UTS Thomas Street Building

Part 3A ESD and Energy-Efficiency Report

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1 Executive Summary

This report has been prepared by Steensen Varming, for inclusion with the Part 3A Project Application submission, for the proposed UTS Thomas Street Building, (also known as Faculty of Science), located on Lots 2003 and 2004 DP 1053548, of the city campus of the University of Technology Sydney.

The key intent of this report is to provide a response to the ESD criteria stated in the Director General's Requirements for the UTS Thomas Street Building, as per Section 75F of the Environmental Planning and Assessment Act 1979.

The Major Project Number MP 09_0213 applies to the UTS Thomas Street Building. The Director General Requirements (DGRs) for MP 09_0213 have been issued on 19th January, 2010, and consist of the following requirements for Energy-efficiency and ESD.

- Provide an energy-efficiency report detailing measures to address energy-efficiency and ESD in the design of the building.
- Measures should include water-saving measures, energy efficiency, recycling and waste disposal.

In the concept plan for the proposed Thomas Street building, the University committed to the following targets in relation to energy efficiency and ESD:

- 6 star Green Star Education target for the new Thomas Street Building; (later amended to a 5 star target)
- Reduction in overall water campus consumption by up to 20% (based on 2002 levels); and
- Meet or exceed the requirements of Section J of the Building Code of Australia for energy efficiency in building fabric and environmental systems.

To meet these targets, UTS will:

- Adopt water sensitive urban design principles, such as stormwater reuse and rainwater capture across the campus; and
- Adopt practices to minimise construction and operational waste including reusing 80% of demolition waste.

This report presents a concise summary of the design decisions that have been made during the Concept design stage, and includes key ESD opportunities and initiatives that are likely to be implemented on the project. The strategies presented in this report are based on the architectural design developed by Durbach Block Jaggers and BVN Architects.

The primary design intent for the proposed Thomas Street Building is to achieve a building that contributes less carbon emissions, consumes fewer natural resources, and ensures the health, comfort and safety of its occupants, while maintaining the functional requirements of a laboratory building.

In addition to the DGR's, the proposed design also addresses the key brief requirements established by the University. UTS has a strong focus on sustainability and the proposed project is expected to undergo a formal Green Star certification process, per the Green Star Education V1 tool.

The UTS Campus ESD Master Plan 2020 noted an aspirational 6 Star Green Star rating for the Thomas Street Building. Following further assessment during the concept design stage, it was determined it is more appropriate to target a 5 star rating. Due to the function and use of the facility, there are some spaces that do not align with the Green Star tool. In addition, due to site constraints and inclusion of basement levels, the project would not score certain credits, such as daylighting, external views, etc. More details are provided in section 3.1 of this report.

