

# Liverpool Civic Place – Phase B & C

## Environmentally Sustainable Design Report

**Prepared for:** Built Development Group

**Attention:** Barry Teeling

**Date:** 09 December 2020

**Prepared by:** Guljit Bates

**Ref:** 43144-2 (301350001)

**Stantec Australia Pty Ltd**

Level 6, Building B, 207 Pacific Highway, St Leonards NSW 2065

Tel: +61 2 8484 7000 Web: [www.stantec.com](http://www.stantec.com)

# Revision

Revision	Date	Comment	Prepared By	Approved By
1	26/11/2020	Draft for review	GB	GB
2	09/12/2020	DA Issue	GB	GB

# Contents

<b>1. Executive Summary</b>	<b>1</b>
<b>2. Introduction</b>	<b>2</b>
2.1 Site Location and Context	4
<b>3. Project Sustainability Drivers</b>	<b>5</b>
3.1 Liverpool Local Environmental Plan 2008	5
3.2 Liverpool Development Control Plan 2008	5
3.3 NSW Building Sustainability Index (BASIX)	6
3.4 NCC 2019 Volume One – Section J	6
3.5 Green Star Design & As Built v1.3	7
<b>4. ESD Strategy</b>	<b>8</b>
4.1 Energy & Carbon Emissions Improvements	8
4.2 Water	10
4.3 Indoor Environment Quality	11
4.4 Materials	11
4.5 Sustainable Transport	12
4.6 Land Use and Ecology	12
4.7 Building Emissions	12
4.8 NCC 2019 Section J	12
4.9 BASIX	13
<b>5. Conclusion</b>	<b>14</b>
<b>Appendix A Preliminary Green Star Pathway</b>	<b>15</b>

# 1. Executive Summary

This Environmentally Sustainable Design (ESD) Development Application (DA) report has been prepared on behalf of Built Development Group for the proposed Liverpool Civic Place Phase B and Phase C development located at 40-42 Scott Street, Liverpool NSW 2170.

This report provides an overview of the proposed project's ESD initiatives and framework proposed to maximise the overall sustainability of the development. It outlines the regulatory and project specific sustainability drivers and proposed design approaches for the project.

The ESD outcomes of the development are demonstrated through the following targets for the development:

- Thermal performance of both buildings designed to meet stringent NCC 2019 Section J requirements;
- BASIX Energy and Water compliance for the co-living facility;
- Commercial office building is designed to achieve a 5 Star NABERS Energy Base Building and a 3.5 Star NABERS Water Whole Building ratings; and
- 5 Star Green Star Design & As Built v1.3 certification for the commercial office building.

The design approach will be focused around the following key initiatives:

- Use of passive design elements, including shading devices and consideration of glazing extents to naturally provide comfort and minimise energy consumption;
- Creation of healthy environments including reduction in the use of harmful volatile organic compounds in glues, sealants and paints;
- Bespoke design solutions that provide for long term climate adaptation and resilience;
- Minimising consumption of natural resources, including water and raw materials;
- Minimising environmental impacts during construction, including embodied energy and the ecological cost of materials;
- Minimising environmental impacts during operation, including energy consumption and waste creation; and
- Provision of access to sustainable, integrated and convenient travel options.



## 2. Introduction

This Environmentally Sustainable Design (ESD) Report is submitted to Liverpool City Council (Council) on behalf of Built Development Group in support of a Stage 2 Development Application (DA) for Phase B and Phase C of the Liverpool Civic Place development located at 40-42 Scott Street, Liverpool. It follows the approval of a Concept Proposal / Stage 1 DA (DA-585/2019) for the broader Liverpool Civic Place master plan that has determined land uses, building envelopes, public domain and a multi-level common basement across the site. The full Liverpool Civic Place site, subject to the Concept Proposal / Stage 1 DA approval is illustrated at **Figure 1**, however the scope of this Stage 2 DA is limited to Phase B and C, (refer to **Figure 2**) with the exception of embellishments to the Terminus Street pocket park.

