University of Technology Sydney

SSD 9571 - Blackfriars Precinct Research Building Stage 2

Stage 2 ESD Report

REP/ESD/DA2

Issue | 26 August 2019

Job number 260749-00

Arup Pty Ltd ABN 18 000 966 165

Arup
Level 5
151 Clarence Street
Sydney NSW 2000
Australia
www.arup.com

ARUP

Contents

1 Introduction

1.1 Proposed Development[1]

UTS proposes to create a unique, innovation driven industry hub at its Blackfriars precinct. This will encompass the continued use of the site's significant heritage buildings complemented by a new 6,000 square metre building, the Blackfriars Research Industry Hub to house UTS and its research partners. The Blackfriars Research Facility will be a new building slated for research in innovative Engineering programs, including the emerging areas of Robotics, Advanced Manufacturing, Advanced Analytics, Big Data & Networking, Creative Digital, Health Manufacturing including Medical Devices and Prototyping.

The UTS Blackfriars Research Facility will be a building able to respond to the changing needs of leading research academics from the university and industry partners. The facility will aspire for a commercial research feel with an accent on transparency, collaboration and innovation, and a focus on NSW and Australia's digital economy.

The Blackfriars building will provide a hub for leading academics and industry partners to work side by side leading to:

- Collaboration through the open exchange of information, skills and ideas
- Development of start-up companies
- Commercialisation opportunities
- Collaborative research partnerships

The Proposal located at the northern end of the Blackfriars Precinct site. The proposed building will be consistent with the Stage 1 approval (as modified) and comprises:

- a new five storey high (plus basements and plant levels) building envelope for education, commercial and ancillary retail floorspace,
- a maximum gross floor area of 6,000m^2
- 2 basement levels (subject to archaeological approval),
- associated landscaping and public domain works.

1.2 SEARs

This report is written in response to Clause 7 of the SEARs issued for SSD 9571 which requires the proponent to address:

> **7. Ecologically Sustainable Development (ESD)**
>
> - Detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the Regulation) will be incorporated in the design and ongoing operation phases of the development.

[1] After URBANAC, Request for SEARs – UTS Blackfriars Stage 2 SSD

- Include a framework for how the future development will be designed to consider and reflect national best practice sustainable building principles to improve environmental performance and reduce ecological impact. This should be based on a materiality assessment and include waste reduction design measures, future proofing, use of sustainable and low-carbon materials, energy and water efficiency design (include water sensitive urban design) and technology and use of renewable energy.
- Include preliminary consideration of building performance and mitigation of climate change, including consideration of Green Star Performance.
- Provide a statement regarding how the design for the future development is responsive to the CSIRO projected impacts of climate change, specifically:
    - Hotter days and more frequent heatwave events
    - Extended drought periods
    - More extreme rainfall events
    - Gustier wind conditions
    - How these will inform landscape design, material selection and social equity aspects (respite/shelter areas).
- Relevant Policies and Guidelines
    - NSW and ACT Government Regional Climate Modelling (NARCliM) climate change projections.

2 Response to SEARs

2.1 Ecologically Sustainable Development

Definition

The Australian Government formalised the term ecologically sustainable development in their ESD National Strategy of 1992 as:

Development that improves the quality of life both now and in the future, in a way that maintains the ecological processes on which life depends.

As part of the strategy they recognised that there is no single definition for ESD and that the focus should be on intergenerational equity of environment, economy and society. In developing the ESD Strategy for the UTS Blackfriars Precinct, each element is tested against both the definition and the intent. Although not strictly equivalent, in this document the terms ESD and sustainability are used interchangeably.

Principles of ESD

As part of the State government, UTS is keen for the development to be progressed according to the Principles of ESD, as stated by The Hon. Justice

Brian J Preston (2006). These principles include application and understanding of:

1. Principle of sustainable use
2. Principle of integration
3. Precautionary principle
4. Inter-generational and intra-generational equity
5. Conservation of biological diversity and ecological integrity
6. Internalisation of external environmental costs

Each of these principles has a scope of coverage which extends well beyond that of a typical development such as the Blackfriars Precinct. However, it is envisaged that these principles should be an overarching guide for the future developer of the precinct.

2.2 ESD Framework

To uphold the ESD, a framework has been utilised. This is a combination of policy drive requirements from the University and their commitment to rate the facility using the Green Star tool.

UTS Policies

Sustainability at UTS is embedded in the UTS Strategic Plan 2009 – 2018 and commits the university to include environmental sustainability principles and targets in all aspects of decision-making.

The UTS Sustainability Strategy 2017 - 2020 provides the overarching framework guiding sustainability implementation. The strategy aims to fully integrate sustainability into campus operations, teaching and learning, research, and community engagement.