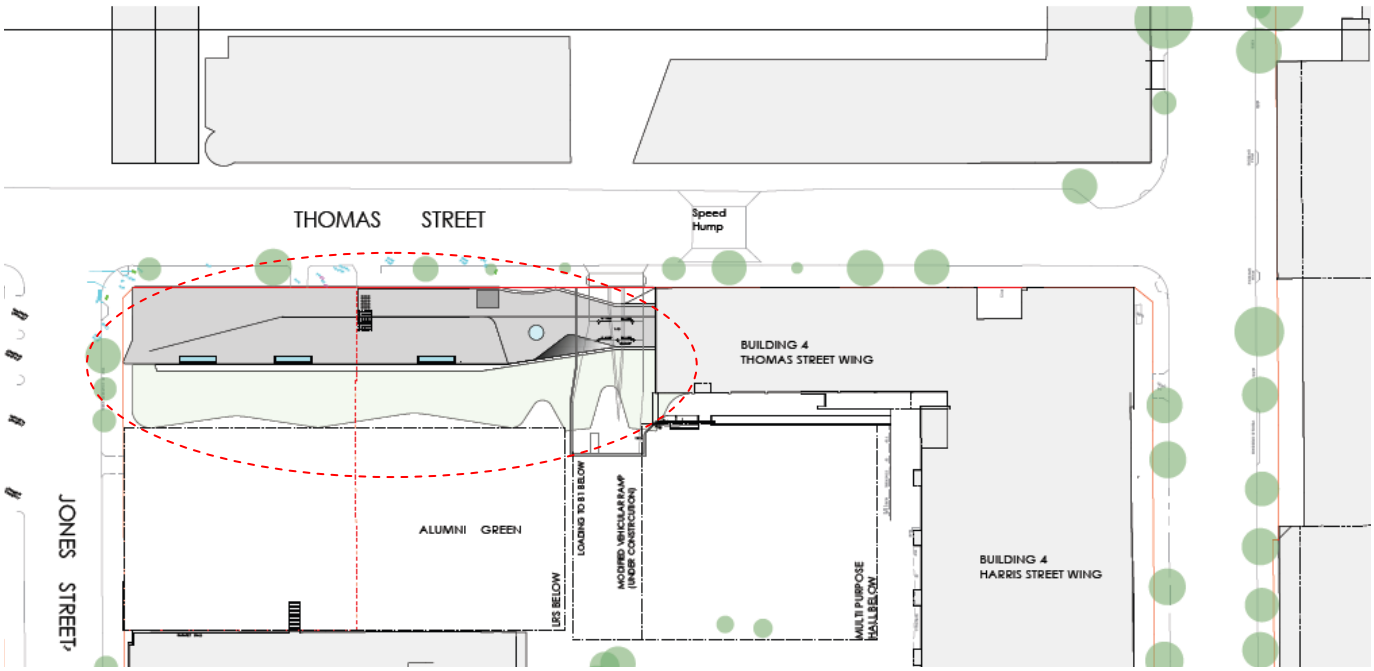

Fig 1: Location Plan of the proposed Thomas Street Building

2 Introduction

The proposed Thomas Street Building (also known as the Faculty of Science) is considered to be a vital landmark for the UTS campus, and forms an important part of the campus revitalisation. Appropriate passive and active design strategies have been incorporated in the proposed design to reduce energy and water consumption and ensure a long-life, low-energy and low maintenance outcome.

Key ESD strategies developed include:

- Mixed-mode ventilation to offices.
- Shared energy plant (by connecting to the central energy plant in Building 1)
- Rain water harvesting and reuse
- Green Roof
- Allowance for connection to future precinct trigeneration system
- Daylight access and control
- On-site Renewable Energy Generation via roof-mounted PV
- Efficient Fan-coil units fitted with ECDC Motors
- Zoning and compartmentisation of laboratory and office spaces.

Scientific laboratory buildings of this nature are highly-serviced buildings, and are high-energy consumers. Appropriate sustainability strategies have been developed in conjunction with the University's objectives, to showcase the building as a high-performance building embodied with low energy and sustainable design principles that support the overall UTS environmental ethos of Think, Green, Do.

The proposed building design is based upon a holistic well-integrated approach to sustainability to ensure a high environmental outcome is achieved. Emphasis has been laid on sustainability objectives, rather than purely on aesthetics.

The proposed design is developed not just for the proposed building in isolation, but considers its relation with rest of the campus. Due to its proximity to the Alumni Green, extra emphasis has been placed on creating a coherent connection with the green space to improve social sustainability.

3 Project Targets / Benchmarks

In addition to the Director General's Requirements, key project targets for the project have been identified in the UTS Campus ESD Masterplan 2020.

The following environmental targets are being aspired by the University:

- Certified Green Star 5 Star Rating as per the Green Star Education V1 rating tool.
- Reduction in overall campus water consumption by up to 20% (based on 2002 levels),
- Meet or exceed the requirements of Section-J of the Building Code of Australia for energy-efficiency in building fabric and environmental systems.

3.1 6 Star Vs. 5 Star Green Star target

The design team recognises that UTS has a strong focus on sustainability and that the proposed project is expected to undergo a formal Green Star certification process, using the Green Star Education V1 tool.

The *UTS City Campus ESD Masterplan 2020* developed by Arup in 2008 is a guideline document that recommended new buildings on campus achieve 6 star Green Star ratings. These guidelines and aspirational targets were developed prior to the concept design phase of the Thomas Street Building when the Faculty of Science's exact requirements and activities to be undertaken in the building were not yet determined. It was later determined that it is more appropriate and feasible to target a 5 star Green Star rating for the proposed laboratory facility due to the following reasons:

- Compliance with some of the Green star credits is not feasible for the proposed facility. These credits include:

Daylighting	Due to the presence of basement levels, it is difficult to achieve a high score for this credit.
External views	Difficult to achieve compliance with this credit, due to the presence of basement levels.
Greenhouse gas emissions	This credit recognises designs that minimise greenhouse gas emissions associated with operational energy consumption. The proposed services design is limited to the efficiency of the existing central plant. As such it is difficult to achieve a high score for this credit.
Air change effectiveness	Due to the specific air-quality requirements of laboratories, it is difficult to achieve compliance with this credit.
Dematerialisation	Dematerialisation is not relevant to laboratory facilities.
Topsoil	Due to the basement excavation, it is not possible to achieve compliance with this credit.
Legionella	Compliance with this credit cannot be achieved because the proposed facility will be served via existing campus cooling towers.