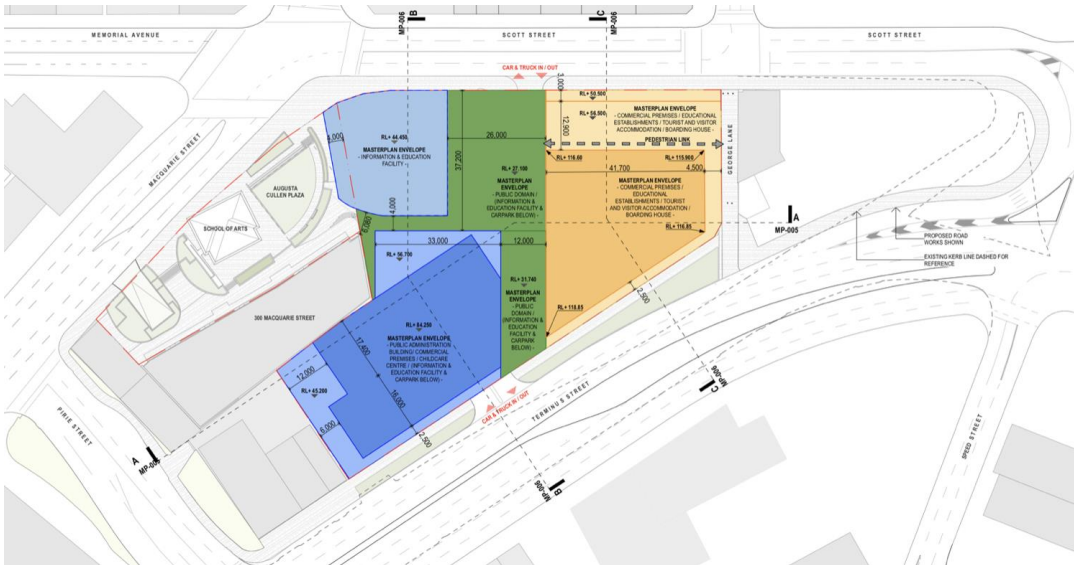


Figure 1 Liverpool Civic Place Master Plan site

Source: FJMT

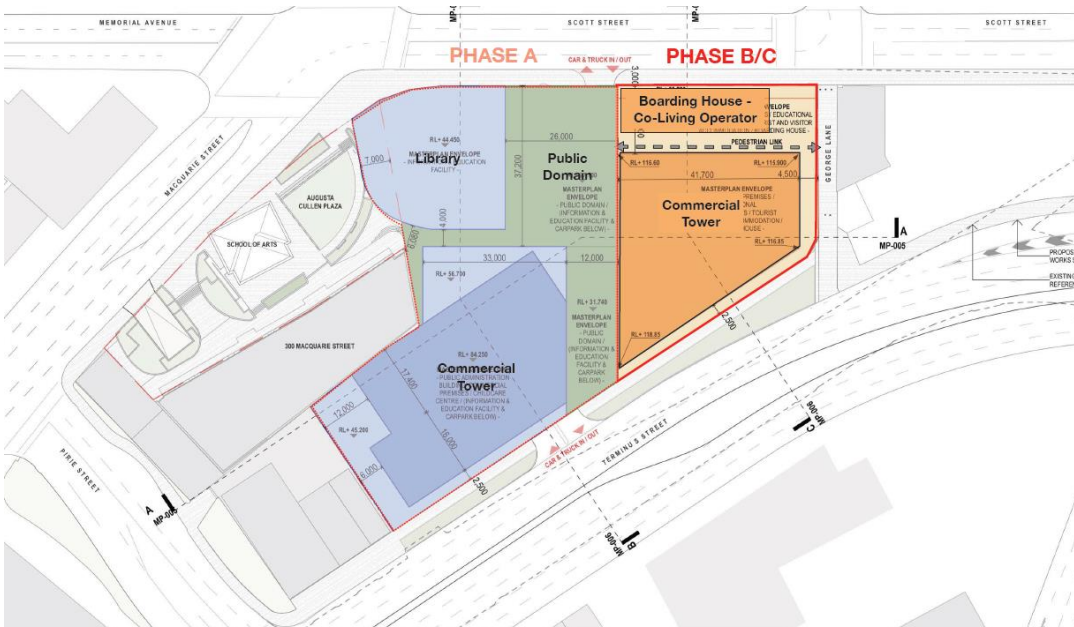


Figure 2 Liverpool Civic Place Phase B/C site (subject site)

Source: FJMT



This Stage 2 DA seeks approval for:

- Construction and use of a nine (9) storey boarding house to be operated as a co-living facility, comprising;
  - ground floor lobby and retail tenancies;
  - eighty-four (84) rooms;
  - communal facilities including living, kitchen and dining areas, a gym, rooftop terrace and a laundry.
- Construction and use of a twenty-two (22) storey commercial office building, comprising:
  - ground floor lobby and retail tenancies;
  - nineteen (19) commercial office levels; and
  - mid level and rooftop plant.
- Construction and use of four basement levels;
- Landscaping and public domain works including:
  - provision of a pocket park fronting Scott Street and George Lane;
  - embellishment of the elevated pocket park fronting Terminus Street; and
  - provision of a through-site link, connecting George Lane to the central public plaza.
- Extension and augmentation of services and infrastructure as required.

This DA reflects the staged planning approval pathway for the Liverpool Civic Place redevelopment which has included two previously approved DAs and a third DA currently under assessment, as outlined below:

#### **Concept DA DA-585/2019:**

The planning approval pathway for the Liverpool Civic Place development commenced in 2019, with the submission of a Concept Proposal / Stage 1 DA for the Liverpool Civic Place master plan. On 31 August 2020, the Concept Proposal / Stage 1 DA (DA-585/2019) was approved by the Sydney Western City Planning Panel. The Concept Proposal / Stage 1 DA consent sets out the future development concept of the site, including the approved land uses, building envelopes, an expanse of public domain and a common basement. The Concept Proposal / Stage 1 DA did not approve any physical works.

#### **Early Works DA DA-906/2019:**

DA-906/2019 was approved by the Sydney Western City Planning Panel on 29 June 2020. The development consent relates to demolition of all structures, select tree removal and bulk earthworks including shoring through the use of piles. Early works commenced on site in September 2020 and are scheduled for completion in August 2021.

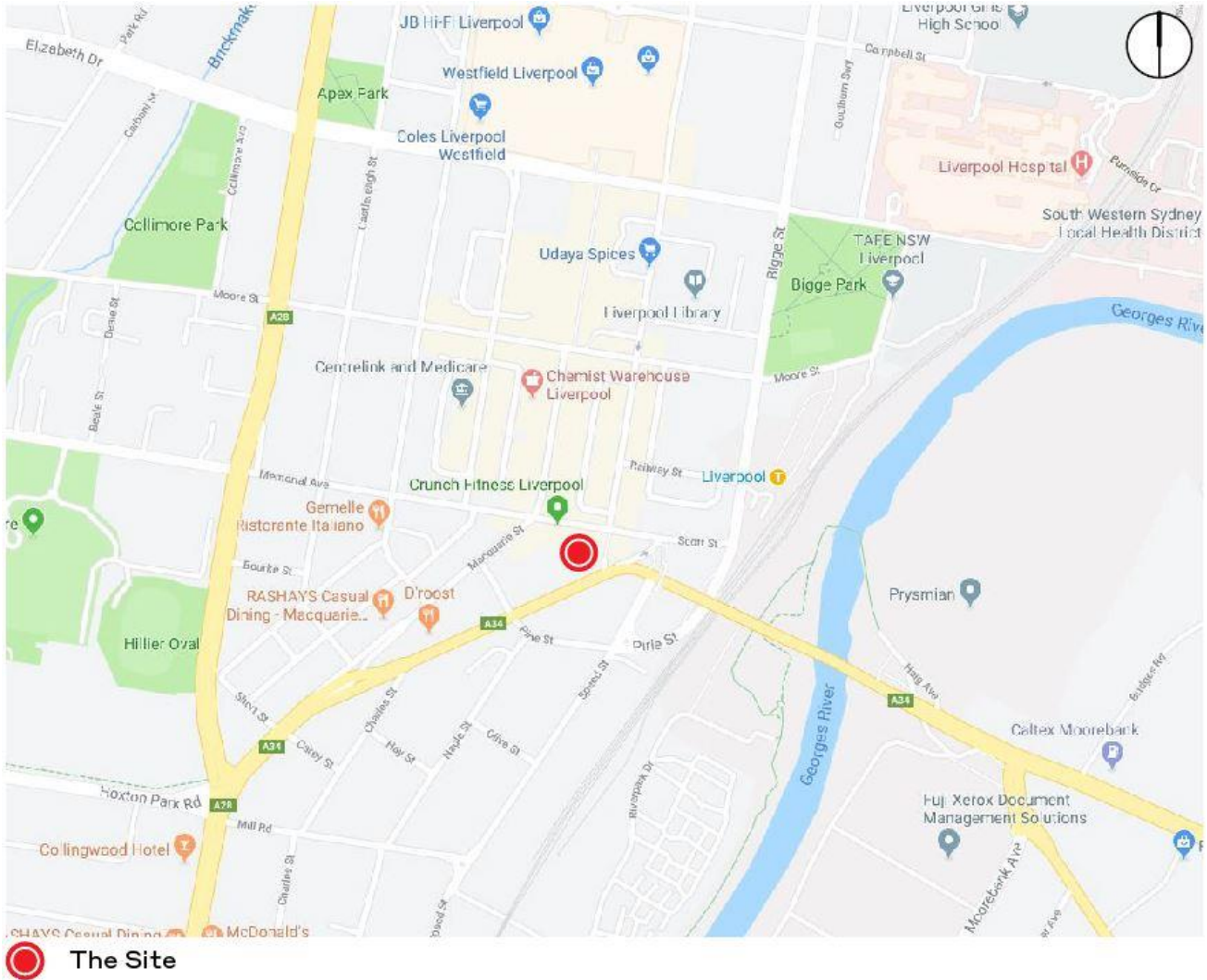
#### **Phase A Stage 2 DA DA-836/2020:**


