JBA Urban Planning Consultants

Preferred Project Report

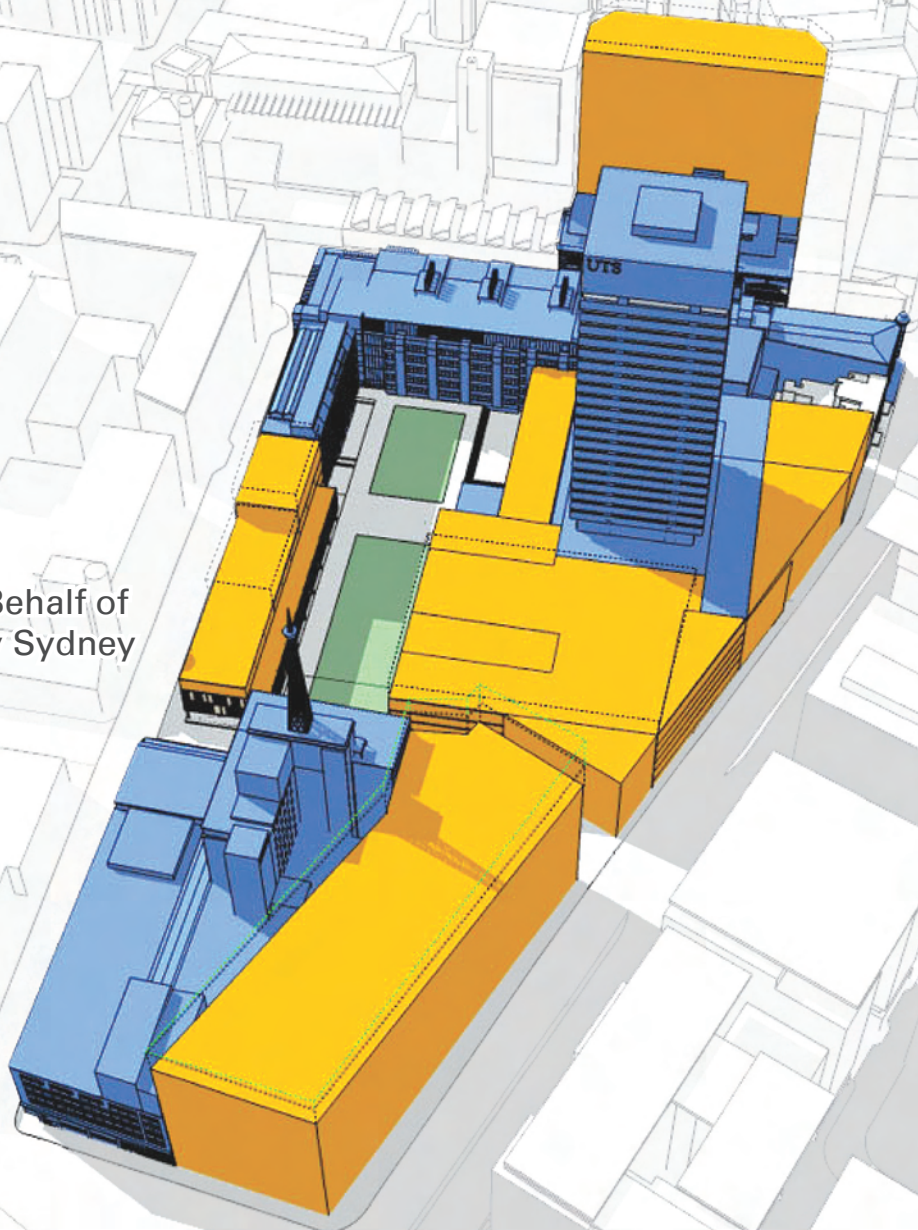
UTS City Campus, Broadway Precinct

Concept Plan 08_0116

Submitted to
Department of Planning on Behalf of
the University of Technology Sydney

Volume 1 of 3

October 2009 ■ 08439



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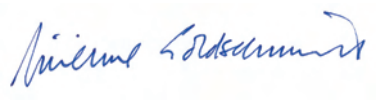
This report has been prepared by: Vivienne Goldschmidt

Signature  Date 26/10/09

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1.0 Introduction

An Environmental Assessment Report (EAR) for the Concept Plan for additional education, social and sporting facilities and student housing at the Broadway Precinct of the UTS City Campus at Ultimo was publicly exhibited for a period of five weeks between 27 May 2009 and 25 June 2009. The Department of Planning has advised that it received 7 submissions in response to the exhibition.

The proponent, the University of Technology Sydney (UTS), has reviewed and considered the submissions and, in accordance with clause 75H(6) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), has responded to the issues raised. This Preferred Project Report (PPR) sets out the proponent's response to the issues raised, details a number of revisions to the Concept Plan, requests the Minister to direct that no further assessment be required for the Multi Purpose Sports Hall, a component of the Concept Plan, and includes a revised Statement of Commitments.

This report should be read in conjunction with the Environmental Assessment Report (EAR) dated May 2009 and forms part of the Concept Plan.