- Some of the ESD initiatives that are currently proposed by UTS are not awarded points under the Green Star Educationv1 tool.

- A cost / benefit analysis was undertaken and it was determined by the University that given the additional cost of achieving a certified 6 star Green Star rating as well as the difficulty in achieving a 6 star rating with this building type, the money would be better utilised on facilitating the wider UTS targets for greenhouse gas emission reductions. UTS, as part of its Australian Technology Network (ATN) commitments, has made a commitment to achieve an 11 per cent reduction in greenhouse gas

emissions based on 2007 levels by 2012-13 and a 30 per cent reduction on 2007 levels by 2020-21. These targets are quite ambitious given the increase in floor area associated with the implementation of the City Campus Master Plan. One of the proposed carbon reduction strategies to meet these targets is the installation of a precinct-based trigeneration system that will serve several buildings on campus, including the Thomas Street Building, with electricity and chilled water.

3.2 National Construction Code Section-J

Section-J of the National Construction Code (Previously known as the Building Code of Australia) 2011 relates to “energy efficiency” of buildings". The main objective of Section-J is to ‘reduce greenhouse gas emissions by efficiently using energy’.

Minimum performance requirements are specified in regards to building fabric, external glazing, building sealing, air movement, HVAC systems, lighting and power, hot water supply, access for maintenance and energy monitoring.

Section J is a minimum performance target for standard buildings. The proposed Thomas Street project aims to be a high-performance sustainable building and will consider exceeding the deemed-to-satisfy requirements of Section-J.

4 ESD Approach

For the UTS Thomas Street Building, the University is committed to achieving energy and water efficiency; reducing waste during construction as well as operation phases and utilising building management systems for monitoring and control.

In accordance with good practice, sensible and appropriate levels of technology and design will be applied to reduce energy wastage and carbon dioxide emissions arising from the operation of the facility both for financial and environmental reasons without reducing the functional standards necessary.

During the Concept design stage, the design team has considered incorporating the following ESD strategies for the project.

- Design the building to maximise access to diffuse natural light and minimise solar heat gain.
- Incorporate passive design strategies (i.e. reduced solar gain due to glazing system recessed within the façade depth and the use of high-performance glazing) to improve the thermal performance of the building envelope, and minimise energy use.
- Improve thermal insulation of the building envelope.
- Environmentally preferable materials would be used wherever possible. (Materials with low VOC and low-formaldehyde emissions will be preferred).
- Material selection to focus on improving indoor air quality.
- Water conservation strategies such as rain water capture and re-use will be implemented.
- Efficient low-flow fittings and fixtures will be specified to reduce water consumption.
- Potable water consumption for landscape irrigation will be reduced.
- Monitor and manage water consumption by installing sub-meters for major water uses in the project and also monitor leak detection.
- Investigate the opportunity to provide temporary storage for fire system test water.
- Investigate the feasibility of a central solar hot water system.
- Incorporate roof-mounted photovoltaics to generate onsite renewable-energy.
- Incorporate electrical and water sub-metering for monitoring usage.
- Specify efficient lamps and luminaires.
- Incorporate efficient energy-saving office equipment.
- Provision of dedicated storage space for recycling waste, so as to reduce landfill.
- Specify refrigerants and insulants with zero ozone depleting potential (ODP).
- Implement commissioning of all systems to ensure efficient performance and minimum energy use.
- Implement a comprehensive commissioning process in line with the CIBSE or ASHRAE commissioning requirements.
- Engagement of an independent commissioning agent to manage commissioning process.
- Implement quarterly tuning of HVAC and lighting systems for the first 12 months of operation to ensure adequate and efficient operation. This will also include a final recommission after 12 months.
- Provide a simple building users' guide, to enable building users to maintain the building as per the designer's intent.

5 Architectural Design Strategies

In order to reduce the energy demand, the Architectural design has incorporated passive design measures to minimise energy consumption associated with air-conditioning and lighting.

5.1 Façade

The primary form of the building is largely dictated by environmental initiatives, such as enhancing solar access and incorporating mixed-mode ventilation.

The northern façade (i.e. along Thomas Street) provides a mechanism that facilitates views, restricts solar loads, glare, CBD noise, and enhances thermal comfort, weather protection and aesthetics.