DA-836/2020 was submitted to Council on 8 October 2020 and is currently under assessment (at the time of writing). The proposed development relates to Phase A of the Liverpool Civic Place redevelopment for the construction and use of a public library, as well as a mixed use building containing commercial office floor space, and public administration floor space to be occupied by Council. The proposal also comprises significant public domain works, including a public plaza and part of the site's five level common basement.



## 2.1 Site Location and Context

The site is located at 40-42 Scott Street, Liverpool within the Liverpool City Council Local Government Area (LGA) as illustrated at **Figure 3**. The site is located at the southern fringe of the Liverpool CBD. The site is approximately 300m south west of the Liverpool Railway Station and is also in the vicinity of a number of regionally significant land uses and features including Liverpool Hospital, Westfield Liverpool, Western Sydney University Liverpool Campus, the Georges River and Biggie Park public open space as illustrated at **Figure 3**.



 **The Site**

*Figure 3 Site Location*

Source: Google Maps & Ethos Urban



### 3. Project Sustainability Drivers

The proposed ESD initiatives for the Liverpool Civic Place Phase B and Phase C development are collectively influenced by various associated requirements and drivers, including:

- Liverpool Local Environmental Plan 2008 (LEP 2008);
- Liverpool Development Control Plan 2008 (LDCP 2008);
- Building Sustainability Index (BASIX);
- Green Star Design & As Built v1.3; and
- NCC 2019 Volume One – Section J Energy Efficiency

Further details regarding the above are documented below.

#### 3.1 Liverpool Local Environmental Plan 2008

The Liverpool Local Environment Plan (2008) has a specific focus on providing ecologically sustainable development throughout Liverpool. The aims of the plan include:

- To foster economic, environmental and social well-being so that Liverpool continues to develop as a sustainable and prosperous place to live, work and visit;
- To conserve, protect and enhance the environmental and cultural heritage of Liverpool;
- To protect and enhance the natural environment in Liverpool, incorporating ecologically sustainable development; and
- To promote a high standard of urban design that responds appropriately to the existing or desired future character of areas.

#### 3.2 Liverpool Development Control Plan 2008

The Liverpool Development Control Plan (LDCP 2008) supplements the LEP 2008 with more detailed provisions to guide the development, including.

- Part 1 General Controls for all Development
  - 6.8 Water Conservation
  - 20.3 Bicycle Parking and Cycling Facilities
  - 22 Energy Conservation
  - 25 Waste Disposal and Re-use Facilities
- Part 4 Development in Liverpool city centre
  - 4.2 Controls for Building Form
  - 4.5 Environmental Management





### 3.3 NSW Building Sustainability Index (BASIX)

BASIX is implemented under the following regulatory frameworks:

- *Environmental Planning and Assessment Regulation 2000 (EP&A Regulation), and*
- *State Environmental Planning Policy 2004 (the BASIX SEPP)*

The EP&A regulation specifies the types of developments BASIX applies to within NSW, as well as the purpose and content of BASIX certificates. The BASIX SEPP ensures the consistency in implementing the BASIX scheme throughout NSW and overrides the provisions of other planning instruments and development control plans that would otherwise contradict or modify any obligations under the BASIX scheme.

BASIX sets water and greenhouse gas reduction targets relative to the NSW average benchmark for per person potable water consumption & greenhouse gas emissions within the residential sector. BASIX also sets the minimum performance levels for thermal comfort of the dwelling, replacing the NCC Energy Efficiency benchmarks within the state of NSW.

Based on outcomes of Land and Environment Court Rulings (e.g. SHMH Properties Australia Pty Ltd v City of Sydney Council [2018] NSWLEC 66), dwellings within Class 3 developments are subject to BASIX requirements. A separate streamlined process has been created for 'large boarding houses' within the BASIX tool which subjects the development to only the Energy and Water components of BASIX. The thermal comfort section of the development is assessed at a later stage and against Section J requirements.

### 3.4 NCC 2019 Volume One – Section J

NCC Section J establishes the minimum energy efficiency provisions for all classes of buildings. The provisions are designed to achieve the functional objective of Section J which is to reduce greenhouse gas emissions.

