



Sustainable Design Referral Comments

<p>Assessment</p>
<p>The architectural drawings and Sustainable Management Plan (SMP) for the above project were reviewed against the WSUD (LPP 22.12), and ESD (LPP 22.13) policies as well as the Fishermans Bend Strategic Framework Plan. The objective of these policies is for new development to achieve best practice in environmentally sustainable development and stormwater management, from the design stage through to construction and operation.</p> <p>Further information is needed before the project proposal could be considered to meet Council’s standards for best practice. Comments on areas where improvement could be made are itemised below:</p>
<p>Changes sought before any permit is considered</p>
<ul style="list-style-type: none"> • Green Star – The SMP notes “design potential to achieve a 5-Star Green Star rating (non-certified) standard... A 4-Star certified rating will also be targeted”. A clear commitment to a standard is required for this project to be assessed. Consider also: <ul style="list-style-type: none"> - Certification – Achieving a Green Star certification allows the project to be publicly promoted and acknowledged for this achievement. Consider Green Star certification - Verification – If the project is not to be put forward for certification with the GBCA, consider assessment by an appropriately qualified, and experienced independent third party. • ESD Report – This report contains language which is non-committal and as such, are unable to be assessed. The report provides general overview comments, but insufficient detail. <ul style="list-style-type: none"> - Revise language - Reword statements such as for example: “potential to be achieved”, “will be considered”, “should” or “are recommended”, etc., to provide a clear commitment to design outcomes and performance measures proposed by the applicant. - Greater depth – Provide a more detailed description of which technologies and initiatives are to be pursued, whether part of the Green Star credits or otherwise. This includes items covered elsewhere such as construction waste etc mentioned in the Planning Report. - Innovation – Further to page 5 of the SMP, provide detail of the Green Star Communities, Living Building Challenge and BREEAM credits noted.
<p>Urban ecology</p>
<ul style="list-style-type: none"> • Urban Heat Island Effect – Use of lighter colour roofing and/or paving can assist in alleviating the UHI Effect. Provide detail of the albedo of the roofing and paving material where these will be exposed to direct sun.
<p>Changes to ESD report</p>
<p>Management</p>
<ul style="list-style-type: none"> • Building Users Guide (BUG) – Consider providing the BUG electronically with other building occupant user systems such as CCTV etcetera to make more accessible. This could include: <ul style="list-style-type: none"> - utility usage, recycling options, and green travel information, including real-time public transport
<p>Materials</p>
<p>Materials generally – Council’s Best Practice Standards for materials are explained in the SDAPP Building Materials Fact Sheet which is available for download from the Council’s website. Consider the following:</p> <ul style="list-style-type: none"> - Concrete - substitute some cement content of concrete with recycled content. - Steel – sourced from a ‘Responsible Steel Makers’ per Green Star credit
<p>Indoor Environment Quality</p>
<ul style="list-style-type: none"> • Thermal performance rating – Strategic Framework Objective 7.4 is to minimise energy consumption of all new development while maintaining high levels of occupant thermal comfort. Council best practice Standard is for thermal performance to be a minimum of 10% higher than the legal minimum:

<ul style="list-style-type: none"> - Residential – A 6.6 star average and 5.0-star minimum NatHERS rating sought. Provide a preliminary NatHERS assessment of sample units or provide information on how energy efficiency requirements will be achieved. - Cooling loads - VPP 58.03 requires a maximum cooling load of 30 MJ/M2 per annum. Clearly state in the SMP that this will be achieved for all apartments. - Non-residential - provide a 15% improvement on legal minimum elemental thermal insulation provisions
<p>Energy</p> <ul style="list-style-type: none"> • Carpark ventilation – Council’s Best Practice Standard is for basement carpark to be provided that are either fully naturally ventilated, or use carbon monoxide monitoring to control the speed and operation of ventilation fans. <ul style="list-style-type: none"> - Revise the SMP to incorporate these technologies. • Active transport – Council’s Best Practice Standard is to improve the efficient use of energy. Well-designed access to stairways will minimise lift usage thus saving energy, and offer benefits of increased fitness and connectivity of occupants. Consider providing connectivity between commercial levels, and separately, between residential levels generally and: <ul style="list-style-type: none"> - Security - door hardware/security profiles and signage are provided to encourage stair use over lifts • General energy efficiency - Council’s Best Practice Standards is to achieve an energy efficiency standard that is at least 10% above minimum NCC compliance. <ul style="list-style-type: none"> - Provide a preliminary Section J energy rating assessment that shows how this will be achieved. • Solar panels – Photovoltaic panels are indicated on facades but not rooftops. <ul style="list-style-type: none"> - Façades - Provide the details of the panels array size and panel location. Consider: - Rooftop – Consider solar panels over plant area, and as shading to portions of roof terraces. • Kill-switches – Consider the provision of switches that shutdown unnecessary electrical demand when apartments are unattended. • Lighting – Council’s Best Practice Standard is for reducing reliance on artificial lighting, and for luminaires to be energy efficient. Further to page 3 of the SMP consider: <ul style="list-style-type: none"> - Illumination power density – further clarify lighting densities will be aggregated per use - External areas – provide timers with daylight sensors - Internal areas - provide daylight and occupancy sensors for internal areas such as storerooms, corridors, and all other common areas in addition to zone switching. • Electrical appliances – Council policy is for peak energy demand to be reduced through use of efficient heating and cooling systems. Council’s Best Practice Standard is for energy efficient hot water, heating and cooling systems to be installed that are within one energy star rating of the best available. Consider committing to this in the SMP for: <ul style="list-style-type: none"> - all electrical domestic and commercial appliances - any heating or cooling systems • Hot Water System - Council’s Best Practice Standard is for energy efficient hot water systems to be installed that are within one energy star rating of the best available. Consider: <ul style="list-style-type: none"> - a high-efficiency centralised hot water system with highly-insulated flow-and-return system
<p>Water</p> <ul style="list-style-type: none"> • Fire test water reuse – Consider the provision of tanks to capture a minimum of 80% of water for fire system testing. Connect tanks to on-site water reuse to minimise potable water demand. Consider: <ul style="list-style-type: none"> - ESD report – State water reuse storage capacity as a percentage of total fire test water, and state water reuse • Water efficient fixtures and appliances – Council’s Best Practice Standard is to improve water efficiency and reduce total operating potable water use through the installation of WELS rated fixtures and appliances within one star of best available. <ul style="list-style-type: none"> - urinals – consider waterless urinals (note the need to avoid ill-informed maintenance which can lead to complaints from malfunction) - washing machine - 4 star minimum WELS rating - dishwashers - 5 star minimum WELS rating • Separate meters - Council’s Best Practice Standard is for the installation of separate water meters in individual dwellings and non-residential areas within the same development. Consider: <ul style="list-style-type: none"> - individual hot and cold water meter per dwelling

Stormwater

- **Modelling tool** – The nominated stormwater modelling tool (STORM) is considered more appropriate to simple, and smaller scale projects. A project of this complexity needs to consider a tool which is capable of complex, continuous simulation modelling such as MUSIC.
 - modelling file – Provide electronic file for MUSIC stormwater modelling (’.sqz’ format) for assessment.
- **Stormwater submission** – Standard 5 of Objective 7.3 of the SFP states stormwater treatment must meet best practice quality standards to the satisfaction of the relevant water authority prior to discharge to receiving waterways. Provide the following per the Local Policy 22.12: Stormwater Management:
 - stormwater plan – Provide a plan which shows the full site with all catchment areas and treatment measures annotated as per that in the modelling report. Catchment areas need to be clearly linked to related treatment method.
- **Rainwater capture** - Standard 2 of Objective 7.3 requires capture of runoff from 100% of the roof area and successfully retain onsite at least 50% of this volume (derived from a 5 year, 72 hour storm event). This area is to include all above ground rainfall capture areas. Indicate sufficient rainwater tank capacity to achieve this on drawings.
 - Capture capacity – appears undersized. Provide computations indicating this capacity.
- **Third pipe** - Objective 7.2 states new buildings must install a third pipe to supply non-potable uses within the development to an agreed building connection point. The relevant water authority must be consulted when designing and constructing streetscapes to facilitate cost efficient and low-disruption provision of a third-pipe network.
 - Note reuse connection in both the SMP and on drawings.
- **Water reuse** - Standard 1 of Objective 7.2 requires developments to maximise the use of alternate water sources whilst awaiting connection to a future precinct wide recycled water supply once it is available.
 - Reuse connection - Indicate in the SMP that rainwater and recycled water is to be connected to all of the following uses: toilet flushing, washing machines, fire services, irrigation and cooling towers.