Submissions

In total seven (7) submissions were received in response to the public exhibition of the Concept Plan as follows:

State authorities and agencies	5
Council of the City of Sydney	1
Coalition of Chippendale Community Groups	1

The agency submissions (see **Attachment 1**) supported UTS's efforts to promote the use of public transport, walking and cycling, however recommended actions to minimise impacts on public infrastructure including stormwater and drainage systems and the proposed alignments of future high frequency underground transport links (CBD and West Metro). The submission from the Council of the City of Sydney supported the principle of the redevelopment of the UTS Campus, however stressed the need for the outcome to achieve a high standard of design and environmental performance.

Issues raised by the Coalition of Chippendale Community Groups include the scale of the changes proposed to the site, impacts on the locality arising from increased student numbers, potential contamination under part of the site and insufficient open space for students.

UTS's response to the issues raised are summarised in **Attachment 1**.

The Department of Planning requested that the future of the elevated escalator/ stair between the Ultimo Pedestrian Network (UPN) and Building 6 be addressed in the Concept Plan. This is addressed in **Section 2**.

Changes to the Concept Plan

The proponent has made the following revisions to the Concept Plan:

- The outcome of the Design Excellence competition for the Broadway Building has resulted in the need to alter the building envelope for this site. The revised building envelope and the assessment of potential impacts are addressed in Section 3 of this PPR.
- The detailed design of the Multi Purpose Sports Hall (MPSH) has necessitated a minor change to the landscaping concept for Alumni Green, see Section 4.1.3.

These changes are summarised in **Section 5** and shown on the revised plans at **Attachment 16** in Volume 3. The plans, figures and reports to be substituted as a consequence of the amendments are listed at **Table 4** in **Section 5.**

In addition, the indicative staging of the development of the Concept Plan has changed. The key changes are in relation to the Broadway Building, the Multi Purpose Sports Hall, Building 1 Podium and Building 6. This is illustrated at **Attachment 15** in Volume 2.

Further Assessment of the Multi Purpose Sports Hall

Since lodging the EAR for the Concept Plan, the proponent has prepared the design for the development of the Multi Purpose Sports Hall (MPSH) and also undertaken a series of assessments of the potential impacts of the development. As demonstrated in **Section 4** of this report, the proposed design is consistent with the Concept Plan and there will be no environmental impacts as a result of its construction and operation. Accordingly, the proponent is requesting the Minister to direct that no further assessment of this component of the Concept Plan is required and to approve the development of the MPSH.

Statement of Commitments

The draft Statement of Commitments has been revised to reflect the changes to the Concept Plan. The final Statement is in **Section 6** of this PPR.

2.0 Response to Issues

The Department of Planning raised only one issue in relation to the Concept Plan. UTS's response is provided below. The other issues raised in the submissions are addressed at **Attachment 1**.

Elevated access over the Ultimo Pedestrian Network

The Department of Planning has advised that the future of the elevated escalator/ stair over the Ultimo Pedestrian Network (UPN) providing access to Level 4 of Building 6 should be addressed. The Department is of the view that the structure should be rationalised and preferably removed as it detracts from the urban environment and would not be necessary for pedestrian access once Building 6 (Peter Johnson Building) is redeveloped.

As explained below, UTS is of the view that the structure should not be rationalised or removed.

If the existing escalators and stairs were to be removed they would need to be relocated within Building 6 which accommodates the Faculty of Design, Architecture and Building (DAB). For the following reasons this is not favoured by UTS:

- The university's future redevelopment plans for Building 6 do not include the provision of escalators or vertical transport with the equivalent people moving capacity.
- It would be a major intervention that would require significant modifications to the planning and use of a number of spaces within the existing Building 6 podium.
- It would result in a loss of important teaching and faculty space that DAB cannot afford to lose and which cannot be replaced in Building 6.

Any rationalisation of the escalators and stairs is not favoured by UTS as the existing configuration with the escalators and stairs at the sides of the UPN hard against the adjoining buildings is the optimal arrangement. This configuration allows a clear pedestrian path of maximum width in the middle of the UPN where it is required (and also provides the clear space needed for the operation of the heritage train that travels on the existing tracks on special days).

The University believes that the design of the escalators, stairs and bridge has considerable design merit and notes that the original design process was thorough. This involved assessment of various options and extensive stakeholder engagement including with all relevant authorities. It is further noted that:

- The architects responsible for the design are recognized as leaders in the profession: schematic design by the Cox Group and design development and construction documentation by Denton Corker Marshall (the winners of the recent Design Competition for the UTS Broadway Building).
- Development Approval for the escalators, stairs and bridge was received from the City of Sydney Council in 1999 and construction was completed in 2002
- The escalators, stairs and bridge were designed as an important and integral part of the UPN with the configuration and detailing of the bridge purposefully designed to be evocative of the traditional railway bridges and overpasses found in Sydney. This is particularly appropriate and relevant given the use of the UPN for displaying heritage trains.