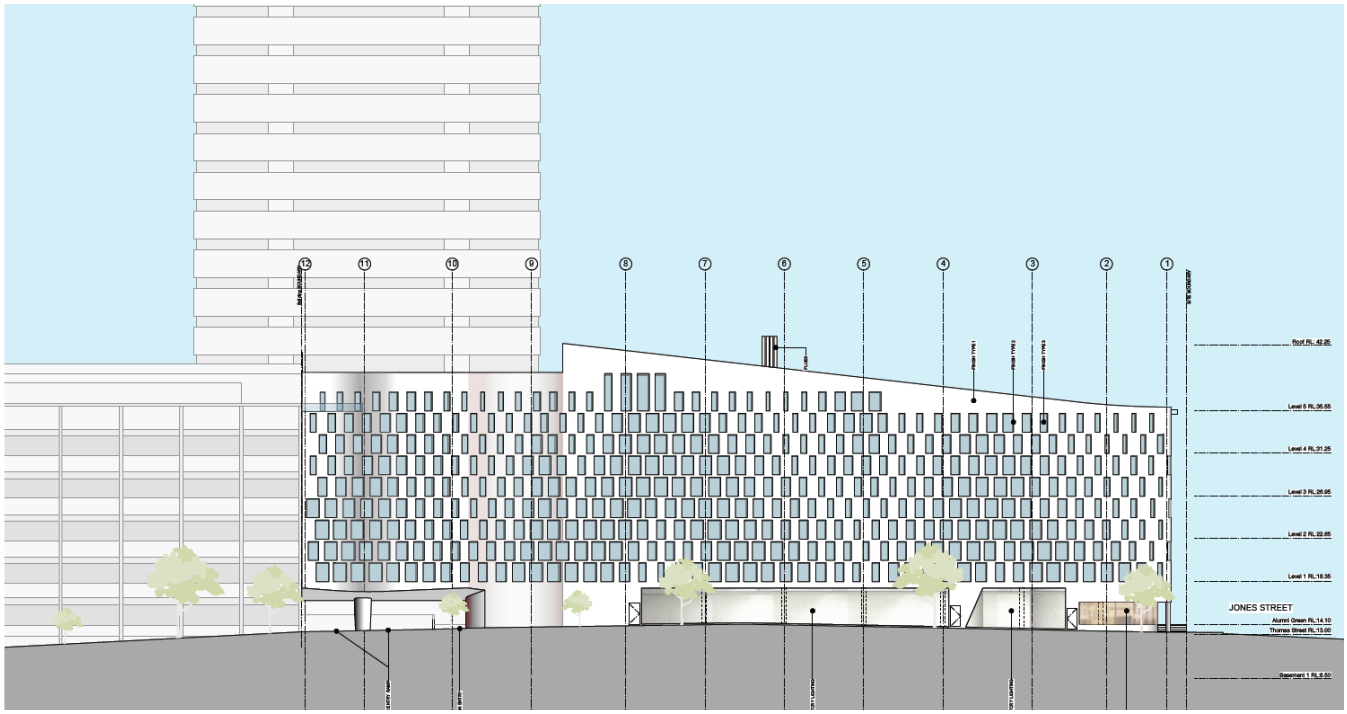

Fig 2: Northern Façade

The southern façade plays a vital role in providing natural ventilation. To facilitate cross-ventilation, supply of outside air is introduced via openings.

To avoid concerns with prevailing winds (such as CBD noise, pollution), the air intakes have been located on the Southern façade, facing Alumni Green. This southern location has lower solar heat gains, and also the Alumni Green and the proposed landscaping would provide natural air filtration and act as a noise buffer. More details of the proposed ventilation strategy are provided in the services section of this report.

5.2 Roof Garden

Incorporating a roof garden is another key aspect of the proposed design. Since the site is located in a largely established urban area, it has been a priority to provide an easily accessible roof garden over the lower roof level (i.e. the 4th floor level), to serve as public space for exclusive use of the building occupants.

The proposed roof garden will provide thermal insulation and assists in reducing the building's heating and cooling loads and surface run-off. The roof garden provides an opportunity to enhance the ecological value of the site.

