South Melbourne Town Hall Redevelopment

ESD Opportunities

City of Port Phillip

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–	06 December 2019	Issue for client

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1.0 Introduction & Framework

1.1 Context

The City of Port Phillip is considering options for the potential redevelopment of the South Melbourne Town Hall. As part of that assessment, the City of Port Phillip will consider ESD factors that may contribute to a reduced environmental impact for the building.

1.2 The Brief

The brief for the project covered a site visit and subsequent preliminary ESD opportunities assessment for eventual briefing and design stage consideration.

This assessment was conducted prior to any scope or brief for the potential works. As such, recommendations provided in this report should be reviewed prior to any use in a project brief or cost plan to ensure they align with redevelopment aims, scope, budget and timeframe, when known.

1.3 Defining Project Sustainability Requirements

It is important to define, with clarity and simplicity, what we mean by "sustainability" on the project so that:

- The client, the project team, the contractors, the facility managers and other relevant stakeholders, can share a common vision and speak a common language.
- Targets / goals can be established then monitored and reported against through design, construction and operation.
- Initiatives can be identified to deliver the targets / goals, including synergies between initiatives.

The project has a range of stakeholders and interested parties, and each has their own sustainability drivers and areas of interest. In addition, there are a range of standards and rating tools that are often used by organisations or on projects to define sustainability. These include:

- Build Environment Sustainability Scorecard
- Green Star
- WELL Building Standard
- Fitwel
- Living Building Challenge
- One Planet Living
- UN Sustainable Development Goals

The City of Port Phillip (CoPP) has a strong commitment to sustainability for its wider community. The CoPP has developed a number policies, strategies and plans to assist in creating a sustainable future. This includes:

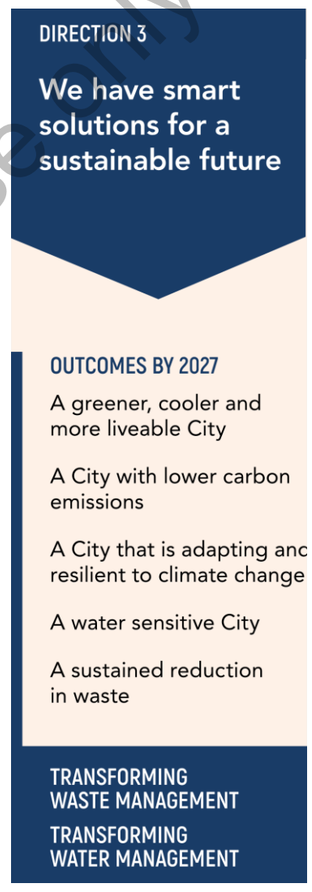
- Local Planning Policy Clause 22.13 Environmentally Sustainable Development
- Act and Adapt: Sustainable Environment Strategy 2018-28
- Sustainable City Community Action Plan
- Council Plan 2017-27

1.4 The Framework

The City of Port Phillip's Council Plan been used as the framework for the ESD opportunities assessment on this project. The Council Plan outlines a long-term vision for the City and a commitment to support the health and wellbeing of people and places. The Plan is structured around directions and associated outcomes. The five outcomes under Direction 3 'We have smart solution for a sustainable future' have been used as the category headings for this ESD opportunities assessment. These are:

- A greener, cooler and more liveable City
- A City with lower carbon emissions
- A City that is adapting and resilient to climate change
- A water sensitive City
- A sustained reduction in waste

In addition, other initiatives related to health and wellbeing, although not directly related to the CoPP Plan Direction 3, have been included within this ESD opportunities assessment. These other initiatives fall under the category headings of indoor environmental quality (IEQ), materials and transport.



2.0 ESD Opportunities

2.1 A greener, cooler and more liveable city

Plan Actions

A. Increasing canopy cover and diversity of tree species across streets and open spaces.
B. Facilitating the greening of the built environment, through green roofs, walls and facades.