The elevated escalator/ stair access is an essential and functional part of the UTS City Campus pedestrian circulation system. It provides a direct connection between the main circulation level of the UTS Broadway Precinct to the UPN and facilitates a safe pedestrian connection between the Broadway and Haymarket Precincts and to Central Railway Station and the George Street Bus Interchange.

UTS has considered and assessed the Department of Planning's comments. Based on this assessment, it confirms its position that the escalator and stairs should be retained in their current configuration and location.

3.0 Changes to the Broadway Building

In accordance with its commitment to design excellence, UTS conducted a Design Excellence competition for the design of the Broadway Building. The Design Competition jury included eminent professionals including nominees of the Department of Planning, Sydney City Council and UTS. As described below, the building envelope of the winning design does not fully accord with that proposed in the exhibited Concept Plan, and as result UTS is amending the Concept Plan.

The winning design, by Denton Corker Marshall Pty Ltd (DCM), incorporates an architectural feature in the form of an aluminium screen. The detailed design of the building (and the screen) will be the subject of a future project application, however, the proponent is seeking consent through the Concept Plan for the heights and profiles of the architectural feature.

The proponent has assessed the potential impacts of the revised envelope on wind, views and solar access. The assessments demonstrate that the revised envelope per se will have no, or a negligible, additional impact on wind, views and solar access when compared with the envelope described in the EAR. In relation to the architectural feature, the impacts on wind are negligible, but there will be some impact on shorter range views of the radio tower atop Building 10, and minor shadowing impacts. The assessment of impacts follows in **Section 3.2**.

The architectural drawings of the revised building envelope and proposed architectural feature have been prepared by DCM and are attached as **Attachment 13** in Volume 2. **Figure 1** illustrates the revised 3-D model of the Concept Plan.

