

Owners of Strata Plan 50411

**Planning Proposal 153-157 Walker
Street, North Sydney**

Sustainability Strategy

153-157 Walker Street Sustainability Strategy

Final | 22 March 2021

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It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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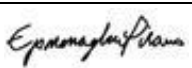
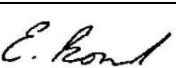
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Contents

	Page
1 Background	1
1.1 Overview	1
1.2 Site description	1
2 Statutory Context	2
1.1 Sydney region plans	2
1.2 Local Planning Context	3
3 Sustainability Strategy	5
3.1 Energy efficiency	5
3.2 Passive design	6
3.3 Thermal mass	6
3.4 Natural ventilation	7
3.5 Water conservation	7
3.6 Waste management & minimisation	7
3.7 Stormwater management	8
3.8 Building materials	9
3.9 Adaptive reuse of buildings	9
3.10 Hot water systems	9
3.11 Utilisation of roof space	10
4 Conclusion	10
5 References	11

1 Background

1.1 Overview

The owners of strata plan 50411 have engaged Arup to provide sustainability advice for the 153-157 Walker Street Planning Proposal at North Sydney, which includes a commercial tower and podium.

The purpose of this report is to outline the initiatives that recommended for the proposal that contribute towards the principles of Environmentally Sustainable Development (ESD). ESD requirements are guided by local and regional policy, therefore this report identifies the aims and objectives of relevant policies, providing details as to how the proposal will seek to align.

1.2 Site description

The site is rectangular in shape and comprises a total land area of 1,928m². It is positioned on the eastern side of Walker Street and has existing vehicular access to two separated basements from Little Walker Street. It has frontages to Walker Street to the west and Little Walker Street to the east of 45.6m respectively and is located 20m to the south of the intersection of Berry / Arthur and Walker Streets (see Figure 1).



Figure 1 Aerial view of the site and immediate surrounding context

The land across the site falls from a high point on Walker Street (RL 61.5 in the north-west corner) to the south east. Along Walker Street, the site falls by 3.3m from north to south whilst a comparative fall of 1.4m is observed along Little

Walker Street. The site falls by 3m on average from the western to the eastern boundary.

2 Statutory Context

This section provides an outline of relevant policy and planning requirements for consideration in the context of 153-157 Walker Street. It recognises that the North Sydney Local Environmental Plan 2013 (LEP) and North Sydney Development Control Plan (DCP) are the primary consideration but has drawn reference from other state and regional policy where relevant.

1.1 Sydney region plans

The strategic policy context for the project includes the Greater Sydney Regional Plan – A Metropolis of Three Cities. The Greater Sydney Commission (GCC) has developed a number of sustainability objectives for the North City District in which 153-157 Walker Street resides. Those specifically relating to the development include:

- *Planning Priority N7: Growing a stronger and more competitive Harbour CBD*
- *Planning Priority N10: Growing investment, business opportunities and jobs in strategic centres*
- *Planning Priority N12: Delivering integrated land use and transport planning and a 30-minute city*
- *Planning Priority N13: Supporting growth of targeted industry sectors*
- *Planning Priority N21: Reducing carbon emissions and managing energy, water and waste efficiently*
- *Planning Priority N23: Preparing local strategic planning statements informed by local strategic planning.*

1.2 Local Planning Context

North Sydney LEP

The North Sydney LEP is the principle legal document for controlling development and guiding planning decisions made by Council. This Plan aims to make local environmental planning provisions for land in North Sydney in accordance with the relevant environmental planning instrument under section 3.20 of the Environmental Planning & Assessment Act. The Plan has a number of aims with following being most relevant to sustainability:

- Maintain and protect natural landscapes, topographic features and existing ground level.
- Minimise stormwater run-off and its adverse effects and improve the quality of local waterways.