Initiative	Discipline
Apply heat reflective roof paint to reduce the heat island effect and allow cooler indoor spaces, particularly for spaces with no roof insulation.	Architect
Utilise the forecourt as a publicly accessible landscaped zone, including soft landscaping and shading structures.	Landscape
Incorporate on-site food production / edible landscaping, such as vegetable planter boxes.	Landscape

2.2 A city that is adapting and resilient to climate change

Plan Actions

A. Increasing community resilience to the impacts of climate change.
B. Requiring development to adapt to and positively influence the local climate.
C. Managing and reducing the impacts of flooding and sea level rise.

Initiative	Discipline
Upgrade hydraulic and civil drainage systems for increasing peak rainfall events and flood mitigation, including higher capacity gutter and down pipe system.	Services
Relocate plant / switch rooms to an area that is not susceptible to flooding.	Services
Redesign new plant rooms / areas to allow later addition of additional units or upsizing of specified systems.	Services

2.3 A water sensitive city

Plan Actions

A. Reducing potable water consumption by encouraging more efficient water use and establishing alternative water sources.
B. Improving the quality of water entering Port Phillip Bay and increasing ground permeability.

Initiative		Discipline
Upgrade all fixtures and fittings with the following WELS ratings as a minimum: ▪ Toilets – 4 Star WELS ▪ Taps – 5 Star WELS ▪ Urinals – 6 Star WELS ▪ Showers – 3 Star WELS (< 7.5L/min)		Services
Investigate flow restrictors on existing fixtures.		Services
Investigate rainwater harvesting for reuse in newly installed toilets and/or landscape irrigation. Note: The existing downpipe locations on the roof may pose issues for effective collection, and spatial requirements for tank storage needs to be considered.		Services
Investigate treatment of forecourt stormwater runoff to reduce pollutant load and total volume entering municipal systems. There is potential for integration into landscaping of the forecourt.		Services
Design new landscape to require no irrigation and to be tolerant of hot and dry weather conditions, or reuse rainwater to irrigate if required.		Landscape
Newly installed HVAC heat rejection systems are waterless.		Services

2.4 A sustained reduction in waste

Plan Actions

A. Reducing waste and maximising recycling and diversion from landfill through service innovation and facilitating community action.
B. Managing waste collection to improve amenity and achieve cleaner streets, public spaces and foreshore areas.

Initiative	Discipline
Ensure waste facilities clearly support recycling of all possible waste streams, including: ▪ Co-mingled recycling ▪ Paper and cardboard ▪ Glass ▪ Hard plastics ▪ Soft plastics	Architect Owner
▪ Food and garden organics The location of point-of-disposal should be accessible and visible, preferably along circulation routes.	
Provide community recycling facilities for “hard to recycle” items, such as public bins for batteries and mobile phones.	Owner
If food & beverage is provided onsite, partner with food & beverage retailer(s), with possible initiatives relating to: ▪ Single use plastic cup reduction via deposit schemes, recycling and/or compostable alternatives ▪ Bamboo cutlery not plastic ▪ Paper not plastic straws ▪ Paper not plastic bags ▪ Collection of waste food to a food rescue service	Owner
Require at least 90% of demolition and construction waste to be recycled by the contractor.	Contractor
Implement a program to sustainably remove and then reuse, donate or recycle the existing fit-out.	Architect

2.5 A city with lower carbon emissions

Plan Actions

A. Reducing Council energy consumption and greenhouse gas emissions.
B. Facilitating a reduction in community greenhouse gas emissions by partnering with the community and private sector.
C. Promoting sustainable and low energy precinct infrastructure.

