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PORTSIDE EAST – BUILDING 18

HAMILTON

DA – SUPERIOR DESIGN OUTCOMES REPORT

BROOKFIELD RESIDENTIAL PROPERTIES

ON BEHALF OF

BROOKFIELD PORTSIDE EAST PTY LTD

Client

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SUSTAINABILITY CONSULTANTS

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EXECUTIVE SUMMARY

The proposed development, Portside East Building 18, comprises of a single tower that rises from a podium level.

EMF Griffiths are the project's sustainability consultants. This report outlines the project's commitment to superior design outcomes with respect to ESD.

The key achievements which can be considered a superior design outcome with respect to ESD are as follows:-

Façade Amenity	A high performance integrated façade that incorporates extensive private balconies that provide passive shading and shelter from wind, rain and intense sunlight.
Energy Management and Lifecycle Impacts	The building incorporates significant passive design initiatives that result in a reduction in annual cooling demand when compared to a standard deemed to satisfy outcome. The annual thermal energy load is less than the code required levels. This results in direct reduction in energy to heat and cool the building with associated improvements in running costs, efficient resource use and less greenhouse gas emissions.
Water	Fire test water to be re-used for pool top-up and irrigation.
Transport	The development features secure bicycle parking spaces for each dwelling and for retail visitors.
Waste and Materials	As a brief requirement, materials shall be selected which minimise the use of materials that deplete natural resources or create toxic pollution during manufacture. Materials with potential for end of life recycling or that contain or are manufactured with high levels of recycled or waste materials are encouraged. Dedicated recycling collection bins will be provided within garbage chute rooms on each level. Recycling receptacles will be placed adjacent to each general waste bin located in public and common areas.

SECTION 1.0 INTRODUCTION

EMF Griffiths has been engaged by Brookfield Residential Properties on behalf of **Brookfield** Portside East Pty Ltd to report on Superior Design Outcomes (SDO's) required by the Department of State Development, infrastructure and planning (DSDIP) at Portside East Building 18.

This report will demonstrate how the proposed development protects, manages and enhances natural systems and promotes the efficient use of materials, water and energy to minimise impacts on the environment. It will illustrate the project's specific targeted measures that contribute to a sustainable development.

The development has set real and attainable goals to achieve a superior design outcome. The project focuses on the following:

- A commitment to passive design principles, including energy efficiency and thermal comfort as well as integration of daylight and natural ventilation.
- Project requirements for responsible materials selection and waste reduction.
- Water use reduction through efficiency measures.
- Transport initiatives such as encouraging cleaner modes of transport.

1.1 BUILDING DESCRIPTION

The building consists of one (1) tower rising from a central podium with the following areas:

- Class 2: Residential apartments on Podium Level 2 through to Level 14 consisting of:
 - One hundred and fifty six (156) residential apartments.
 - One (1) bed and two (2) bed apartments.
 - Roof deck with resident's pool and outdoor common area.
- Class 6: Retail on Ground Floor and mezzanine Level
- Class 7a: Car parking in Basement Level 1, Ground floor, mezzanine and Podium Levels 1 and 2.

SECTION 2.0 SUPERIOR DESIGN OUTCOMES

Significant measures have been undertaken to ensure that this development responsibly impacts upon the local environment and addresses environmental, social and economic sustainability aspects for the buildings' occupants, users and the wider community.

The environmental vision, principles, goals and strategies for Portside East Building 18, are described as follows:

Vision	To Create a Sustainable Urban Community			
Principles	Promoting and maintaining a liveable community.	Providing economic benefit.	Protecting ecological values and optimising resource use.	Promoting planning and design excellence.
Goals	A community that is diverse, safe and healthy, has access to services, jobs and learning, that fosters active local participation and is a pleasant place to live, work and visit while integrating with and enhancing the value of existing neighbourhoods.	Economic benefit is maximised by facilitating the release of urban land, incorporating lifecycle costs including operational savings, long term employment opportunities, and creating partnering opportunities and long term value.	Protect, manage and enhance natural systems, habitats and biodiversity, and promote the innovative and efficient use and management of materials, water and energy to minimise impacts on the climate.	Develop a modern resilient and adaptable urban form that promotes connectivity, safety and accessibility whilst recognising existing local values and aspirations.
Strategies	• Housing affordability. • High quality of life. • High levels of community participation. • Healthy and safe communities. • Respect existing communities.	• Public benefit. • Lifecycle costs. • Land supply. • Partnerships. • Sustainability champion.	• Climate impact. • Water. • Energy and transport. • Materials and waste. • Habitats and biodiversity. • Pollution.	• Community and place. • Responsive urban form. • Quality public realm. • Infrastructure. • Connectivity, safety and accessibility. • Engagement and partnerships.

2.1 FAÇADE AMENITY

Deliverable	Strategy
Daylight and Glare	Glare from sunlight, daylight and artificial lighting should be controlled. Glare is a function of contrast against surrounding surfaces and angle of incidence. A high visual light transmission (VLT) allows for an abundant quantity of natural daylight to enter the space which in turn will offer substantial energy savings and at the same time improve the wellbeing of occupants. However, too much daylight, in conjunction with a high ultra violet transmission (UVT), will cause glare, overheating and fading issues within the space. As such a maximum 40% VLT is recommended for blinds generally and solar blinds with maximum 3-5% VLT for units with high exposure. Blind fixing points are provided as standard. From previous experience around 95% of unit owners install blinds to add additional daylight control.
Natural Ventilation	Window openings and sliding doors to living areas and bedrooms to have openings to allow for cross-flow ventilation. Window openings from bedrooms are to be maximised whilst complying with the BCA operability restrictions. Cross ventilation is incorporated into the design of the units.
Passive Design	This project is targeting a 5 Star minimum and 6 Star average NatHERs rating which is a significant improvement on Building Code Passive Design requirements. A balance has been maintained between sheltered, enclosed spaces whilst encouraging natural ventilation and passive cooling. All apartments have private balconies to assist with passive cooling and minimising heat gain in summer. The project's passive design features that achieve this level of performance are detailed in Section 3.
Private External Space	All apartments are designed with a private balcony accessed by the living area. The master bedroom of higher standard apartments generally also has access to a private balcony. The balconies increase the number of façades to each apartment therefore increasing passive cooling through natural ventilation. The balconies also assist with sheltering the main living areas of the apartments from intense sunlight. By providing flexible indoor - outdoor type rooms that can be comfortably used during all seasons internal living spaces can be reduced significantly. The majority of the private open space on all apartments is shaded for at least 3 hours during mid-summer.
Internal Noise Levels	Building services noise is required to meet the satisfactory design sound levels provided in Table 1 of AS/NZS 2107:2016; 35 L_{Aeq} dB(A) for sleeping areas and 45 L_{Aeq} dB(A) for common areas.

2.2 ENERGY MANAGEMENT

Deliverable	Development Strategy
Energy Sub-metering	Sub-metering is targeted for substantive energy uses within the building (greater than 10kVa) and to monitor light and general power consumption for common areas. A minimum of check metering for common areas is to be provided that allows monitoring of changing trends will be provided in accordance with Section J of the Building Code. Each meterable premises will have a supply authority electricity sub-meter installed which will measure only the electricity supplied to that meterable premises. Sub-meters will allow for accurate billing to ensure owners or tenant's only pay for the amount of electricity they use. The supply authority electricity sub-meter will be installed in a common area and free of hindrance or obstruction to a person authorised to read and/or maintain the electricity sub-meter.
Energy Efficient Appliances	Project team to explore the preferential specification of high star rated energy efficient appliances for clothes dryers and dishwashers and other installed appliances as part of the base building works. Efficient induction hoods to be installed. Ratings are to be included in returnable schedules.
Energy Efficient Lighting	LED lighting with a minimum output of 40 lumens per Watt to be used as standard in apartments. Excludes a heat lamp used in a bathroom for the purpose of radiating heat. Minimum CRI of 80 for all LED lights. LED for common areas.
Energy Efficient Lifts	Regenerative drive converts the excess energy generated by a lift into electricity that can be reused elsewhere in the building. With conventional drives, this energy is converted into heat, which then needs to be removed from the building by air conditioning systems. Regenerative drive can cut lift energy consumption by 20-35% on average, depending on building height and lift speed. Regenerative drives are included in proposed lift design.
Efficient Ventilation Systems	Demand based ventilation systems are included preferentially over large centralised systems. Individual toilet exhausts are to be provided for apartments so that a demand based system is provided rather than a 24/7 central system for the whole building. CO monitoring is to be provided on car park exhausts so ventilation will match demand from the space. The car park also has a mixture of natural air intakes and mechanical ventilation which save energy expended on supply air fans.