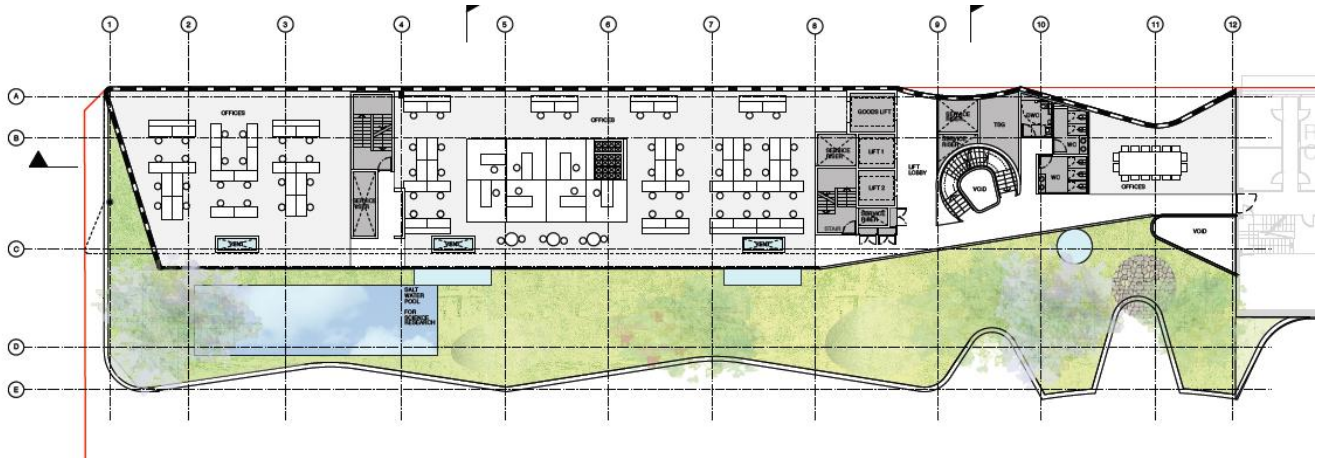

Fig 3: Plan of proposed Roof-garden

6 Key Services Strategies

Energy efficiency has been an integral part of all services design. In addition to the credits identified as part of the Green Star pre-assessment (noted in Appendix-A) the following initiatives mentioned here are also targeted.

6.1 Mechanical Services

The following mechanical services initiatives have been incorporated at this stage:

- The proposed building will be served from the campus central energy plant, located in UTS Building 1.
- The proposed air handling system will incorporate a Central Air Handling unit (AHU) with localised Fan Coil Units (FCUs) for zoned control.
- Fan coil units will be fitted with Electronically commutated direct current (ECDC) motors.
- Variable Speed Fans will be provided to adjust sash positions on fume-cupboards.
- Fume-cupboard make-up air will be modulated to match fume cupboard exhaust rate in order to reduce energy consumption.
- Zero ODP refrigerants and insulants will be specified for all mechanical services.
- To facilitate PVC minimisation, non-PVC products will be specified for all mechanical services, wherever appropriate and feasible.
- Mixed-mode ventilation for all office areas.

6.1.1 Ventilation and air-conditioning strategy

Mixed mode ventilation combines both natural and mechanical ventilation systems. The prevailing winds and the local temperature conditions, indicate that there is potential to incorporate mixed-mode ventilation into the office spaces within the building.

The laboratories and auditorium will be air-conditioned, due to functional requirements such as controlled internal environments and acoustic privacy.

To avoid concerns with prevailing winds (CBD noise and pollution), the air intakes have been located on the Southern façade, facing Alumni Green. This southern is exposed to lower solar gains, and the proposed landscaping arrangement would provide natural air filtration and act as a noise buffer.

The proposed natural ventilation strategy for the office spaces utilises strategically placed voids within the building, which facilitate passive stack ventilation. Air would be introduced into the office spaces via the southern façade (Alumni Green side) at low level and allowed to rise through the voids, serving the offices and dry labs. The air is then exhausted via voids acting as thermal exhaust shafts.

We would recommend that the auditorium be served via a displacement ventilation system. This is to be developed further in consultation with the architects. This system uses the buoyancy of warm air to provide air circulation. Cool air is introduced at low level and at low velocity. Air is allowed to rise as it absorbs heat and pollutants, to high level where it can be extracted.

Displacement ventilation is considered as a low energy approach, as the entire volume of the room is not conditioned. The introduction of supply air at low level provides the best quality of air to the occupants, increasing their awareness and alertness.

For the laboratories, air-conditioning will be provided via Fan-coil units. These are located at a high ceiling level and consist of coils through which chilled water and heating water is circulated. The heating or cooling of the coil promotes air movement through the buoyant properties of cooled and heated air.

The chilled water to the Thomas Street building will be supplied from the central plant located in Building CB01.

In addition, there is an opportunity to explore the possibility of connecting to a campus district energy scheme, encompassing trigeneration. This strategy is still under investigation and is outside the scope of this report.