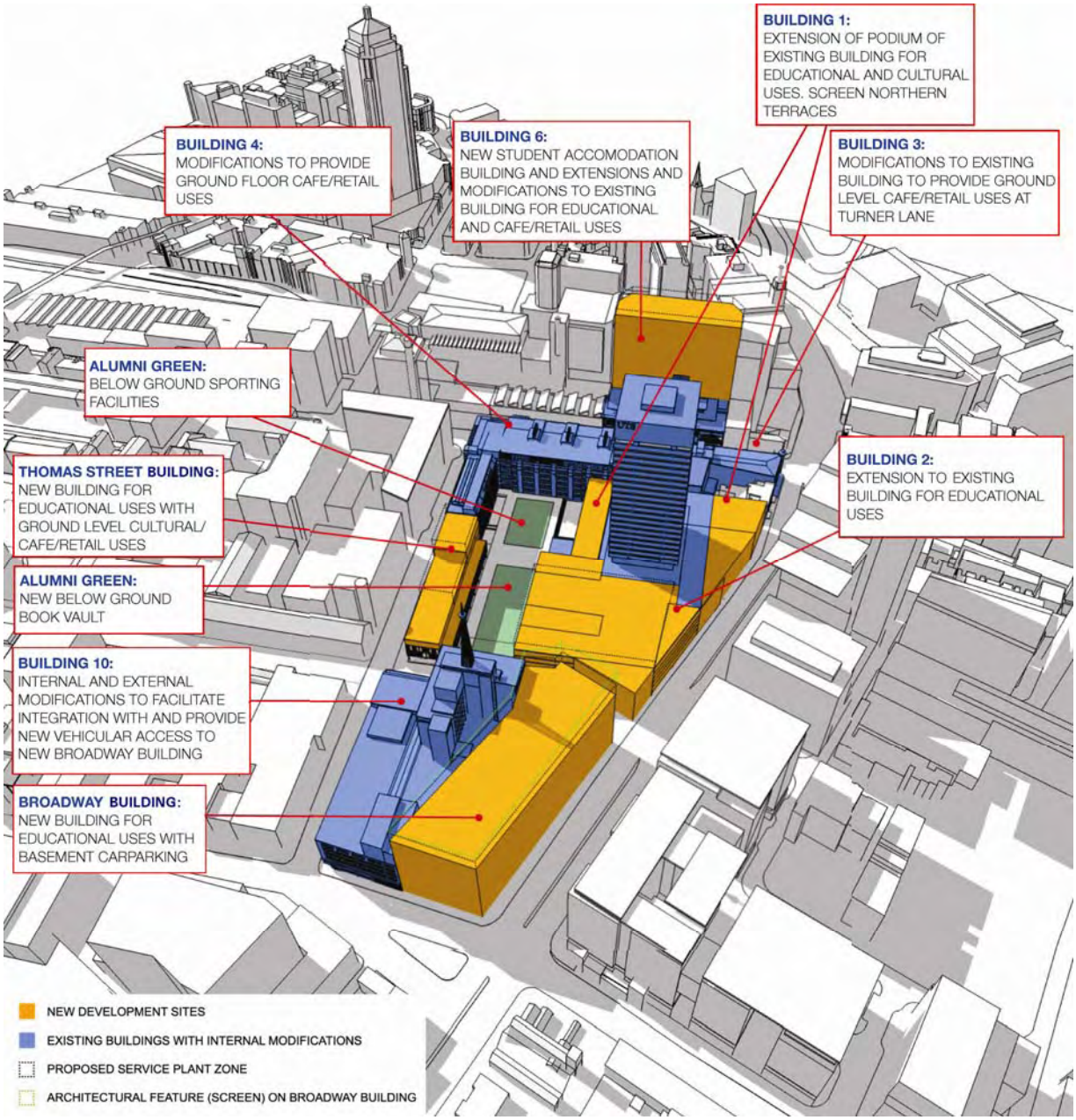

Figure 1 – 3D Model of building envelopes (Source: BVN, DCM and JBA)

3.1 Proposed Changes

3.1.1 Building Envelope

The following changes are proposed to the building envelope of the Broadway Building:

- The maximum height of the envelope (along Wattle Street) is increased by 0.67 metres to 46.91 metres (RL 54.64) as defined under Sydney Local Environmental Plan 2005 (SLEP 2005) or to 54.11 metres if measured in accordance with the Standard Instrument – Principal Local Environmental Plan (see **Figures 2** and **3).**
- The building envelope is capable of incorporating additional floors. Accordingly the Concept Plan now proposes an 11 storey building along Jones Street instead of the nine (9) storey building envisaged in the EAR, and 12 storeys at Wattle Street (10 storeys in the EAR). The gross floor area of the building remains unchanged. The additional storeys compensate for the loss of floor space resulting from the inclusion of a substantial atrium at the centre of the building and the through-site links described below.
- The winning design incorporates an architectural feature in the form of four tilted and skewed perforated aluminium screens (plates) cladding the four facades of the building, illustrated at **Figures 5** and **6** and described in **Section 3.1.2** below.
- Through-site connections have been increased with the addition of a pedestrian thoroughfare between Jones Street and the corner of Wattle Street and Broadway. This is in addition to the connection between Jones and Wattle Streets adjacent to Building 10 described in the EAR (see **Figure 4).**
- The footprint of the building has been slightly altered to remove the overhang of Building 10 proposed in the Concept Plan (see **Figure 2).**

Other than the changes listed above, the purpose and function of the Broadway Building, including car parking arrangements, remain the same as that described in the EAR (Section 3.5).

For clarity, the heights of all buildings in the Concept Plan - including the new height of the Broadway Building - are presented below in **Table 1**. It replaces Table 3 in the EAR.

Table 1 – Concept Plan heights

Building	Max. building height (m) (SLEP 2005)	Max. building height (m) (Std Inst)
Building 1 podium	22.47	28.67
Building 2	24.24	30.09
Building 6 (new tower)	69.20	74.00
Broadway Building	46.91	54.11
Thomas Street Building	27.10	33.30