2.3 WATER

Deliverable	Development Strategy
Water Conservation	Current Queensland Development Code (QDC) Performance Criteria P6 requires that; All shower roses have a minimum 3-star Water Efficiency Labelling and Standards rating 4.5 to 9 litres per minute.
Water Conservation	Current Queensland Development Code (QDC) Performance Criteria P7 requires that; All toilet cisterns have a dual flush function and have a minimum 4-Star Water Efficiency Labelling and Standards rating 4.5 litres per flush full flush and 3 litres per flush half flush, and are compatible with the size of the toilet bowl to allow for proper functioning of the toilet.
Water Conservation	Current Queensland Development Code (QDC) Performance Criteria P8 requires that; All tap ware have a minimum 4-star Water Efficiency Labelling and Standards rating, 6.5 to 7.5 litres per minute with tap aerator.
Water Efficient Appliances	Dishwashers and washing machines are to be supplied as part of the base building works. High WELS rated fixtures, minimum 4 star WEL rating, are being explored for the project and the rating will be included in returnable schedules.
Water Meters	Water meters are required on all major water uses in the project and in each dwelling and a practical mechanism for data monitoring is identified.
Fire System Water Consumption	Hydrant test water will be reused for irrigation. Sprinkler water is not considered acceptable for reuse.
Fire System Water Consumption	Each floor or section of a building fitted with a sprinkler system is to have isolation valves or shut-off points for floor-by-floor testing.

2.4 TRANSPORT

Deliverable	Development Strategy
Bicycle Facilities - Residents	To encourage cycling as a mode of transport, provision of lockable, covered, bicycle parking spaces will be provided at the rate of one (1) per unit; and One (1) visitor bicycle parking space per 400m² GFA or part thereof.
Bicycle Facilities - Visitors	To encourage cycling as a mode of transport, provision of lockable, covered, bicycle parking spaces will be provided at the rate of one (1) per 200m² GFA or part thereof. These will be located on the Ground Level and Basement Level , close to the retail outlets or a major public entrance, in an accessible on-grade location, signposted.
Electric Car Charging	Electric car charging facilities will be incorporated into the building design upon request of buyer.

2.5 WASTE AND MATERIALS

Deliverable	Criteria
Sustainable Supplier	The design will demonstrate innovation in the selection and use of construction materials and products, which minimise the use of materials that deplete natural resources or create toxic pollution in their manufacture. Materials with potential for end of life recycling or that contain or are manufactured with high levels of recycled or waste materials should be encouraged. The following strategies are to be considered for materials selection: • Timber and composite timber products used in the building and construction works are required to be sourced from either or a combination of post-consumer re-used timber; or Forest Stewardship Council (FSC) certified Timber. • Total cost of PVC content is to be reduced through replacement with alternative materials. • Thermal insulants and refrigerants, where they are used are to avoid the use of ozone-depleting substances in both manufacture and composition. • All wall, ceiling, carpet and floor finishes, and adhesives and sealants are to be low-VOC emitting (EN 13419) • All composite wood product used, including joinery and loose furniture, is to be low emission formaldehyde (rated E0) • The project will, where appropriate, source their manufactured materials from suppliers with ISO14001 certification and EMPs in place. • The development will use materials sourced locally where practical. • Reduction of Portland cement in all concrete mixes across the project.
Recycling Waste Collection and Storage	Recycling waste collection area to be included as a minimum adjacent to waste chutes on each floor. Recycling receptacles to be located adjacent to general waste bins in common and public areas.