NCC Section J 2019 will apply to the design and construction of Liverpool Civic Place Phase B and Phase C. NCC Section J 2019 represents a 'step change' substantial increase in the minimum energy efficiency requirements for a building. The energy efficiency performance requirements are now significantly more stringent, with the overall aim of reducing future operational energy consumption and greenhouse gas emissions.

The development will demonstrate compliance with the minimum design provisions as identified within National Construction Code (NCC) 2019 Volume One, Section J – Energy Efficiency, including:

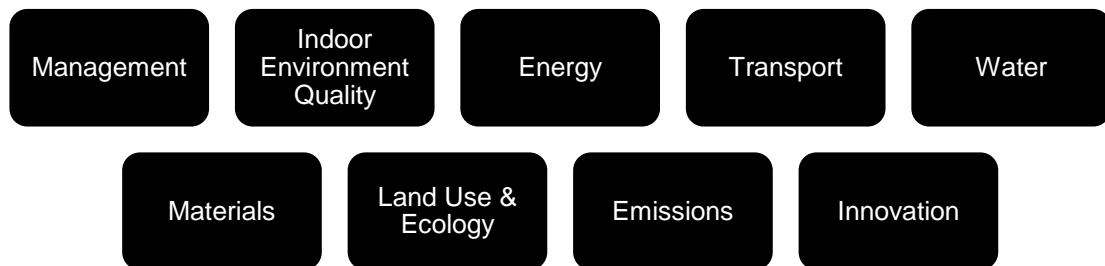
- Part J1 – Building Fabric
- Part J3 – Building Sealing
- Part J5 – Air-Conditioning and Ventilation Systems
- Part J6 – Artificial Lighting and Power
- Part J7 – Heated water supply and swimming pool and spa pool plant; and
- Part J8 – Facilities for energy monitoring



### 3.5 Green Star Design & As Built v1.3

Widely considered as the benchmark environmental assessment tool within the Australian Property Industry, Green Star is an independent accreditation framework which delivers sustainable built outcomes throughout the project lifecycle. Green Star is a credits-based star rating system ranging from one through to six stars.

Green Star assesses the environmental performance of projects in design, construction and operation via the following category frameworks:



The evaluation tool most suited to this project is the “Green Star Design & As Built v1.3” tool. This tool has been developed for new buildings and major refurbishments and aligns with the projects NCC 2019 Section J requirement.

The commercial office base building design is to achieve a minimum 5 Star Green Star Design & As Built v1.3 outcome. A provisional Green Star analysis and matrix demonstrating the projects ability to achieve the minimum 5 Star Green Star performance outcome is included in **Appendix A** of this report. Note, the provisional list of initiatives will be subject to further amendment during project detailed design phase following development approval.

## 4. ESD Strategy

In pursuit of environmentally sustainable design, the project is targeting the following sustainability outcomes:

- Thermal performance of both buildings designed to meet stringent NCC 2019 Section J requirements;
- BASIX Energy and Water compliance for the co-living facility;
- Commercial office building is designed to achieve a 5 Star NABERS Energy Base Building and a 3.5 Star NABERS Water Whole Building ratings; and
- 5 Star Green Star Design & As Built v1.3 certification for the commercial office building.

The design response for the proposed Liverpool Civic Place Phase B and Phase C development will consider and implement the ESD requirements and drivers identified below.

### 4.1 Energy & Carbon Emissions Improvements

A variety of energy efficiency measures will be considered for the proposed development. These energy efficiency measures will influence the final design, construction and future operation of the space. The final strategy will always be a combination of sustainability, operational feasibility, architectural & functional intent and site-specific appropriateness.

The energy efficiency strategy generally follows the hierarchy pyramid below. Best practice energy efficiency generally dictates that in the first instance demand is reduced. This has a much greater benefit to the overall long-term sustainability of the site compared to efficiency measures or renewables/offsets. As such, the focus will be on the elements that provide the greatest return on investment.

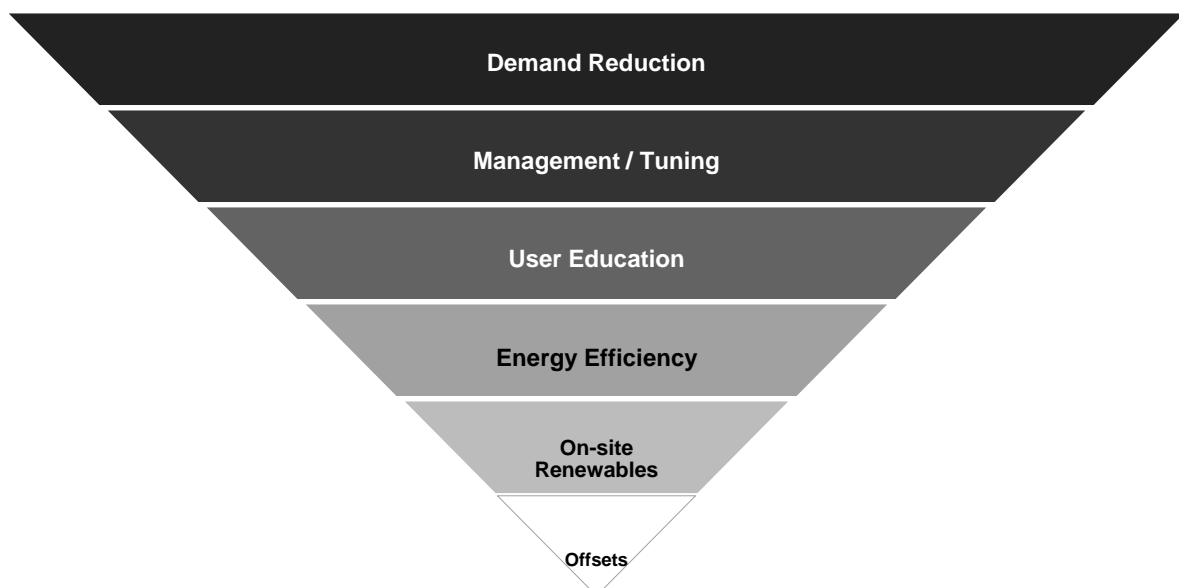


Figure 2: Energy efficiency strategy hierarchy

The commercial office building will be designed to meet a 5 Star NABERS Energy Base Building Standard and the co-living development will include energy efficiency initiatives to minimise energy consumption in accordance with BASiX requirements. The following key design elements are incorporated into the design:

### **Passive Building Design**

- Use of double glazed low-emissivity high-performance façade systems to meet stringent NCC 2019 Section J requirements to passively reduce energy losses and gains throughout the year. This effectively reduces the cooling and heating loads to maintain thermal comfort for conditioned spaces.
- The east and west facades of the co-living building are designed with minimal glazing to minimise heat gains into each space. The northern glazed façade is shaded though deep balcony overhangs to encourage blocking of direct solar gain in summer and take advantage of low level winter sunlight.
- Western façades typically receive very high levels of solar gain therefore the western facade of the commercial office building has been designed with a reduced extent of glazing. This will reduce strain on mechanical systems and overall energy use. Spandrel sections have also been introduced on the remaining facades to minimise heat loss and gain.
- The north and portions of the east and west façade of the commercial office building incorporate horizontal shading devices to block unwanted summer solar radiation while still allowing low level winter sunlight.
- Consideration of thermal breaks to aid in façade thermal performance.
- Insulation to exposed floors, external walls and roofs for thermal efficiency and prevention of heat loss in winter
- The extent of glazing and relatively shallow floorplates allows for good levels of daylight penetration into spaces that would normally require substantial artificial lighting demand. This will aid in reducing overall artificial lighting energy consumption.

### **Mechanical HVAC**

- Dedicated air handling systems serving different thermal on the north, east, west, and south facades, and central zones.
- High efficiency variable speed centrifugal chiller system and high efficiency electric motors on all fans and pumps.
- High efficiency cooling towers, staged to reduce water, fan power and sized to serve the chilled water system.
- Fans to be regularly maintained and filters cleaned to reduce fan pressure.
- Mechanical HVAC system to comply with the stringent energy efficiency requirements of NCC Section J 2019 Part J5.
- Proper air-conditioning control to specific required space temperatures including adequate temperature setpoints and bandwidth. This will assist in avoidance of over-cooling or over-heating a particular area.
- Consideration of 100% electric plant to provide the option of the building being fully powered by renewables in future.

### **On-site Renewable Energy (Solar PV)**

- An approximately 70kW solar photovoltaic (PV) system is to be provided to the development. Solar PV will provide renewable electricity generation to offset main grid use. Consideration of roof design, spatial allowance and building electrical load profile will aid in maximising on-site Solar PV panel utilisation and system capacity to offset grid electricity demand for mechanical air-conditioning and lighting etc.



## Electrical Systems & Lighting

- Electrical artificial lighting and power (including lifts) to comply with the stringent energy efficiency requirements of NCC Section J 2019 Part J6.
- High efficiency LED lighting will reduce the electrical load on the grid for the same output. Further, LED globes have a longer life, reducing replacement periods which demands less maintenance, as well as reducing landfill of precious materials.
- Lighting controls including time clocks, daylight & occupancy sensors to reduce the electrical demand for the lighting systems.
- Maximise usable natural daylight within the architectural design in conjunction with daylight dimming to reduce lighting energy demand.

## Energy Metering and Monitoring

- Extensive energy metering of tenancy and base building services to facilitate energy monitoring.
- Energy sub-meters will allow for the monitoring of relevant areas or functions. Energy data will be recorded by the BMCS (or equivalent system) and used to manage/monitor energy consumption and be reviewed against energy targets/benchmarks.

## 4.2 Water

Given the current drought in Australia, potable water is a precious resource and the project is seeking to minimise the use of this water as far as possible. The commercial office building will be designed to meet a 3.5 Star NABERS Water Whole Building rating. To ensure this outcome, the following design elements will be incorporated:

- Provision of high Water Efficiency Rating Scheme (WELS) rated fixtures, fittings and appliances ensuring lower building water demand:
  - Showers to be 7.5 L/min or lower
  - Toilets to be 4 Star WELS rated
  - Urinals will be maximum 0.8 L/flush (6 Star WELS)
  - Taps to be 4.5 L/min or lower (6 Star WELS), unless in ambulant spaces
- Landscape irrigation system served with a subsoil drip system and moderate/low water species are to be selected.
- Cooling tower design with high cycles of concentration (6+), as well as drift reducing barriers and accurate sizing of mechanical systems.
- A 60kL rainwater tank collecting water off the roof to be used for toilet flushing and irrigation.
- Sub metering and monitoring of major water uses.



## 4.3 Indoor Environment Quality

The proposed development seeks to improve the overall indoor environment quality for building occupants by addressing the following elements:

### Indoor Air Quality

- Material selections & finishes will be selected that can assist with reducing indoor pollutants. This includes products and finishes (paints, adhesives/sealants, carpets, engineered wood products) with low volatile organic compounds (VOC) levels and low formaldehyde emissions impacts. Such selections can assist with improving occupant health through the reduction in internal air pollutant levels
- To maximise occupant experience and wellbeing, it is proposed outdoor air be increased 50% above minimum Australian Standards 1668.2. CO<sub>2</sub> will be managed in the space to a maximum of 800ppm, ensuring healthy air

### Acoustic Comfort

- Ambient Noise levels will be designed to be in line with AS 2107:2016, ensuring a distraction-free environment.
- Reverberation times will be designed to AS2107:2016 and demonstrated in post-construction testing.

### Thermal Comfort

- The proposed mechanical HVAC system will provide air conditioning & ventilation to all indoor occupied spaces to maintain appropriate indoor design temperatures and achieve good levels of occupant thermal comfort.
- Energy efficient mechanical HVAC systems will maintain internal space conditions and provide the required outdoor fresh air ventilation rates appropriate to the space use.

### Visual Comfort & Daylight

- The extent of glazing and relatively shallow floorplates allows for good levels of daylight penetration into spaces
- Architectural design and façade location allow building occupants to have good access to high quality external views.