North Sydney DCP

The DCP outlines submission requirements and performance targets that must be met in order to demonstrate that the proposed development will deliver efficient use of resources. For developments >5,000m² GFA the following requirements apply:

- a NABERS Energy Commitment Agreement and associated documentation; OR
- if a NABERS Energy rating tool is not available for the particular type of non-residential development proposed, an Energy Efficiency Report from a suitably qualified consultant that sets out proposed energy efficiency measures; AND
- a WSUD report from a suitably qualified consultant; AND
- evidence that the building design has been awarded a Green Star rating; OR
- if evidence of a Green Star rating being awarded is not available at DA stage or if a Green Star rating tool is not available for the particular type of non-residential development proposed, a Sustainability Report including an Efficient Use of Resources Commitment Table (to be completed by suitably qualified consultants) must be submitted.

The DCP outlines a series of objectives in relation to specific sustainability themes which are encouraged to be met by the development. Each objective includes a list of provisions outlining the mechanisms in which to meet the stated objectives. The substantiality themes which are relevant to the development include:

- Energy efficiency
- Passive solar design
- Thermal mass and insulation
- Natural ventilation

- Water conservation
- Waste management & minimisation
- Stormwater management
- Building materials
- Adaptive reuse of buildings
- Hot water systems
- Green roofs.

North Sydney Centre – Capacity and Land Use Study

The North Sydney Centre review was prepared to identify and implement policies and strategies to ensure that the North Sydney Centre retains and strengthens its role as a key component of Sydney's global economic arc and becomes a more attractive and sustainable place for residents, workers and businesses.

The study was developed to provide a framework to allow the growth of the North Sydney centre and accommodate forecast demand for additional commercial floor space in the North Sydney CBD. The proposal responds to this study through the provision of employment and commercial floor space while taking advantage of planned infrastructure upgrades within close proximity of the site.

North Sydney Local Strategic Planning Statement (LSPS)

The North Sydney Local Strategic Planning Statement (LSPS) builds upon the planning work found across a range of established Council policies and plans to set a framework as to how the North Sydney LGA will evolve, while setting the strategic direction for land use planning within the LGA over a 20 year period.

The LSPS sets out North Sydney's desired direction with regards to housing, employment, transport, recreation, environment and infrastructure. The key sustainability aims and objectives relevant to this proposal are:

- Protect and enhance North Sydney's natural environment and biodiversity
- Reduce greenhouse gas emissions, energy, water and waste

North Sydney Economic Development Strategy

The North Sydney Economic Development Strategy was developed to consolidate Council's economic development and set a coordinated plan to facilitate the continued economic growth of the area. While this strategy does not directly influence ESD requirements, it provides context for the proposal's importance from an economic standpoint.

Specifically, the North Sydney CBD is the focus of the region's economic activity. Part of the shorter term strategies identified in the strategy include encouraging new office stock and high quality developments within the CBD while also balancing improved amenity of centres for workers and visitors. The proposal responds to this strategy through the provision of new sustainable office stock and commercial space to encourage greater employment and economic opportunities to the local region.

3 Sustainability Strategy

The sustainability strategy will be framed around the agreed environmental objectives of the development that are in alignment with the LEP, DCP and other relevant state and regional policy outlined. This section of the report aims to identify the initiatives which effectively align with these objectives that should be integrated into the building design where feasible.

3.1 Energy efficiency

The proposal will deploy the principles of the energy hierarchy by seeking to reduce the operational energy demand via initiatives which improve energy efficiency. Initiatives considered will include the following where reasonably practical:

- Variable speed drives on pumps and fans.
- Low pressure drops on the hot water and chilled water pipework systems reducing the associated pump energy required
- Energy efficient air handling units (AHU) with low specific fan power (SFP) air distribution system
- Smart BMS to provide energy monitoring and targeted heating/cooling.
- High efficiency appliances
- High efficiency air cooled chillers or variable refrigerant flow (VRF) systems
- Low energy LED lighting installations to reduce energy consumption as well as the cooling demand
- Automated lighting controls.

The future development will also aim to supply energy as efficiently as possible by aiming to electrify all operational energy demands avoiding the use of gas. While gas has proven to be a viable energy source for some time, it's position as a clean energy resource is diminishing as the uptake of renewable energy on the electricity grid continues to increase. This has resulted in the grid carbon factor continuing to fall, making electricity an increasingly cleaner option. In addition, certain parts of the country including the ACT and the City of Sydney have committed to source 100% of their electricity demand from renewable generation, a precedent which is expected to spread further strengthening the appeal of an electrification strategy.