Initiative	Discipline
Draught proofing, particularly sealing around existing doors and windows, to minimise air leakage and thermal bridging. This is the simplest and affordable action to take and will increase the effectiveness of insulation retrofit and/or window upgrades.	Architect
Retrofit building fabric thermal insulation: ▪ Roof insulation R4.8 or better, to conditioned spaces with no existing roof insulation; and/or ▪ Wall insulation R2.8 or better, to the internal faces of exterior walls (could combine addition of internal, acoustic linings).	Architect
Windows upgrades including double glazing retrofit systems and/or solar control films for selected windows (i.e. windows of rooms with solar heat gains from the east/west).	Architect
Install external/interstitial automated and bi-directional blinds to selected windows.	Architect

Initiative	Discipline
All-electric (gas-free) systems within the building, including replacing the domestic hot water plant with electric instantaneous systems (low usage) or heat pumps (higher usage). Moving towards all-electric will support future elimination of fossil-fuel use and contribute towards greenhouse gas reduction goals.	Services
Retrofit HVAC design and control strategy, considering the following: ▪ HVAC zoning for different space uses and cellular spaces. ▪ Relaxed thermostat set points for air-conditioning. ▪ Heat recovery for ventilation systems (decentralised room-by-room). ▪ Variable speed drives (VSD) on all pumps and fans.	Services
Newly installed HVAC equipment and lighting to meet Green Star efficiency benchmarks (Design & As-Built credit 15E)	Services
Upgrade lighting to LED with dimming feature throughout.	Services
Install integrated lighting control system using PIR-based motion sensors, daylight harvesting and/or time scheduling (where functionally appropriate).	Services
Install an integrated building management and control system, including: ▪ Controls that turn off lights and HVAC outside air when cellular spaces are unoccupied. ▪ Link HVAC and lighting controls to the security system to ensure overnight shutdown.	Services
Install smart metering for extensive metering and sharing of data to change energy consumption behaviours.	Services
A comprehensive services and maintainability review should be conducted during the design stage. A facilities manager should be involved to review design and provide feedback regarding operation and maintenance.	Services
Engage an independent agent for commissioning and tuning of all building services systems to CIBSE standards prior to handover.	Services
Provide a solar PV canopy/pergola located in the surrounding landscape to generate renewable energy for building services.	Services Landscape

2.6 Other – Indoor Environmental Quality

Plan Actions

A. Although not directly related to the CoPP Plan, the following initiatives should also be considered.

Initiative	Discipline
Relocation of side-by-side supply and return air vents to extend distance separation and meet best practice provisions.	Services
Install exhaust fans for all bathrooms, kitchens, and rooms with high volume printer/copiers.	Services
Limit indoor pollutants of newly applied/installed materials and products, e.g. VOCs, formaldehyde. The “Red List” can be applied to prohibit all toxic and harmful materials and chemicals.	Architect
Remove existing carpet with no acoustic or heritage value.	Architect
Install bi-directional blinds to tall windows that allow blocking of glare at low levels but sunlight to enter above.	Architect
Provide one or more dedicated or multi-use wellbeing room for personal and quiet use, e.g. meditation, prayer etc.	Architect
Introduce indoor plants and biophilic design elements.	Architect

2.7 Other – Materials

Plan Actions

B. Although not directly related to the CoPP Plan, the following initiatives should also be considered.

Initiative	Discipline
Preference newly installed furnishings, furniture, interior finishes and finish materials with an environmental initiative: ▪ Reused ▪ Recycled content ▪ Environmental Product Declaration (EPD) ▪ Third-party certifications (e.g. GECA, Global Greentag, Cradle to Cradle) ▪ Stewardship programs ▪ Other recognised materials transparency programs	Architect
Implement a program to sustainably remove and then reuse, donate or recycle the existing fit-out.	Architect
Ensure only ethically sourced materials are used in the redevelopment, e.g. no human slavery, underage workers, or discriminatory or unsafe work practices in the supply chain.	Architect