## 4.4 Materials

The production of materials uses large amounts of raw materials including water and energy, as well as needing to be transported long distances to the development site. Building materials will generally be selected based on considerations of aesthetics, value, functionality, durability and minimising environmental impacts throughout the project life cycle. The following initiatives will be implemented:

- Steel sourced from a certified Responsible Steel Maker.
- Timber products to be certified by a forest certification scheme (FSC/PEFC) or re-used.
- PVC products (cables, pipes, flooring etc.) that are Green Star “Best Practice” sustainable PVC.
- Consideration in the selection of materials and products which include re-used content, environmental product declarations, third party sustainability certifications or product stewardship programs.
- Head Contractor to target recycling at least 90% of demolition and construction waste during construction phase.
- The use of concrete with reduced Portland cement content (lower embodied energy).
- Separated operational waste streams to divert as much waste from landfill as possible.



## 4.5 Sustainable Transport

To support the reduction of private car trips and encourage the use of sustainable transportation, the following initiatives will be implemented:

- A Green Travel Plan and Transport Access Guide will be developed for the project to outline and encourage public transport options.
- The site is located close to the Liverpool Train Station and multiple bus stops.
- The site is surrounded by amenities such as cafes, shops and services within walking distance, encouraging people to move by foot over public transport.
- Approximately 147 secure bicycle spaces and supporting end of trip facilities will be provided to encourage bicycle use.

## 4.6 Land Use and Ecology

The following strategies will be implemented to reduce the negative impacts on the site's ecological value as a result of urban development, and to enhance the quality of local ecology post-construction.

- Landscaped public domain area with water sensitive / drought tolerant native plant species.
- Landscape elements with tree canopy cover to reduce urban heat island effect and provide improved building user amenity.

## 4.7 Building Emissions

The following initiatives will be considered for implementation where possible:

- External lighting will be designed with consideration of the obtrusive effects of outdoor lighting and light pollution generally.
- Stormwater quality improvement devices will be implemented to improve the quality of stormwater runoff and achieve the necessary pollution reduction targets.

## 4.8 NCC 2019 Section J

The project is subject to the new provisions outlined within NCC Section J 2019. The proposed new performance standards for NCC Section J will increase the thermal performance requirements for code compliant façade designs. Glazing thermal performance, solar control, visible light transmittance and inclusion of appropriate shading features within the design response must be considered in accordance with the increased performance requirements of NCC Section J 2019.

A preliminary JV3 assessment has been carried out on the proposed development to confirm compliance with Section J 2019. The design has optimised energy efficiency & thermal performance via design of external façade design elements which improve the building passive thermal performance. These features include:

- Use of double glazed low-emissivity high-performance façade systems to meet stringent NCC 2019 Section J requirements to passively reduce energy losses and gains throughout the year. This effectively reduces the cooling and heating loads to maintain thermal comfort for conditioned spaces.
- The east and west facades of the co-living building are designed with minimal glazing to minimise heat gains into each space. The northern glazed façade is shaded through deep balcony overhangs to encourage blocking of direct solar gain in summer and take advantage of low level winter sunlight.
- Western façades typically receive very high levels of solar gain therefore the western facade of the commercial office building has been designed with a reduced extent of glazing. This will reduce strain on mechanical systems





and overall energy use. Spandrel sections have also been introduced on the remaining facades to minimise heat loss and gain.

- The north and portions of the east and west façade of the commercial office building incorporate horizontal shading devices to block unwanted summer solar radiation while still allowing low level winter sunlight.
- Consideration of thermal breaks to aid in façade thermal performance.
- Insulation to exposed floors, external walls and roofs for thermal efficiency and prevention of heat loss in winter

In addition to the above, thermal comfort modelling will be included to demonstrate compliance with the new NCC 2019 code, with a minimum performance of  $-1.0 < PMV < 1.0$  in each mechanically conditioned zone. The design of the building fabric will demonstrate compliance with this clause through dynamic modelling of the building against a reference case.

## 4.9 BASIX

The co-living development is defined as a 'large boarding house' under the guidance provided by the Department of Planning and Environment (<https://www.planningportal.nsw.gov.au/basix/large-boarding-houses>) as it meets all three criteria nominated below:

- Designed to accommodate more than 12 people, or the total floor area exceeds 300m<sup>2</sup>
- At least 80% of the dwellings are less than 35m<sup>2</sup>; and
- It only comprises residential flat buildings

The development will seek to comply with the nominated BASIX energy and water targets through the initiatives described in the sections above. As per the alternative assessment for large boarding houses, the thermal comfort levels for this particular development is assessed under Section J requirements.

	BASIX Target	Project Score
<b>Energy</b>	25	25
<b>Water</b>	40	42

## 5. Conclusion

Ecologically Sustainable Design is a driving consideration in the development of the proposed Liverpool Civic Place Phase B and Phase C, located at 40-42 Scott Street, Liverpool NSW 2170. As described within the report above, the project will incorporate a number of ESD and environmentally conscious initiatives in both design and operation.

The ESD initiatives outlined in this report are a reflection of the ESD investigations to date, and a summary of the implemented and proposed design and operational initiatives. The specific initiatives that will be installed across the development will be determined throughout the design process and will be subject to feasibility analysis, including that of the final use and layout.

The development's commitment to reducing the overall environmental impact is evident of the holistic approach taken to long-term sustainability. Documented initiatives cover a range of concepts including:

- Passive building design and NCC 2019 Section J compliance
- Potable water reduction
- BASIX Energy and Water compliance for the co-living development
- Minimising waste to landfill
- Use of materials with high environmental value
- Occupant amenity and comfort
- Building metering and management practices

We trust this report provides sufficient overview of the project's commitment to environmentally sustainable design and the sustainability vision for the Liverpool Civic Place Phase B and C development.