It is proposed that the fan coil units be fitted with ECDC motors. These ECDC motors are about 30% more efficient than traditional AC motors. EC technology provides closer control of the fan speed.

For the offices, the proposed design considers having the fan coil units within the ceiling void. The fan coil units offer future flexibility, so that the units can be relocated and placed above the space being served.

6.2 Electrical Services

The following electrical services initiatives have been incorporated at this stage:

- Energy sub-metering will be in accordance with the requirements of BCA Section J-8, as well as Green Star requirements. All sub-meters will be linked to the building management system (BMS) for energy auditing, energy monitoring and troubleshooting.
- Cross-Linked Polyethylene (XLPE) and Low Smoke Zero Halogen (LSZH) cables will be used in the electrical distribution systems in place of traditional PVC type cabling.
- Daylight sensors will be used where appropriate to control the perimeter artificial lighting in the development to reduce energy usage. Lighting circuits shall be designed to provide high flexibility and not control large/multiple areas with one switch.
- Efficient external lighting to meet or exceed the minimum requirements of AS 1158 for illuminance levels.
- The lighting system will incorporate energy efficient lamps, use of luminaires with high light output ratios, and be coupled with lighting controls to reduce energy consumption.
- External artificial lighting will be designed to minimise light spillage and shall incorporate day light sensors.
- The lighting design will comply with AS 4282 ‘Control of the Obtrusive Effects of Outdoor Lighting’, to minimise light pollution into the night sky.

6.3 Renewable Energy

The incorporation of roof-mounted photovoltaics onto the fifth-floor is being investigated, as it has been a specific design intent to incorporate renewable-energy measures, such as photovoltaics, which are highly visible and act as a statement of intent.

Their incorporation would assist with enhancing environmental awareness among the student community and the general public.

6.4 Hydraulic Services

The following hydraulic services initiatives have been incorporated at this stage:

- Rainwater harvesting and reuse - Rainwater will be collected from roof areas of the proposed building and will be reused for irrigation and toilet flushing purposes.
- Water efficient fixtures and tapware will be specified.
- Sub-meters will be provided for all major water uses within the building.
- Non-PVC pipework will be specified for all hydraulic services, for all appropriate areas.

7 Waste Disposal and Recycling

The University implements sustainable waste management principles, in the following order of priority, to avoid, reduce, reuse, recycle and finally dispose of remaining non-recyclable and hazardous waste in a responsible way.

The above waste management policies indicate that the University achieves compliance with the Director General's Requirements for waste management.

It should be noted that the University strives to reduce the amount of waste going to landfill. Results from a 10 day audit in 2011 show that over 81% of the rubbish out of the general bins has been diverted from landfill. Waste is segregated into recyclable and non-recyclable waste from the following waste streams:

- General waste
- Glass
- Expanded Polystyrene
- Construction Materials
- E-Waste
- Hazardous waste
- Furniture
- Fluorescent Tubes