As part of their commitment, the University has nominated a number of goals and targets, some highlights from this are noted below. The University reports annually on its performance against these targets, and their overall sustainability strategy.

Greenhouse - as part of the Australian Technology Network of universities, UTS is committed to some of the most ambitious greenhouse gas reduction targets of any Australian university. We are striving for a 20% reduction on 2007 levels by 2020/21.

Energy saving – $9 million was spent over three years installing new energy efficiency technology such as sensor and LED lighting, aircon upgrades, and new meters.

Water - continually reduce water consumption each year compared to the previous year.

Waste and recycling – recycle 80% of general waste (diversion from landfill).

Community engagement - we have a range of sustainability engagement targets set for each year incorporating numbers of students and staff participating in sustainability events, engagement on social media, etc.

Details on the University's performance can be found here: https://www.uts.edu.au/partners-and-community/initiatives/uts-sustainability/governance/our-performance

Green Star

As part of their commitment, the University is utilising the Green Star tool developed by the GBCA to guide the application of ESD initiatives on the new development. The target rating under the tool is 5 star – equivalent to Australian Excellence in sustainable design.

To ensure that the target rating is achieve, the design team has reviewed a total of nearly 80 credit points – these have been reviewed against design and implementation risk to ensure that the minimum threshold for 5 star is exceeded. A summary of the total points targeted, and the risk-rated score is shown in Figure 1.

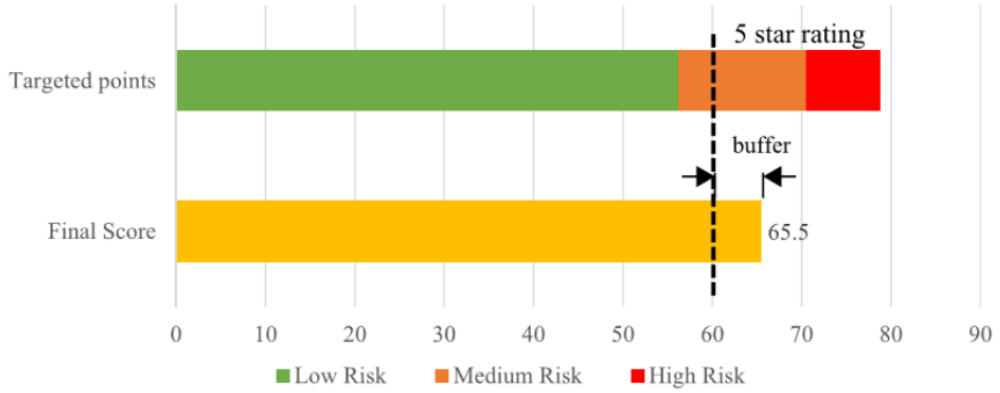

Figure 1 Green Star target score

Some highlights of the proposed Green Star strategy include:

Management

All credits under the management section of the tool have been targeted, including the engagement of an Independent Commissioning Agent and the application of a Climate Change Adaptation plan.

Indoor Environment Quality

Over 60% of the credits in this section of the tool are targeted – the building form has been developed to allow the achievement of good daylight and views.

Energy

The building has been designed to achieve a 30% reduction compared to minimum code compliance. This is additionally supplemented by a generous PV array.

Water

Water efficiency of the building is based on minimisation of demand, by appropriate selections of fixtures and fittings, which is also supplemented by air cooled heating plant – removing the need for cooling towers. A rain water tank is also proposed as part of the development to assist in offset of non-potable water use.

Materials

Responsible sourcing of materials is targeted and options exist for the implementation of a timber structural system. It is also proposed to exceed the benchmark for diversion from landfill of 90%.

The finalisation of the Green Star strategy will be implemented in the developed design stage. The overall targets are fixed and part of the University's commitment to sustainability.

2.3 Climate Change

As part of the Green Star strategy, it is proposed that the project will be develop a Climate Change Adaptation Plan. This will look at how the building design is developed to cope with predicted climate change impacts in the foreseeable future. It will also address resilience of the building in these circumstances.

Typical strategies that will be reviewed as part of this assessment include:

- Allowance to increase services capacity
- Understanding of risk from flooding events, and appropriate mitigation
- Assessment of thermal comfort impacts in the case of increased temperatures
- Resilience of systems in extreme conditions

3 Summary

Overall, the University of Technology Sydney has proposed an adaptable, innovative facility which can showcase the its support of leading edge engineering programs. The building design has been developed to support this function in a sustainable and amenable manner. The proposed ESD initiatives summarised in this report highlight how UTS will address and exceed the requirements nominated for ecologically sustainable development in the SEARs.