Greenhouse Accounts Factors (2024 for NEM grid), and the approximation of annual energy use (assumed from electricity) the total annual emissions for the office floor space is estimated at 313.40 tonnes CO₂-e p.a..

These carbon emissions are mostly Scope 2 only and could be eliminated, to provide a Net Zero emissions outcome if both building owner and tenants opted for 100% renewable electricity supply. Further, as the grid decarbonizes over the coming decades, this result will reduce accordingly.

Table 1 Energy Consumption & Emissions per Annum

	Energy Consumption estimates per annum	Greenhouse Gas Emissions estimate per annum
Scope 1	Natural Gas: 0 MJ	0 tCO ₂ -e/year
Scope 2	Electricity: 447,719 kWh	295.49 tCO ₂ -e/year
Scope 3	Residual mix of electricity	17.91 tCO ₂ -e/year
Total		313.40 tCO ₂ -e/year

Note: Refrigerant leakage has not been calculated as data unavailable

Note: Upfront emissions have not been included as Scope 3

Appendix A – Net Zero Statement Checklist

Department of Planning and Environment Net Zero Statement Technical Note		
Net Zero Statement Checklist		
Cover Letter		
Project details and overview	☒	
Confirm if development is fossil fuel-free or requires a transition strategy.	☒	
Certified and signed by a mechanical or electrical engineer	☒	
On-Site Fossil Fuel Usage		
If development is fossil fuel-free:		
Provide evidence of fossil fuel-free operations	☒	
If development is fossil fuel dependent:		
Provide details of each fossil fuel system used and electrification transition strategy.	☐	
Provide evidence the development will operate without fossil fuel by 2035 by confirming it -		
Incorporates infrastructure or space for necessary infrastructure to transition – plant, equipment, ventilation etc	☐	
Energy Efficiency		
Have energy reduction initiatives been described for the following? -		
Passive design features – building orientation, natural ventilation, insulation, glazing performance, air tightness etc.	☒	
Technical design features – energy efficient HVAC and lighting systems, smart controls and occupancy sensors etc.	☒	
Renewable Energy Generation and Storage		
Have renewable energy or storage initiatives been described? – solar panels, photovoltaics, wind turbines etc.	☒	
Estimated Energy Consumption if available		
Estimated fossil fuel consumption per year	☐	
Estimated electricity consumption per year	☐	
Total estimated energy consumption per year kWh/y/m ² of GFA	☐	
Estimated GHG emissions for energy use if available		
Estimated direct (scope 1) GHG emissions per year	☐	
Estimated indirect (scope 2 and 3) GHG emissions per year	☐	
Total estimated GHG emissions per year	☐	
Abbreviations & Glossary		
DHW – Domestic hot water		
GFA – Gross floor area		
GHG – Greenhouse gas emissions		
HHW – Heating hot water		
HVAC – Heating, ventilation and air conditioning		
PV – Photovoltaic		
SB SEPP – State Environmental Planning Policy (Sustainable Buildings) 2022		
Emission scopes – A mechanism for classifying different sources of GHG emissions used in carbon accounting. There are three ‘scopes’		
Scope 1 covers direct emissions from on-site fuel combustion (e.g. diesel, natural gas and LPG). Scope 2 covers indirect emissions from the consumption of purchased electricity, steam, heating and cooling. Scope 3 covers indirect emissions from activities not owned or controlled by the reporting organisation, including production of fuels, electricity transmission losses, embodied carbon in construction and maintenance (including materials and products) tenant energy consumption, waste treatment, water treatment and travel to/from the building.		

Appendix B – NABERS Reverse Calculator

For an office building with 2710sqm GFA located within postcode 2142, referring to NABERS energy rating target of 5-Stars for the Whole Building with 180 computers; NABERS reverse calculator is used to calculate benchmark for maximum allowable energy consumption. 100% Electricity is assumed in total energy consumption and emissions are calculated.

Benchmarking factor at 5 stars NABERS Energy	102
Maximum Benchmarking Emissions at 5 Stars NABERS Energy:	313,403.9 kgCO ₂ -e/year
Benchmarking Emissions Intensity at 5 Stars NABERS Energy:	115.6 kgCO ₂ -e/sqm. Year
Energy Intensity at 5 Stars NABERS Energy:	594 MJ/sqm. Year
Reporting Emissions for this Office – Scope 1, 2 and 3:	313,403 kgCO ₂ -e/year
Reporting Emissions for this Office – Scope 1 and 2:	295,494 kgCO ₂ -e/year
Maximum Allowable Energy Consumption:	
Target Max Electricity:	447,719 kWh per annum
Target Max Gas:	0 MJ per annum
Target Max Diesel:	0 L per annum
Scope 1 Emissions factor for Natural Gas (NGA Factors 2024)	51.53 kgCO ₂ -e /GJ
Scope 2 Emissions Factor for grid electricity from National Greenhouse Accounts (NGA) Factors 2024	0.66 kgCO ₂ -e /kWh
Scope 3 Emissions factor for grid electricity (Residual mix) (NGA Factors 2024)	0.04 kgCO ₂ -e /kWh
Scope 1 Emissions (no Gas / Diesel Usage)	0 kgCO ₂ -e/year
Scope 2 Emissions (447,719 kWh X 0.66)	295,494 kgCO ₂ -e/year
Scope 3 Emissions (Scope 1,2 and 3 – Scope 1 and 2)	17,909 kgCO ₂ -e/year
Total	

Note: These results have been calculated based on inputs from NABERS reverse calculator and are an indication only, cannot be promoted or published. To promote an energy rating target, a NABERS Commitment Agreement is required.

Results

Benchmarking factor at 5 stars NABERS Energy:	102
Maximum Benchmarking Emissions at 5 Stars NABERS Energy:	313,403.9 kgCO ² -e/year
Benchmarking Emissions Intensity at 5 Stars NABERS Energy:	115.6 kgCO ² -e/m ² .year
Energy Intensity at 5 Stars NABERS Energy:	594 MJ/m ² .year
Reporting Emissions for this office – Scope 1, 2 and 3:	313,403 kgCO ² -e/year
Reporting Emissions for this office – Scope 1 and 2:	295,494 kgCO ² -e/year
Maximum Allowable Energy Consumption:	
Target Max Electricity:	447,719 kWh per annum
Target Max Gas:	0 MJ per annum
Target Max Diesel:	0 L per annum