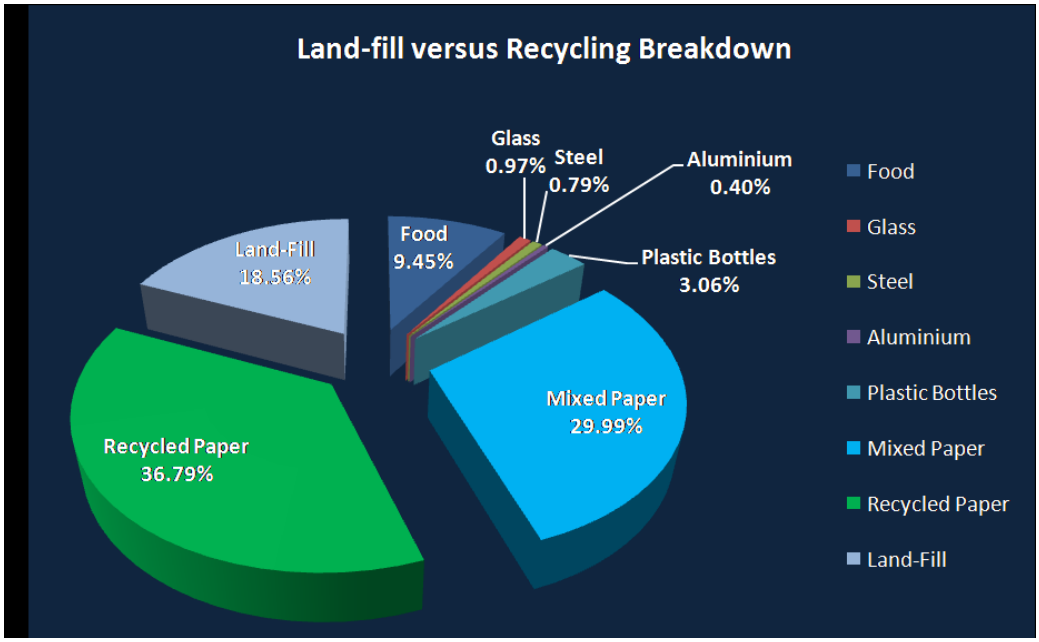

Fig 4: Graphical representation of waste recycling versus landfill

In addition to operational waste management, the University also implements construction waste management policies.

Skip bins are provided on the campus, for the collection of construction materials generated during building projects and also for large items such as broken furniture.

Recent data indicates that almost 90% of all construction waste from skip bins has been diverted from landfill through a recovery process that recycles soil, building rubble, concrete, bricks, tiles, timber, assorted metals, paper and cardboard.

8 Environmental Benchmarking

For the proposed UTS Thomas Street Building, one of the key brief requirements was to attain a minimum of 6 Star Green Star rating, which has later been amended to a 5 Star rating. In response to this project target, the design team have committed to design towards attaining a 5 Star Green Star rating.

In this context, a preliminary assessment has been undertaken, using the latest version of the Green Star Education V1 tool, developed by the Green Building Council of Australia (GBCA). This pre-assessment indicates the initiatives that would be incorporated to attain the targeted 5 Star Green Star rating.

Appendix-A of this report contains a copy of the Green Star pre-assessment.

8.1 Green Star

Green Star is an environmental rating tool developed by the Green Building Council of Australia (GBCA) that has a holistic approach over a wide range of issues that address sustainability, from water to energy, materials to indoor environmental quality (IEQ) and also considers management practices. It is recommended that the tool be used right from the concept design stage in order to achieve the best possible outcome.

The total environmental performance of the building is benchmarked by giving it a star rating from 1-6. Ratings below 3 Star are not officially recognised by GBCA. Only ratings of 4 Star and above are formally recognised and certified by the GBCA, since they represent better than average environmental credentials.

The rating tool consists of 9 categories, namely:

- Management
- IEQ
- Energy
- Transport
- Water
- Materials
- Land use and ecology
- Emissions and
- Innovation

8.2 Weighted Points

The Green Star categories have different environmental weightings for each category.

The categories are weighted according to the importance of environmental issues and geographical location within Australia. For instance, potable water has a greater significance in South Australia than the Northern Territory, and therefore the Water category has a higher weighting in South Australia. The ninth category is Innovation and up to 5 points are set aside to reward projects that utilise innovative technology or practices.

Once all the credits in each category have been assessed, a percentage score for each category is calculated. This percentage score is then multiplied by the Green Star environmental weighting factor, to obtain a single score.

$$\text{Category score} = \frac{\text{No. of credits achieved}}{\text{No. of credits available}} \times 100\%$$

$$\text{Weighted score} = \frac{\text{Category score (\%)} \times \text{Weighting factor (\%)}}{100}$$

The weighted scores of each category are added together to give an overall score which corresponds to the final Green Star rating, as follows:

Rating	Total Weighted Points	
1 Star	10 - 19 pts	
2 Star	20 - 29 pts	
3 Star	30 - 44 pts	
4 Star	45 - 59 pts	**Best Practice**
5 Star	60 - 74 pts	**Australian Excellence**
6 Star	75+ pts	**World Leader**

8.3 Eligibility criteria

To be eligible for a Green Star Education v1 tool certification, the proposed UTS Thomas Street Building must meet all four provisions of the eligibility criteria established by the GBCA. This includes:

1. Space Use
2. Spatial Differentiation
3. Conditional Requirements
4. Timing of Certification

It has been determined that the proposed UTS Thomas Street building would satisfy all the above eligibility criteria.

9 Appendix-A (Green Star Pre-assessment)

The preliminary assessment indicates that the proposed UTS Thomas Street building has the potential to achieve a minimum of 67 points. This would attain 5 Star Green Star rating, with seven additional buffer points.