2.6 MANAGEMENT

Deliverable	Criteria
Environmental Management Plan.	A comprehensive, site specific Construction Environmental Management Plan is to be provided
Building Users' Guide	A Comprehensive Building User's Guide is to be provided, based on information from all design consultants and incorporating operating instructions and benchmarks for consumption and usage.
Waste Management Plan	Waste Management Plan is to be provided, outlining benchmarks for recycling and waste management both during construction and on an ongoing basis.
Commissioning, Data Collection and Monitoring	Design team are required to monitor and verify the commissioning of services in the development. Design team to review commissioning results as part of 12 month defects liability period.

SECTION 3.0 SUMMARY OF PASSIVE DESIGN MODELLING

3.1 RESIDENTIAL NATHERS MODELLING

Preliminary modelling of units has been undertaken for the Portside East Building 18.

The models were assessed for the following:

- Determine glazing requirements.
- Determine the additional treatments required to achieve the superior design outcome of an average 6 Star NatHERS rating for across the development and a minimum 5 Star NatHERS rating for an individual unit.

All apartments were modelled with the following:

- Tinted glazing systems for all apartments.
- External walls: 150mm concrete with insulation and internally lined with plasterboard.
- Inter-unit walls: Stud walls with insulation and plasterboard either side.
- Internal walls within apartments: stud walls with plasterboard.
- Exposed floors: 200mm concrete with tiles/timber/carpet and underlay with insulation below concrete slab.
- 1200mm ceiling fans in all bedrooms and some living rooms on Ground Floor to Podium 2.
- Exhaust fans in all kitchens/WC and laundries.
- Downlights that prevent the egress of air from the occupied space to the ceiling cavity.

The following is an outline of preliminary NatHERS modelling results using the BERS Pro software.

Level	Unit	Star Rating
Podium 1	1	5.1
Podium 1	2	5.2
Podium 1	8	5.2
Podium 3	5	5.6
Podium 3	7	5.1
Podium 3	8	7.3
Podium 3	12	6.9
Level 4	5	5.9
Level 4	12	5.9

In summary, it is calculated that the apartments modelled are able to achieve an average greater than 6 Stars with the proposed building fabric. The units modelled are deemed the worst case units.

3.2 NON RESIDENTIAL AREAS

A Section J-JV3 modelling approach is to be adopted for non-residential areas of the project. Below are listed the thermal properties for the building fabric elements expected to be required for the Class 2 common areas and Class 6 areas of the building to provide an improvement above the Deemed to Satisfy requirements of the BCA for passive design.

DESCRIPTION	PROPOSED CONSTRUCTION VALUE	NOTE
Roof: Concrete slab Assumed dark colour	$R_{TOTAL}=4.2$ Solar Absorbance ≥ 0.6	Possible insulation material:- Bradford Gold Ceiling Batts R3.0 + reflective foil (0.9 outer, 0.05 inner emittance)
Shading	As per current architectural scheme	Minimum 3m awning recommended to Retail of Ground floor.
All Glazing (Windows and Doors)	Anticipated Glazing Whole of window performance $U=4.5$ (or lower); $SHGC=0.44$ (or lower)	Example Glazing type: GJames 450 Series 6.38mm Comfortplus Neutral Low-E Laminate ($U:4.6$; $SHGC:0.44$)
External Walls: Concrete walls Assumed dark colour	$R_{TOTAL}=2.8$ Solar Absorbance ≥ 0.6	Possible insulation material: 50mm Kooltherm Insulation boards.