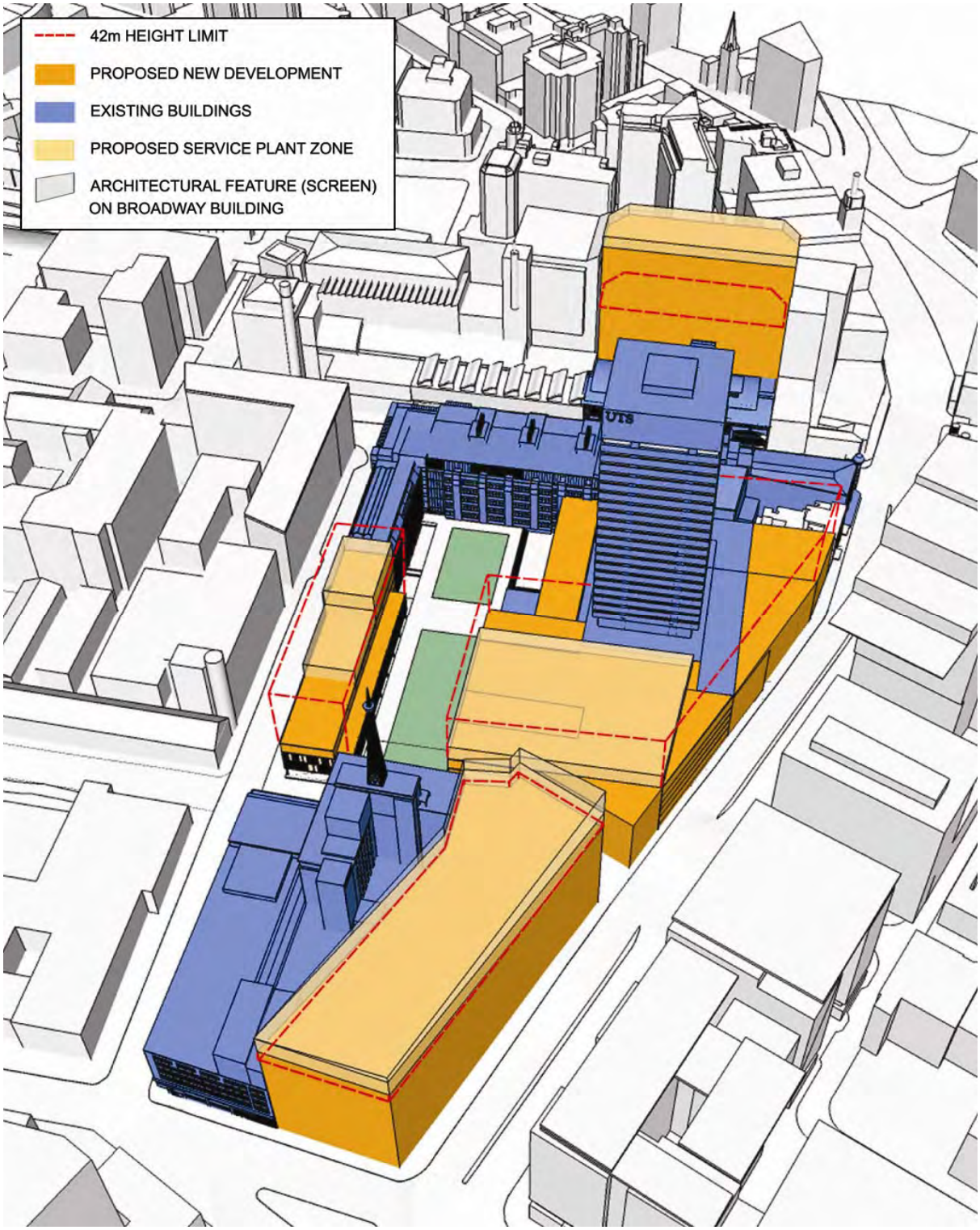

Figure 2 – Building envelope in relation to SLEP 2005 height limit (Source: BVN and DCM)

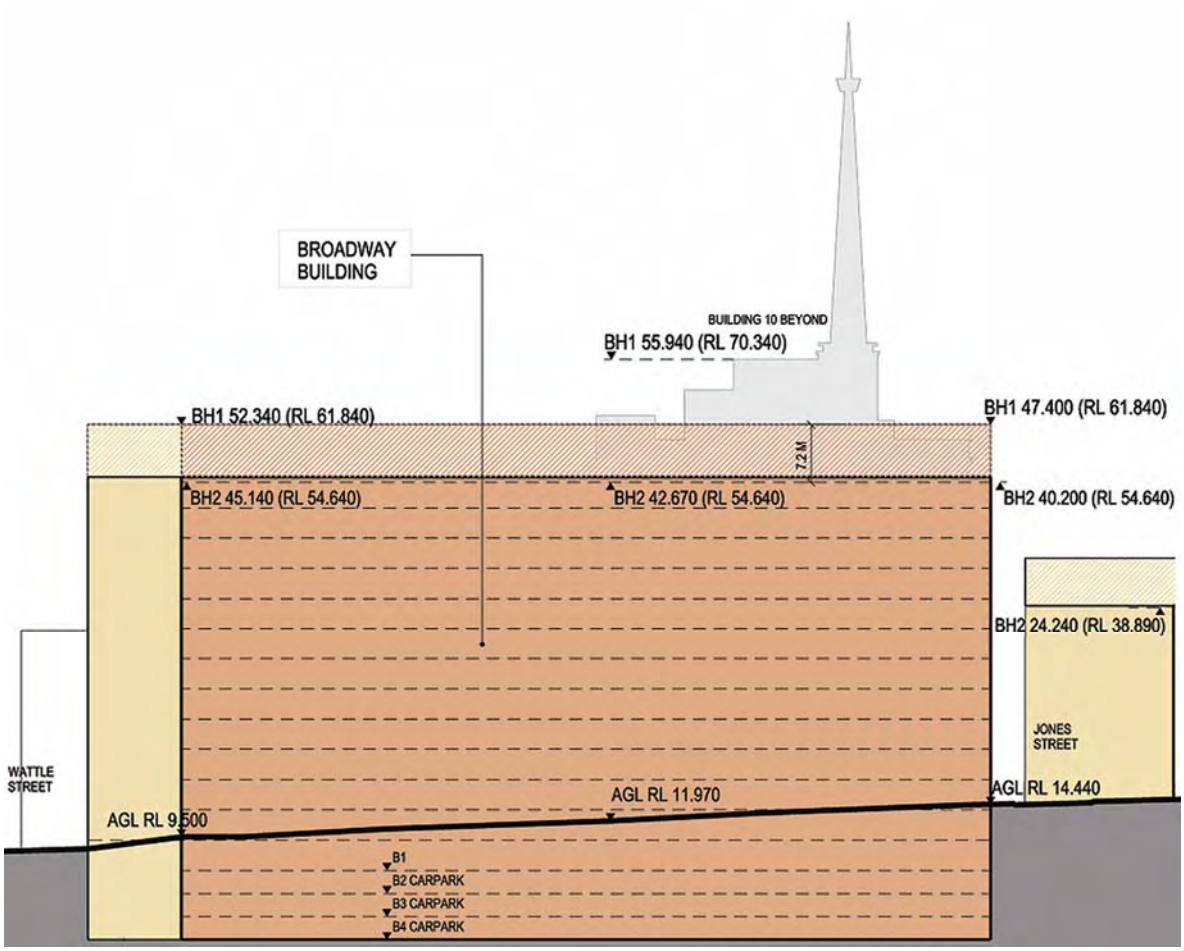

Figure 3 – South elevation of Broadway Building (Source DCM)