Green Star - Education v1

Credit Summary for: **UTS Thomas Street**

Category	Title	Credit No.	Points Available	Points Achieved	Points to be Confirmed
Management					
	Green Star Accredited Professional	Man-1	2	2	0
	Commissioning - Clauses	Man-2	2	2	0
	Building Tuning	Man-3	1	1	0
	Independent Commissioning Agent	Man-4	1	1	0
	Building Guides	Man-5	2	2	0
	Environmental Management	Man-6	2	2	0
	Waste Management	Man-7	2	2	0
	Learning Resources	Man-10	1	1	0
	Maintainability	Man-11	1	1	0
		TOTAL	14	14	0
Indoor Environment Quality					
	Ventilation Rates	IEQ-1	3	0	1
	Air Change Effectiveness	IEQ-2	2	0	0
	Carbon Dioxide Monitoring and Control and VOC Monitoring	IEQ-3	1	1	0
	Daylight	IEQ-4	3	1	1
	Thermal Comfort	IEQ-5	3	2	0
	Hazardous Materials	IEQ-6	1	1	0
	Internal Noise Levels	IEQ-7	2	2	0
	Volatile Organic Compounds	IEQ-8	4	4	0
	Formaldehyde Minimisation	IEQ-9	1	1	0
	Mould Prevention	IEQ-10	1	1	0
	Daylight Glare Control	IEQ-11	1	1	0
	High Frequency Ballasts	IEQ-12	1	1	0
	Electric Lighting Levels	IEQ-13	1	1	0
	External Views	IEQ-14	1	1	0
		TOTAL	25	17	2
Energy					
	Conditional Requirement	Ene-	Conditional Requiremen	Yes	/
	Greenhouse Gas Emissions	Ene-1	20	0	5
	Energy Sub-metering	Ene-2	1	1	0
	Peak Energy Demand Reduction	Ene-3	2	0	1
	Lighting Zoning	Ene-4	1	1	0
	Unoccupied Areas	Ene-7	2	2	0
	Stairs	Ene-8	1	0	1
	Efficient External Lighting	Ene-9	1	1	0
	Shared Energy Systems	Ene-10	1	1	0
		TOTAL	29	6	7

Category	Title	Credit No.	Points Available	Points Achieved	Points to be Confirmed
Transport					
	Provision of Car Parking	Tra-1	0	na	0
	Fuel Efficient Transport	Tra-2	0	na	0
	Cyclist Facilities	Tra-3	4	0	0
	Commuting Mass Transport	Tra-4	5	5	0
	Transport Design and Planning	Tra-6	1	1	0
		TOTAL	10	6	0
Water					
	Occupant Amenity Water	Wat-1	5	4	1
	Water Meters	Wat-2	1	1	0
	Landscape Irrigation	Wat-3	3	3	0
	Heat Rejection Water	Wat-4	4	0	0
	Fire System Water	Wat-5	1	0	1
	Potable Water Use in Laboratories	Wat-6	2	2	0
		TOTAL	16	10	2
Materials					
	Recycling Waste Storage	Mat-1	2	2	0
	Building Reuse	Mat-2	0	na	0
	Recycled Content & Re-used Products and Materials	Mat-3	1	0	1
	Concrete	Mat-4	3	2	0
	Steel	Mat-5	2	1	0
	PVC	Mat-6	2	2	0
	Timber	Mat-7	1	1	0
	Design for Disassembly	Mat-8	1	0	0
	Dematerialisation	Mat-9	1	0	1
	Flooring	Mat-11	3	0	3
	Joinery	Mat-12	1	0	0
	Loose Furniture	Mat-13	3	0	3
		TOTAL	20	8	8
Land Use & Ecology					
	Conditional Requirement	Eco -	Conditional Requirement	Yes	/
	Topsoil	Eco-1	1	0	0
	Reuse of Land	Eco-2	1	0	0
	Reclaimed Contaminated Land	Eco-3	0	na	0
	Ecological Value of Site	Eco-4	4	0	2
		TOTAL	6	0	2
Emissions					
	Refrigerant ODP	Emi-1	1	1	0
	Refrigerant GWP	Emi-2	2	0	0
	Refrigerant Leaks	Emi-3	2	0	2
	Insulant ODP	Emi-4	1	1	0
	Stormwater	Emi-5	5	0	2
	Discharge to Sewer	Emi-6	3	0	2
	Light Pollution	Emi-7	1	1	0
	Legionella	Emi-8	1	0	1
		TOTAL	14	3	7
	Sub-total weighted points:			**49**	**18**
Innovation					
	Innovative Strategies & Technologies	Inn-1	5 points in total for Inn-1,2&3	0	0
	Exceeding Green Star Benchmarks	Inn-2		0	0
	Exceeding Green Star Scope	Inn-3		0	0
		TOTAL	5	0	0
	Total weighted points:			**49**	**18**