The development will explore options to maximise the use of renewable energy by both the use of on-site solar and off-site renewable energy where reasonably practical.

It should be noted that the proposal to increase GFA while the roof area remains constant means that the buildings energy demand will increase while its on-site generation capacity will remain constant. As a result, the potential for on-site renewable energy to meet a significant proportion of the buildings energy load is

reduced. This will be managed by complementing on-site renewables with off-site renewable energy, GreenPower[®] and/or power purchasing agreements where possible.

3.2 Passive design

Given this is an existing site, it will not be possible to adjust the buildings orientation to provide optimum passive solar conditions. The east and west facades are most exposed to the summer solstice which does not enable optimum passive solar conditions. However, to enable the best environmental performance and thermal comfort of the building with the existing solar orientation, the following passive design measures will be considered where reasonably practical:

- High efficiency glazing to maximise solar gains during winter months and minimise solar gains during summer months
- Lower ratio of glazing on the east and west facades to reduce solar gains in summer
- Lower ratio of glazing on the south façade to reduce heat losses during winter
- Use of louvers to maximise solar shading in summer and solar gains during winter
- Use of natural ventilation and lighting in common areas
- Optimising natural light access.

The current site position and surrounding existing built environment results in optimum solar exposure to the east and west along the dual street frontage, allowing for beneficial access to natural light.

The proposed height increase under the planning proposal will also increase the impact of natural ventilation initiatives through accessing higher velocity airflows at higher altitudes; the volumetric flow rate through the opening is proportional to the air velocity. Increased height will also optimise natural light access.

3.3 Thermal mass

Thermal mass for commercial offices is most effective at providing cooling during the summer months, resulting in reduced cooling loads and helping to improve thermal comfort. Architectural features which help increase thermal mass will be built into the design where reasonably practical. Features such as exposed slabs, columns and ceilings can be included to act as a ‘thermal battery’ and help to reduce the ambient temperature during the day.

Due to the fact that offices are predominantly occupied within the day-time rather than the night, thermal mass has a limited effect towards providing winter heating. This is because heat that is stored in the day is released at night. While this can be effective in reducing heating loads in the morning, the impact is generally limited.

3.4 Natural ventilation

As previously discussed, natural ventilation will be utilised where possible to increase operational energy efficiency. As well as providing operable windows to reduce cooling loads, the following strategies will be applied to the development where reasonably practical:

- High-capacity inlets/outlets on opposite sides of rooms to encourage cross ventilation.
- Where a room is only exposed to the outside on one side, inlets/outlets located at the bottom and top of exposed walls can enable single-sided ventilation.
- Passive stack ventilation provides a combination of cross ventilation, buoyancy and the suction effect. Multiple cross ventilated rooms can feed air into the stack enabling twice the depth of cross ventilation, and up to 10 times the floor-to-ceiling height.

3.5 Water conservation

The development will aim to minimise potable water consumption and optimise water efficiency. Initiatives considered will include the following where reasonably practical:

- 4-star WELS rating or higher for all fixtures and appliances
- Sensor operated taps
- Waterless urinals
- Grey water collection and treatment for uses such as toilet flushing, irrigation and cooling towers where applicable
- Rainwater harvesting tanks to supplement grey water uses
- Separate potable water metering and leak detection.

Although increased GFA will increase potable water consumption, it also improves the financial viability of rainwater and greywater harvesting due to an increased non-potable water demand and in the case of the latter, an increased yield.

3.6 Waste management & minimisation

The development will aim to minimise material usage and waste generation during building, construction and demolition through increasing waste segregation and recycling. The following initiatives will be considered where reasonably practical:

- A Waste Management Plan for the demolition, construction and operation of the building is to be provided with the future DA (not this Planning Proposal) in accordance with Part B: Section 19 – Waste Management of the DCP

- Waste management to encourage the reduction, reuse and recycling of materials
- Adequate waste management facilities in the design to aid recycling during operation
- Innovative long life and low maintenance materials
- Off-site prefabrication of suitable building parts
- Clear and transparent waste reporting procedures for contractors and sub-contractors
- Comprehensive hazardous waste management procedures.