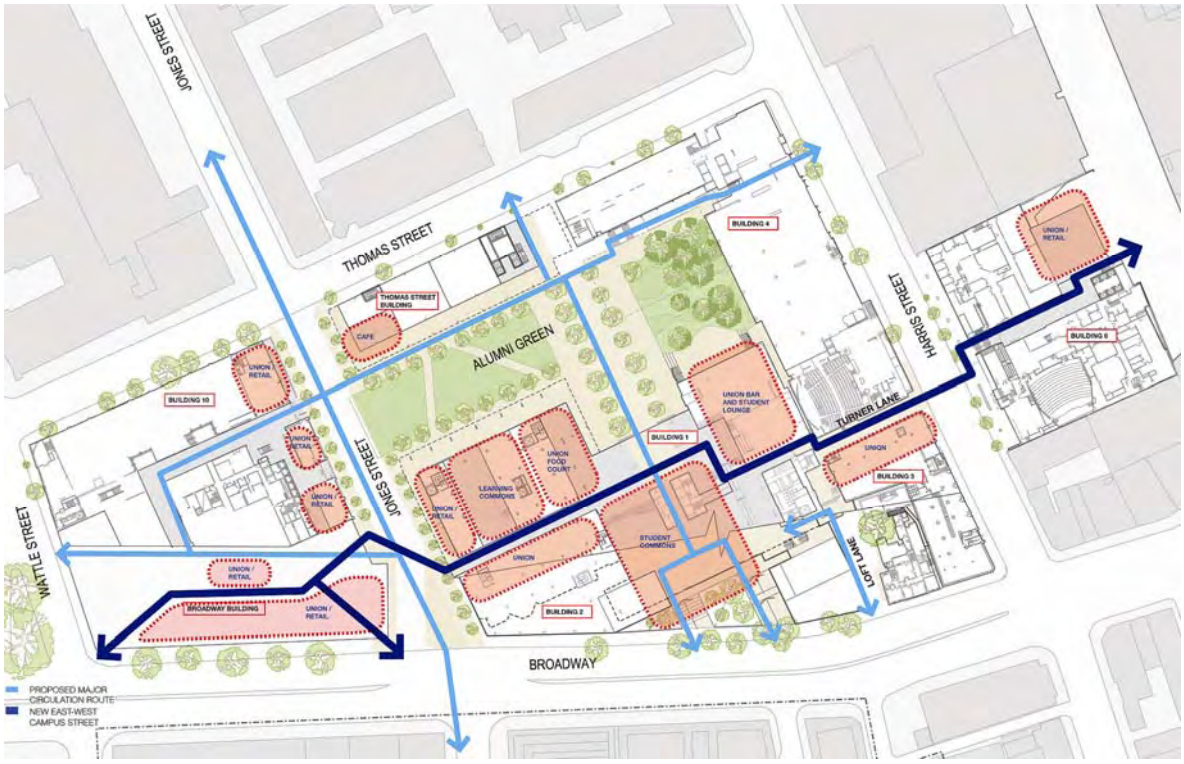

Figure 4 – Pedestrian circulation (Source; BVN and DCM)

3.1.2 Architectural Feature

As shown in the artist's impressions at **Figures 5** and **6**, the architectural feature is designed to allow the building to read as a single sculptural object with the floor levels concealed within its skin. As summarised in **Table 2** and illustrated at **Figures 7** to **10,** the feature will consist of four screens with a different profile on the four facades of the building. At its highest point on Broadway, the top of the feature will slope from 2.50 to 10.70 metres above the roof of the building (measured in accordance with the Standard Instrument).

Table 2 – Height of architectural feature

Building element	Height range above roof (m) (Standard Instrument)
Broadway façade (see **Figure 7**)	2.50 – 10.70
Jones Street façade (see **Figure 8**)	4.90 – 10.70
Wattle Street façade (see **Figure 9**)	0 – 2.50
Building 10/northern façade (see **Figure 10**)	0 – 4.90

The intended decoration of the feature is not arbitrary, but has an embedded meaning in that it incorporates the name of the building in binary code. The screens perform the following functions:

- provide affordable over-cladding to a simple, economical facade system;
- screen views into and from existing and new adjacent buildings;
- allow filtered light and air into the building skin;
- create the image and identity of the building and provide distinctive and memorable architecture.