## Appendix A Preliminary Green Star Pathway



Green Star - Design & As Built Scorecard

Project:	LCP - Phase B Commercial	Round:	1	Core Points Available	Total Score Targeted
Targeted Rating:	5 Star - Australian Excellence			100	65

NA	CATEGORY / CREDIT	AIM OF THE CREDIT / SELECTION	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED
	Management				14	
	Green Star Accredited Professional	To recognise the appointment and active involvement of a Green Star Accredited Professional in order to ensure that the rating tool is applied effectively and as intended.	1.1	Accredited Professional	1	1
	Commissioning and Tuning	To encourage and recognise commissioning, handover and tuning initiatives that ensure all building services operate to their full potential.	2.0	Environmental Performance Targets	-	Complies
			2.1	Services and Maintainability Review	1	1
			2.2	Building Commissioning	1	
			2.3	Building Systems Tuning	1	1
			2.4	Independent Commissioning Agent	1	1
	Adaptation and Resilience	To encourage and recognise projects that are resilient to the impacts of a changing climate and natural disasters.	3.1	Implementation of a Climate Adaptation Plan	2	2
	Building Information	To recognise the development and provision of building information that facilitates understanding of a building's systems, operation and maintenance requirements, and environmental targets to enable the optimised performance.	4.1	Building Information	1	1
	Commitment to Performance	To recognise practices that encourage building owners, building occupants and facilities management teams to set targets and monitor environmental performance in a collaborative way.	5.1	Environmental Building Performance	1	1
			5.2	End of Life Waste Performance	1	1
	Metering and Monitoring	To recognise the implementation of effective energy and water metering and monitoring systems.	6.0	Metering	-	Complies
			6.1	Monitoring Systems	1	1

COMMENTS
Stantec to be engaged throughout as project GSAP
A project specific Design Intent Report is to be developed. Services to provide input to DIR.
Services and maintainability review led by ICA. Contractor to review all documentation and provide feedback to sub-contractors.
Requires air permeability testing to be carried out to at least 10% of building area and not exceed 15m2/h/m2 at 25Pa
Built to commit to 12 month Building Tuning Period. Tuning requirements to be included in all services scope of works.
ICA to be involved throughout design, tender, construction, commissioning and tuning phases.
Climate Adaptation Plan developed with stakeholder engagement. All high and extreme risks identified and actions taken. Phase A Climate Adaptation Plan is also applicable to this development and has been issued to the project team.
All subcontractors to provide O&M information in line with GS requirements and provided to facilities management. Building Log Book to be developed in line with CIBSE TM31. Building Users Guide to be developed & provided to building users.
Built to sign MoU with tenants to setting, measuring and reporting on energy & potable water use
Built to ensure 'Make good' clause is incorporated in all leases.
Metering for distinct uses and any items that exceed 5%/100kW of total energy use and 10% of water use. Meters to be commissioned to NABERS validation protocols and produce alerts if inaccuracies are found - to be included in services scope of works.
Monitoring strategy to be developed and BMS to be able to read all meters, record data, produce alerts

Responsible Construction Practices	To reward projects that use best practice formal environmental management procedures during construction.	7.0	Environmental Management Plan	-	Complies
		7.1	Environmental Management System	1	1
		7.2	High Quality Staff Support	1	1
Operational Waste	A. Performance Pathway	8A	Performance Pathway: Specialist Plan	1	1
		8B	Prescriptive Pathway: Facilities	0	
Total				14	13

Built to develop best practice Environmental Management Plan for the project.
Built Construction is ISO14001 certified
Built Construction to provide mental and physical support to staff, provide training on core concepts of sustainability
OWMP to be developed and implemented in design

Indoor Environment Quality				17	
Indoor Air Quality	To recognise projects that provide high air quality to occupants.	9.1	Ventilation System Attributes	1	1
		9.2	Provision of Outdoor Air	2	1
		9.3	Exhaust or Elimination of Pollutants	1	1
Acoustic Comfort	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	10.1	Internal Noise Levels	1	1
		10.2	Reverberation	1	1
		10.3	Acoustic Separation	1	1
Lighting Comfort	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	11.0	Minimum Lighting Comfort	-	Complies
		11.1 General Illuminance and Glare Reduction	11.1.1 General Illuminance	1	1
			11.1.2 Glare Reduction		
		11.2	Surface Illuminance	1	
		11.3	Localised Lighting Control	1	
Visual Comfort	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	12.0	Glare Reduction	-	Complies
		12.1	Daylight	2	1

Ventilation systems designed to ASHRAE 62.1, have adequate access to both sides of heating & cooling coils, humidifiers & filters.
Base building to be provided with 50% greater OA than AS1668.2
Any print/photocopy equipment to comply with GS emissions guidelines or located in enclosed room. Any kitchens to be ventilated in accordance with AS 1668.2:2012 & dedicated exhaust riser to car park required.
Internal noise levels no more than 5dBA above lower figure in AS/NZ 2107:2016. Testing required at completion.
Reverberation times below maximum in AS/NZ 2107:2016. Testing required at completion.
Requires Rw 45 between enclosed spaces. Achievable with base building delivery scope
Flicker free lighting & CRI >80% and 12-bit or greater resolution.
Best practice lighting levels in line with AS/NZS 1680.2 to be achieved
All luminaires to have diffusers or meet UGR values of AS 1680.1
Requires bi-directional lighting, reflective ceilings. Not targeted.
Requires lighting control for individual occupants including dimming.
Blinds, screens, shading to be provided to control glare.
40% of spaces to receive high levels of daylight. Achievable given floorplate depths.

		12.2	Views	1	1	
Indoor Pollutants	To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	13.1 Paints, Adhesives, Sealants and Carpets	13.1.1 Paints, Adhesives and Sealants	1	1	
			13.1.2 Carpets			
			Engineered Wood Products	1		1
Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1	Thermal Comfort	1	1	
		14.2	Advanced Thermal Comfort	1	1	
Total				17	13	

60% of area have access to high quality external/internal views. Achievable given floorplate depths.
Paints, adhesives, sealants to comply with VOC limits.
Carpets to comply with VOC limits or be GECA/GreenTag/ECS certified
Engineered wood to comply with formaldehyde limits.
High degree of thermal comfort to be provided (-1<PMV<+1).
Very high degree of thermal comfort to be provided (-0.5<PMV<+0.5). Expected in PCA A-grade building