3.7 Stormwater management

The development will aim to minimise its impact on existing drainage conditions through the incorporation of WSUD. Measures will be taken to minimise storm water discharge to reduce any adverse impact on localised flooding. Efforts to maximise storm water quality will also be incorporated to limit the impact on local receptive water bodies such as the Sydney Harbour. This will be achieved by:

- An Erosion and Sediment Control Plan for the construction of the building is to be provided with the future DA in accordance with Part B: Section 17 – Erosion and Sedimentation Control of the DCP
- A Stormwater Management Plan for the operation of the building is to be provided with the future DA in accordance with Part B: Section 18 – Stormwater Management of the DCP.
- Rainwater tanks which are plumbed to appropriate end uses such as water flushing, irrigation and cooling towers.
- Stormwater tanks to retain flows and achieve lower discharge rates compared to pre-development levels.
- WSUD report prepared by a suitably qualified consultant is to be provided with the future DA demonstrating discharged rates have been reduced as much as practical.
- Treatment of stormwater to achieve improved stormwater quality compared to pre-development levels with the inclusion of a stormwater quality assessment demonstrating the following reductions on the Baseline Annual Pollutant load:
 - Litter and vegetation larger than 5mm: 90% reduction
 - Total Suspended Solids: 85% reduction
 - Total Phosphorus: 65% reduction
 - Total Nitrogen: 45% reduction.
- At least 50% paved areas being pervious (such as via permeable pavers).

3.8 Building materials

The development will aim to utilise materials which have a low environmental impact throughout their life cycle as well as materials which are free from toxins and thus not detrimental to indoor air quality. Materials which aid the operational energy efficiency of the building will also be considered where possible. This will be achieved through:

- Materials sourced from renewable and abundant resources.
- Materials with a lower embodied energy and carbon content such as:
 - Green concrete with increased volumes of recycled materials such as fly ash
 - Recycled plastic cladding
 - Recycled steel.
- Sustainably sourced timber.
- Toxin-free floor finishes.
- Light coloured materials and finishes on main external parts of the building.
- Avoid the use of harmful materials such as:
 - Copper, chrome, cadmium, lead, mercury, cyanide and formaldehyde
 - PVC, CCA, VOC and solvents.

3.9 Adaptive reuse of buildings

The proposal is to involve complete demolition of the existing building, therefore no initiatives are proposed here.

3.10 Hot water systems

The development will aim to employ the most efficient water heating technology deemed suitable with the following design principles being employed:

- Solar water heaters
- If solar water heaters are deemed unsuitable, in line with the aim of electrification, air-sourced heat pumps or electric boilers will be considered rather than high efficiency gas boilers
- Hot water plant will be located on the roof.

The current planning proposal is likely to preclude the use of solar water heaters due to an increased hot water demand while the roof area and generation capacity remains constant. It is therefore likely that heat pumps or electric boilers will form the basis of the most efficient water heating solution.

3.11 Utilisation of roof space

The future development will where reasonably practical:

- Improve aesthetics and amenity of the urban environment, particularly when viewed from surrounding buildings
- Provide space for on-site renewable energy production such as Solar PV.
- Control both the quality and flow of stormwater
- Protect the building structure by increasing its thermal protection and reduce heating and cooling requirements
- The development will also explore the suitability of a green roof.

4 Conclusion

This report outlines the key principles and initiatives in terms of sustainability vision and commitment that will be delivered by the proposed future development located at 153-157 Walker Street, North Sydney. The overview of sustainability opportunities and initiatives will allow sustainability features to be embedded into the future detailed DA to achieve sustainable outcomes that respond to both the local planning context and the global trends.

5 References

North Sydney Council, 2013 *Development Control Plan*

North Sydney Council, 2013 *Local Environmental Plan*

North Sydney Council, November 2016 *Capacity and Land Use Study*.

North Sydney Council, March 2020 *Local Strategic Planning Statement*.

SGS Economics & Planning, August 2016 *North Sydney Economic Development Strategy Report*.