2.8 Other – Transport

Plan Actions

C. Although not directly related to the CoPP Plan, the following initiatives should also be considered.

Initiative	Discipline
Provide bicycle storage for employees and visitors.	Architect
Provide high quality end-of-trip facilities with showers, change room and lockers.	Architect
Install electric vehicle charging infrastructure with associated dedicated electric vehicle car spaces, preferably sourced for renewable sourced onsite, e.g. solar PV canopy/pergola.	Architect Services
Facilitate a car sharing scheme (GoGet or similar) by providing a designated car share vehicle space onsite.	Architect
Provide designated taxi/ride share pick-up/drop off bays onsite to encourage safe and easy usage.	Architect

3.0 Case Study Examples

One Carter Lane – Cundall Office, London (New Interiors Project)

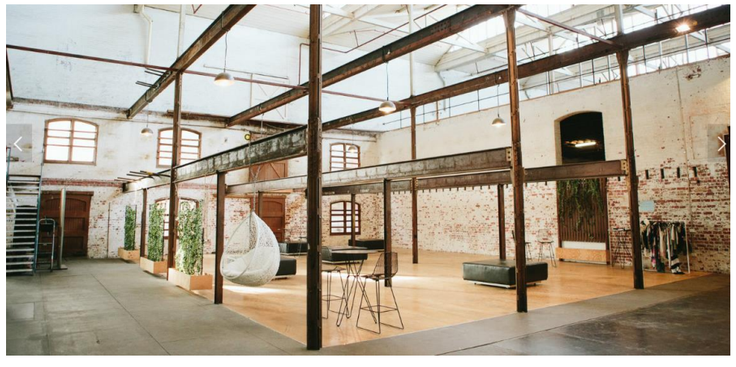
- BREEAM Excellence rating
- Gold WELL rating
- Furnishings, interior paint, adhesives, finishes, fabric/acoustic insulation all selected for low or zero VOCs, formaldehyde and toxic content
- Products selected with a focus on using natural materials
- High density areas have variable volume air distribution controlled by CO_2 sensors to ensure that air quality is maintained.
- Continuous monitoring and recording of zonal space temperature, humidity, lux levels and indoor air quality
- High reflectance low openness factor blinds
- Efficient lighting with occupancy detection and daylight dimming controls
- A ventilated green bio wall

55 St Andrews Place – Melbourne (Retrofit Project)

- 4 Star Green Star rating
- Building Services Journal Awards (2007), Sustainable Refurbishment of the Year, Winner
- BPN Environ Sustainability Award Winner (2007), Large Commercial Building, Highly commended
- External automated and bi-directional blinds
- New HVAC control strategy and recommissioning of the entire system
- Reconfigured fresh air intake location to avoid vehicle exhaust emissions
- Replacement ceiling swirl diffusers to allow for large volume air rates
- New T5 lamps and troffers designed to provide background lighting levels (160 lux)
- Task lighting provided to each desk and connected to a new lighting control system
- Skylights and wintergarden added
- Flow restrictors to taps and showers
- New rainwater tanks and reticulation for toilet flushing and planter box irrigation
- Low off-gassing paints and carpets
- Separate exhaust system for print/ photocopy rooms

Younghusband Woolstore – Melbourne (Retrofit Project)

- Targeting: 5-Star NABERS Energy Office Base Building rating, National Carbon Offset Scheme (NCOS) certification, Water Neutrality, One Planet Living (OPL) recognition
- Use of Life Cycle Assessment (LCA) to demonstrate environmental benefit of re-purposing existing Younghusband Woolstore over complete redevelopment
- Improved existing facade thermal / solar control performance, within heritage and light touch approach constraints
- Gas-free
- HVAC approach including 'right sizing' design, limiting provision of air conditioning, localised control, and wide internal temperature control bands
- Integration of high efficiency artificial lighting solutions
- Maximised extent of solar PV on roof (~400kW)
- Domestic hot water systems to End of Trip facilities and cleaners sinks only
- High water efficiency and low water demand fixtures & fittings
- Air cooled heat rejection for the air conditioning systems
- On-site collection & re-use of rainwater for toilet flushing
- Purchasing of environmental water offsets to make shortfall in rainwater collection and re-use to attain water neutrality



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