Changes to drawings

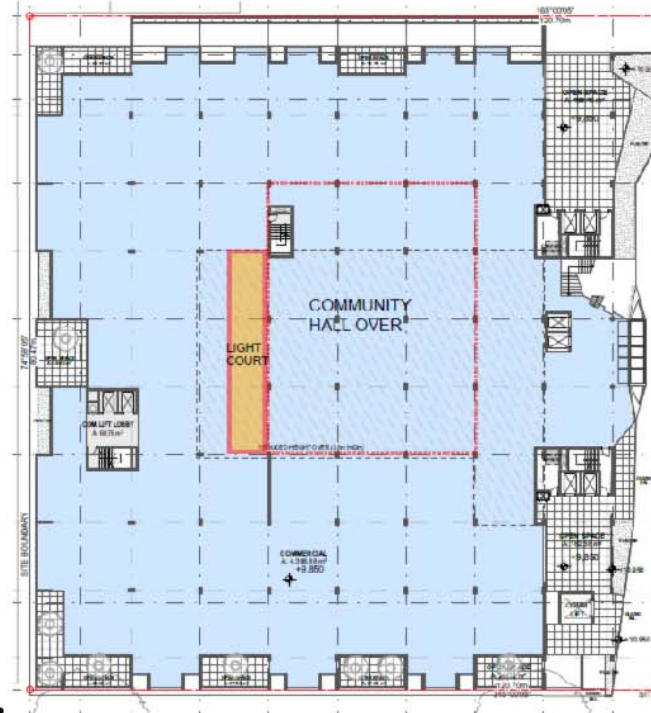
Indoor Environment Quality

- **Dwelling ventilation** – Council’s Best Practice Standard is for all dwellings to be effectively naturally ventilated, either via cross ventilation, single-sided ventilation or a combination. Further details are required to establish if windows allow practical natural ventilation.
 - Operable sash – Indicate window and door format and sash operation on elevations or typical apartment drawings using architectural drawings conventions
 - Provide windows - Provide a minimum of one operable window sash to each habitable room in addition to any glazed door. It is preferable that the window sash operation is such that it is able to be locked ajar, and that it is resistance to the admittance of rain.
 - Balcony screens – Provide full-height walls/screens to the underside of the soffit over where these separate balconies in Tower 3. This will limit visual/acoustic privacy issues and the potential for wind-blown cigarette smoke to inhibit access to natural ventilation.
- **Corridor windows** – Strategic Framework Objective 7.4 Standard 4 states all developments must provide the ability to naturally ventilate communal areas, including the removal of hot air at night in commercial buildings.
 - Tower 3, Level 3 – a second route of access to natural light and ventilation is warranted in the common corridor due to the configuration of this corridor.
- **Cross ventilation** – Strategic Framework Objective 7.4 Standard 1 states residential developments should be designed to maximise cross ventilation through the provision of dual aspect dwellings which must have openable windows. There is insufficient detail to establish how rooms can be adequately cross-ventilated. Consider:
 - Additional sashes – As many people sleep with bedroom doors closed when living with others, the reliance of internal doorways for nocturnal ventilation is undesirable. Provide a minimum of two operable sashes per room for apartments with more than one bedroom.
 - Breeze path - At least 40 per cent of dwellings should provide effective cross ventilation that has a breeze path (measured between the ventilation openings on different orientations) that it is minimum breeze path of 5 metres, and under Council’s Best Practice Standard, a maximum path of 15 metres. Indicate this on typical apartment plans.