In addition, as illustrated in the image at **Figure 11**, the pattern embedded in the screen will read differently at different scales:

- human scale/ close up: transparent with clear visibility through the feature;
- building scale/ mid-distance: both semi-transparent and semi-opaque; and
- city scale/ far distance: uniform and continuous.

Figure 5 – Broadway Building on Broadway at Jones Street (Source: DCM)

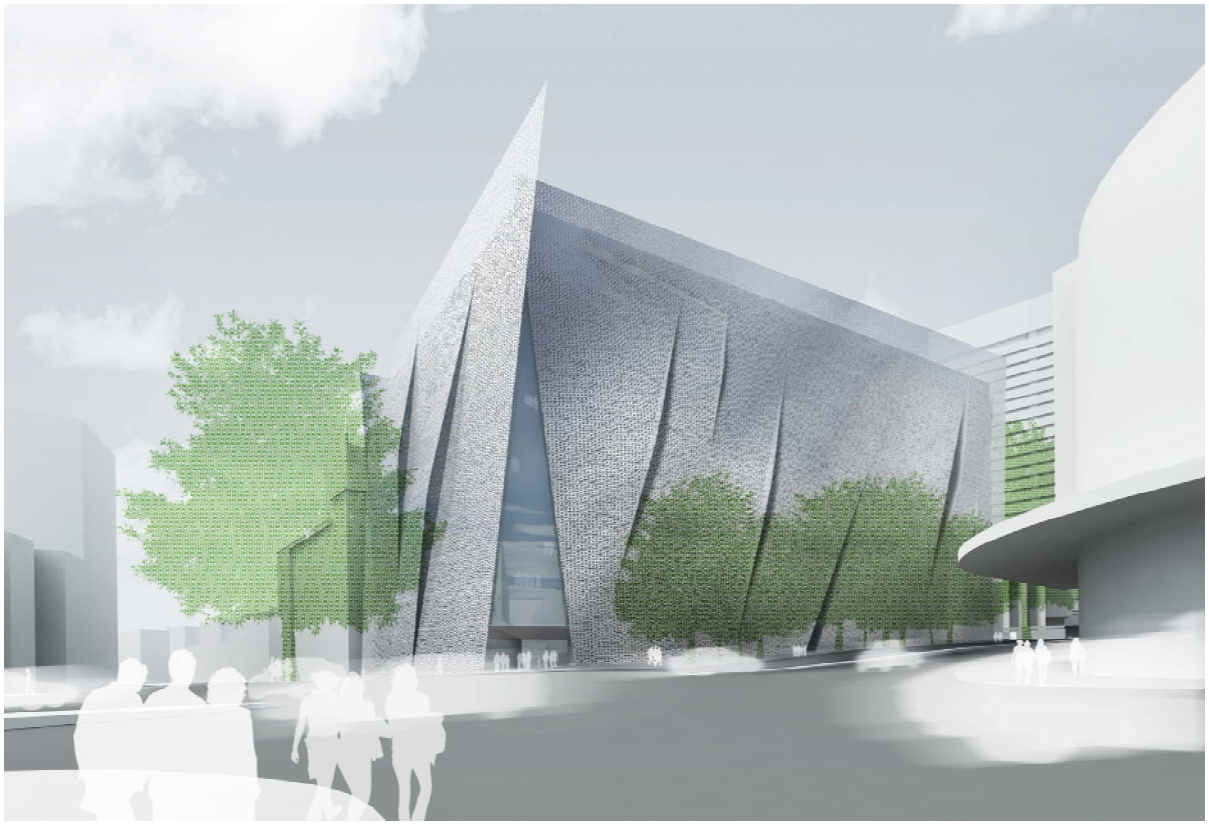

Figure 6 – Broadway Building on Broadway at Wattle Street (Source: DCM)