Energy					22	
Greenhouse Gas Emissions	E. Reference Building Pathway	15E.0	Conditional Requirement: Reference Building Pathway	-	Complies	
		15E.1	GHG Emissions Reduction: Building Fabric	4		
		15E.2	GHG Emissions Reduction	16	3	
		15E.3	Off-Site Renewables	8		
		15E.4	District Services	7		
		15E.5 Additional Prescriptive Measures	15E.5.1 Transition Plan	1		
			15E.5.2 Fuel Switching	2		
			15E.5.3 On-Site Storage	1		
Peak Electricity Demand Reduction	B. Performance Pathway	16A	Prescriptive Pathway: On-Site Energy Generation	0		
		16B	Modelled Performance Pathway: Reference Building	2	2	
Total					22	5

Improvement of 10% against NCC 2019 reference building.
Requires improvement upon NCC 2019 building fabric - current modelling shows the building is only just complying.
2 points awarded for complying with NCC 2019. Additional 2 points for further 20% improvement from services efficiencies and 60kW PV contribution.
No fossil fuels burned on site for heating, cooling or electricity. TBC - LCI to investigate all electric option
Peak demand reduction through services efficiencies & 60kW PV

Transport				10	
Sustainable Transport	A. Performance Pathway	17A	Performance Pathway	10	8
Total				10	8

Tavel Plan to be carried out by Transport consultant. Site close to liverpool station & close to amenities. Estimated 8 points at this stage.
---

Water				12	
Potable Water	A. Performance Pathway	18A	Potable Water - Performance Pathway	12	4
Total				12	4

Efficient taps & showers, waterless urinals, rainwater collection and tank for toilet flushing and irrigation
---

Materials				14	
Life Cycle Impacts	A. Performance Pathway - Life Cycle Assessment	19A.1	Comparative Life Cycle Assessment	6	1
		19A.2	Additional Reporting	4	3
Responsible Building Materials	To reward projects that include materials that are responsibly sourced or have a sustainable supply chain.	20.1	Structural and Reinforcing Steel	-	Complies
				1	1
		20.2	Timber	1	
		20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1
Sustainable Products	To encourage sustainability and transparency in product specification.	21.1	Product Transparency and Sustainability	3	3
Construction and Demolition Waste	B. Percentage Benchmark	22.0	Reporting Accuracy	-	Complies
		22A	Fixed Benchmark	0	
		22B	Percentage Benchmark	1	1
Total				14	10

30% cumulative impact reduction compared to reference building. Target 30% cement replacement, operational energy improvements
Additional life cycle impact reporting, material selection improvement, LCA design review
Steel to be sourced from responsible steel maker
Steel to be sourced from responsible steel fabricator and at least 60% produced using energy reducing processes.
Requires use of certified timber with chain of custody
Formwork, pipes, blinds, flooring, cables to meet best practice guidelines for PVC or do not contain PVC.
Selection of sustainable products. Steel & paints with EPDs, certified plasterboard, base building carpet tiles
Waste contractors and facilities to hold compliance verification summaries
90% of construction waste to be diverted from landfill.



Land Use & Ecology				6	
Ecological Value	To reward projects that improve the ecological value of their site.	23.0	Endangered, Threatened or Vulnerable Species	-	Complies
		23.1	Ecological Value	3	1
Sustainable Sites	To reward projects that choose to develop sites that have limited ecological value, re-use previously developed land and remediate contaminate land.	24.0	Conditional Requirement	-	Complies
		24.1	Reuse of Land	1	1
		24.2	Contamination and Hazardous Materials	1	1
Heat Island Effect	To encourage and recognise projects that reduce the contribution of the project site to the heat island effect.	25.1	Heat Island Effect Reduction	1	
Total				6	3

No endangered species on site
Improvement of ecological value of site with native landscaping.
Pre-existing site
Greater than 75% of site was previously used.
Comprehensive hazardous materials survey to be carried out. Any asbestos, lead or PCBs identified to be stabilised or removed in accordance with best practice guidelines.
Requires use of light coloured roof and pavement. May be possible. TBC

Emissions				5	
Stormwater	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Stormwater Peak Discharge	1	1
		26.2	Stormwater Pollution Targets	1	1
Light Pollution	To reward projects that minimise light pollution.	27.0	Light Pollution to Neighbouring Bodies	-	Complies
		27.1	Light Pollution to Night Sky	1	1
Microbial Control	To recognise projects that implement systems to minimise the impacts associated with harmful microbes in building systems.	28	Legionella Impacts from Cooling Systems	1	
Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	29.1	Refrigerants Impacts	1	
Total				5	3

Post development stormwater discharge does not exceed pre development discharge.
Stormwater pollution reduction targets to be in line with Column B. One Innovation point also targeted.
External lighting design to comply with AS 4282:1997.
No uplighting. ULOR of all external luminaires to be <5%.
Waterless heat rejection system required.
Reduced environmental impact of refrigerants

Innovation				10	
Innovative Technology or Process	The project meets the aims of an existing credit using a technology or process that is considered innovative in Australia or the world.	30A	Innovative Technology or Process		
Market Transformation	The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in Australia or in the world.	30B	Market Transformation		


<b>Improving on Green Star Benchmarks</b>	The project has achieved full points in a Green Star credit and demonstrates a substantial improvement on the benchmark required to achieve full points.	30C	Improving on Green Star Benchmarks	10	2
<b>Innovation Challenge</b>	Where the project addresses an sustainability issue not included within any of the Credits in the existing Green Star rating tools.	30D	Innovation Challenge		2
<b>Global Sustainability</b>	Project teams may adopt an approved credit from a Global Green Building Rating tool that addresses a sustainability issue that is currently outside the scope of this Green Star rating tools.	30E	Global Sustainability		2
<b>Total</b>				<b>10</b>	<b>6</b>

Stormwater targets in line with Column B Ultra Low VOC paints
Financial Transparency High performance site offices
Green Cleaning Groundskeeping

TOTALS	AVAILABLE	TARGETED
CORE POINTS	100	59.0
CATEGORY PERCENTAGE SCORE		59.0
INNOVATION POINTS	10	6.0
TOTAL SCORE TARGETED		65.0

Design with  
**community** in mind

Level 6, Building B  
207 Pacific Highway  
St Leonards NSW 2065  
Tel +61 2 8484 7000

For more information please visit  
[www.stantec.com](http://www.stantec.com)