- School – Demonstrate provision of effective natural ventilation for all habitable rooms and corridors. Indicate cross ventilation path. Consider provision of automated high-level windows appropriate for unattended ‘night-purging’.
- **Daylight for residential** – Council’s Best Practice Standard is to reduce the reliance on artificial light, and Standard 3 states residential development must not rely on borrowed light within dwellings and all habitable rooms must have external, openable windows.
 - **Living spaces** – Council’s Best Practice Standard set a maximum habitable room depth to 8m from a window for combined living/kitchens with a minimum daylight factor of 1% for 90% of the floor area. Provide daylight modelling for the apartments with living rooms which exceed this depth such as: Apartment T1:01, T1:06, etc.
 - **Bedrooms** – Council’s Best Practice Standard is for bedrooms to have a minimum daylight factor of 1% for 90% of their floor area. The number of apartments with internal bedrooms should be limited to a maximum of 10% of the total apartments proposed. Battle-axe access ways should be at least 1.2m wide and no deeper than 1.5m from the window to the leading corner. Several apartments exceed this which is beyond the Better Apartments standard and is not support. Amend accordingly.
- **Daylight non-residential** – Council’s Best Practice Standard is for a minimum daylight factor to be provided for 2.0% for at least 30% of the floor area of regularly occupied primary spaces. The Level 1 floor plate has a large central area with poor natural light, being 70m in width between windows and is unsupported as proposed. Consider provision of a light well to mediate this. (Refer figure below).
 - Supermarket Level G – provide indicative section through western awning and glazing at ground level, to illustrate daylight access from clerestory
 - Supermarket Mezzanine – Offices and staff rooms warrant access to natural light. Consider reformatting plan to access natural light from the east and south-east of the mezzanine
 - Offices Level 1 – light court warranted
 - Community hall – Prior comments note the limited exposure to natural light and ventilation and the current design has none, appearing to be a fully-encased prism, even though there is a courtyard over.
 - Library – this is currently shown with no direct access to natural light, and similarly has the potential from a roof-light to be added over, and/or a light court to be added.

Level 1 plan commercial space - unsupported as proposed

- Light court suggested – which could allow natural light and ventilation to Level 1 commercial, Level 2 hall and Level 3 commercial areas.



- **Sun access** - Strategic Framework Objective 7.4, Standard 2 states all developments should maximise northern orientation. Council’s Best Practice Standard Design for living areas and private open spaces are that at least 70% of apartments in a development receive a minimum of three hours direct sunlight between 9am and 3pm in mid-winter.
 - Winter sun - The proposed building does not achieve this. Provide breeze protected communal access to winter sun in communal terraces.

<p>Energy</p> <ul style="list-style-type: none"> • Clotheslines - Council's Best Practice Standard is for external natural clothes drying facilities to be provided. Consider the provision of retractable or fixed clotheslines, preferably with protection from rain. Provide clotheslines to individual apartment balconies or within the apartment utility rooms. These should have a minimum 7.5 m of line (per the BCA standard), and allow sufficient height to hang bed linen. <ul style="list-style-type: none"> - typical plans – indicate clothesline positions and annotate • Optimise glazed – Council's Best Practice Standard is to reduce energy peak demand through optimising glazed areas. Some areas appear to have full-height glazed walls without providing adequate measures to control solar heat loads entering the relevant room. Even high-performing glazing is likely to produce irregular, thermal comfort outcomes for occupants – and higher energy demand for space heating and cooling. Decreasing window to wall ratios (WWR). If glazed facades are considered unavoidable, consider glass clad, insulated, opaque wall sections and/or provide effective external shading. • Shading – Strategic Framework Objective 7.4, Standard 2 states all developments should provide external shading to facades to reduce summertime heat loads. Policy calls for a reduction in energy peak demand through particular design measures through shading to glazed surfaces and optimised glazing to exposed surfaces which will also increase thermal comfort and energy efficiency. Provide indicative details of effective shading for the following: <ul style="list-style-type: none"> - Footpath awnings – indicate line on drawings and annotate if opaque - Commercial levels – Level 1 and 2 indicate considerable fully glazed wall elements that are over 6.5m tall, and have no shading indicated beyond a small ledge. - Residential towers – vertical fins are indicated on all residential towers facades which are apt for the eastern and western facades, however northern façades will need horizontal element. • Solar panels – Photovoltaic panels are indicated on facades rather than rooftops. <ul style="list-style-type: none"> - Façade - Provide the details of the panels array size and panel location. - Rooftop – Consider solar panels over plant area, and as shading to portions of roof terraces. • Active transport – Further to the notes above consider: <ul style="list-style-type: none"> - School - adding an additional open stair to facilitate free movement between the two school levels at the western end of the building. - First floor – provision of an open stair that is closer to the western end of the atrium to encourages use over lifts for access to both the first floor retail use and the community hall
<p>Water</p> <ul style="list-style-type: none"> • Fire test water reuse – indicate the location on the drawings, and annotate with tank capacity and reuse
<p>Stormwater</p> <ul style="list-style-type: none"> • Modelling tool – The nominated stormwater modelling tool (STORM) is considered more appropriate to simple, and smaller scale projects. A project of this complexity needs to consider a tool which is capable of complex, continuous simulation modelling such as MUSIC. <ul style="list-style-type: none"> - modelling file – Provide electronic file for MUSIC stormwater modelling ('.sqz' format) for assessment. • Third pipe: <ul style="list-style-type: none"> - Note third pipe connection on drawings - Note reuse connection in both the SMP and on drawings.
<p>Transport</p> <ul style="list-style-type: none"> • Residential bicycle parking - - Council policy is to ensure that the built environment is designed to promote cycling as part of minimising car dependency. Council's Best Practice Standard is for residential developments to provide at least one secure bicycle parking space per dwelling and one visitor bicycle parking space per 4 dwellings. Consider: <ul style="list-style-type: none"> - bicycle security – providing CCTV monitoring of the bicycle storage area to minimise theft. - electric bikes – provide appropriate electrical charging points for electric bicycles. - Visitor parks – Some visitor bicycle parking is currently buried two floors below ground. Consider the provision of most visitor parking at ground level, with consideration of short-term delivery riders such a food home-delivery etc. • Vehicle impacts – consider the following:

<ul style="list-style-type: none">- Low emission vehicles – Consider the provision of electrical infrastructure to allow for the charging of electric vehicles.- Car share parking – Consider the provision of car share accommodation on-site.- Small vehicles - 5% or at least 5 parking spaces for motorbikes and/or small vehicles• Green Travel Plan - Council’s Best Practice Standard for large developments is for a Green Travel Plan to be provided. Consider the provision of a prominent and highly accessible display board or an electronic display which will display locale specific green travel information for building users and visitors.
<p>Waste</p> <ul style="list-style-type: none">• Operational waste – Strategic Framework Objective 7.5 Standard 1 states all developments must provide adequate waste management and resource recovery (recycling) facilities and procedures that are fully integrated within the design of buildings.<ul style="list-style-type: none">- Confirm provision of space for hard waste area, and other waste streams – (hard/electronic/ liquid/ polystyrene, batteries, paint, chemicals and detox items, etc) provide detail of how and where these are to be collected
<p>Urban ecology</p> <ul style="list-style-type: none">• Vegetation - Council’s Best Practice Standard is for landscape design and species selection to consider:<ul style="list-style-type: none">- Species – including food production ability, indigenous species, increased biodiversity, and xeriscaping and/or water efficient species- Access – confirm maintenance access routes are available to common gardens on the podium roof where private courtyards might otherwise limit this- Green façade – Façade facing planters and landscaped roof terraces are shown however insufficient detail has been provided to allow a full assessment. Provide indicative details of these.• Irrigation – Council’s Best Practice Standard is for a tap for irrigation and drainage to be provided on balconies and in courtyards to allow residents the potential to garden. Note the provision of:<ul style="list-style-type: none">- taps and floor waste gullies to all private and common balconies, terraces and courtyards- irrigation sources to common areas that have gardens, lawns, or other vegetation