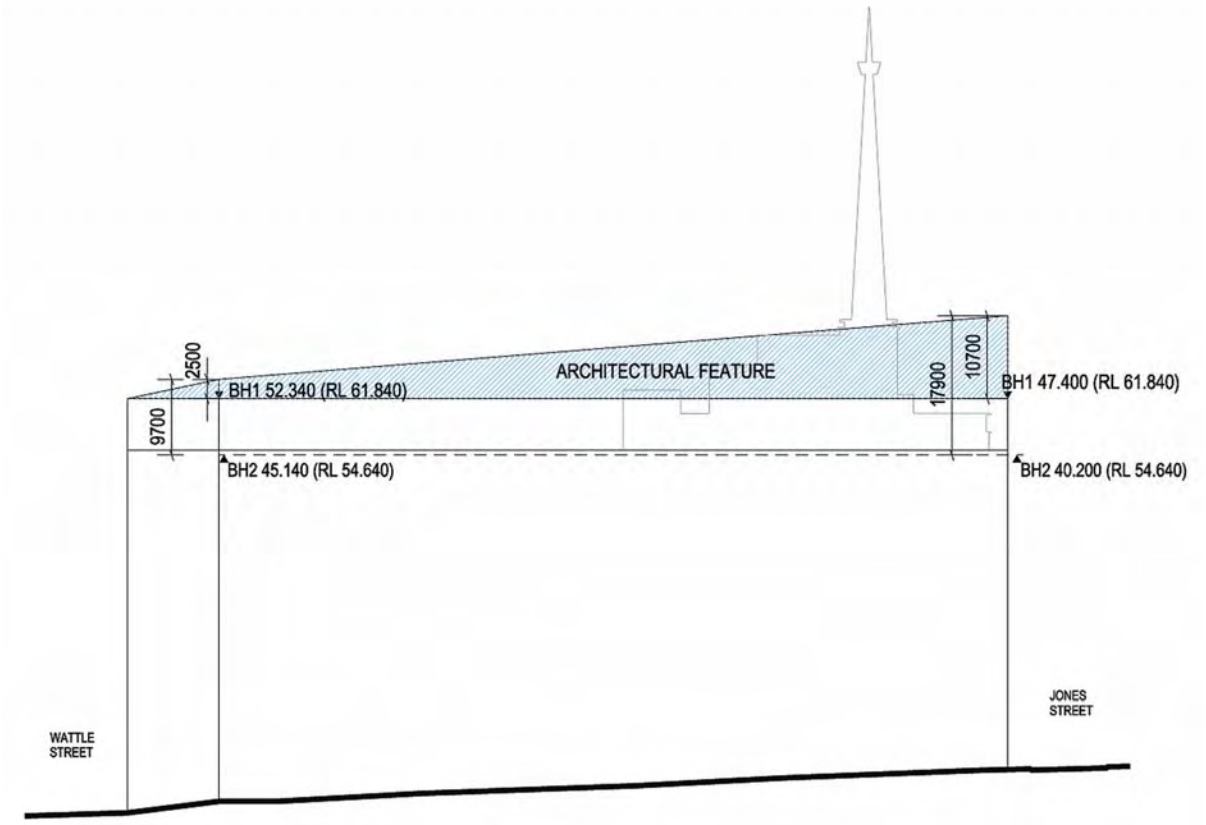

Figure 7 – South (Broadway) elevation of architectural feature (Source: DCM)

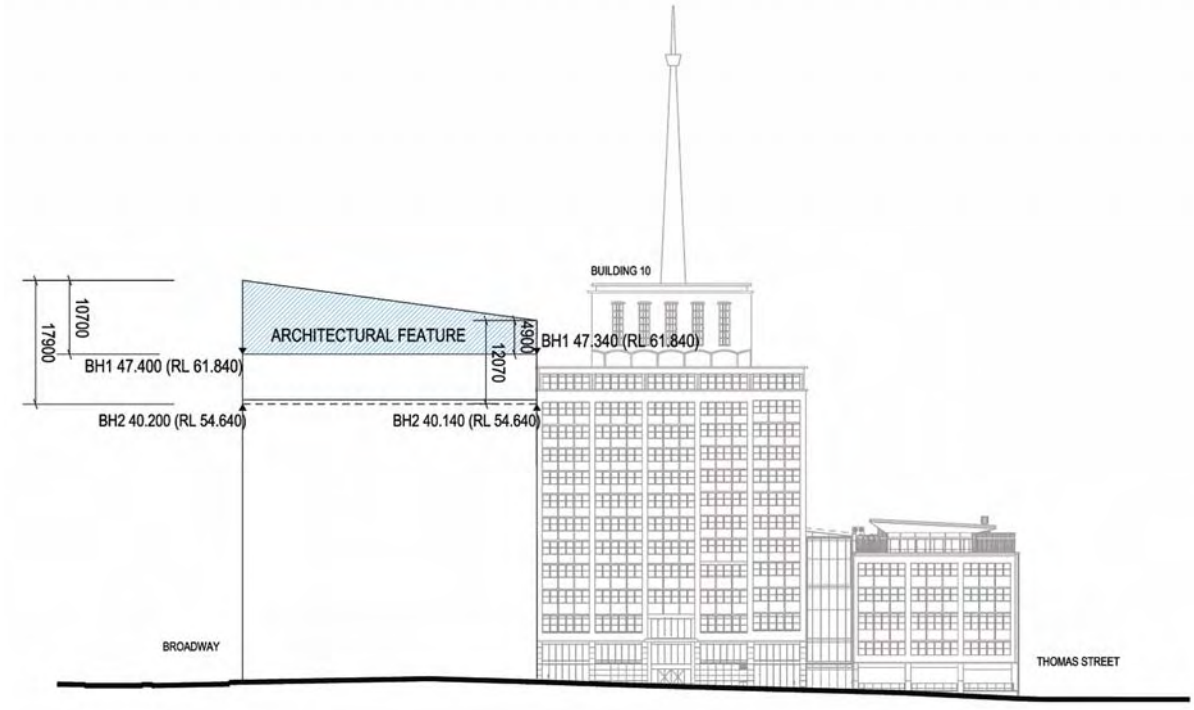

Figure 8 – East (Jones Street) elevation of architectural feature (Source: DCM)

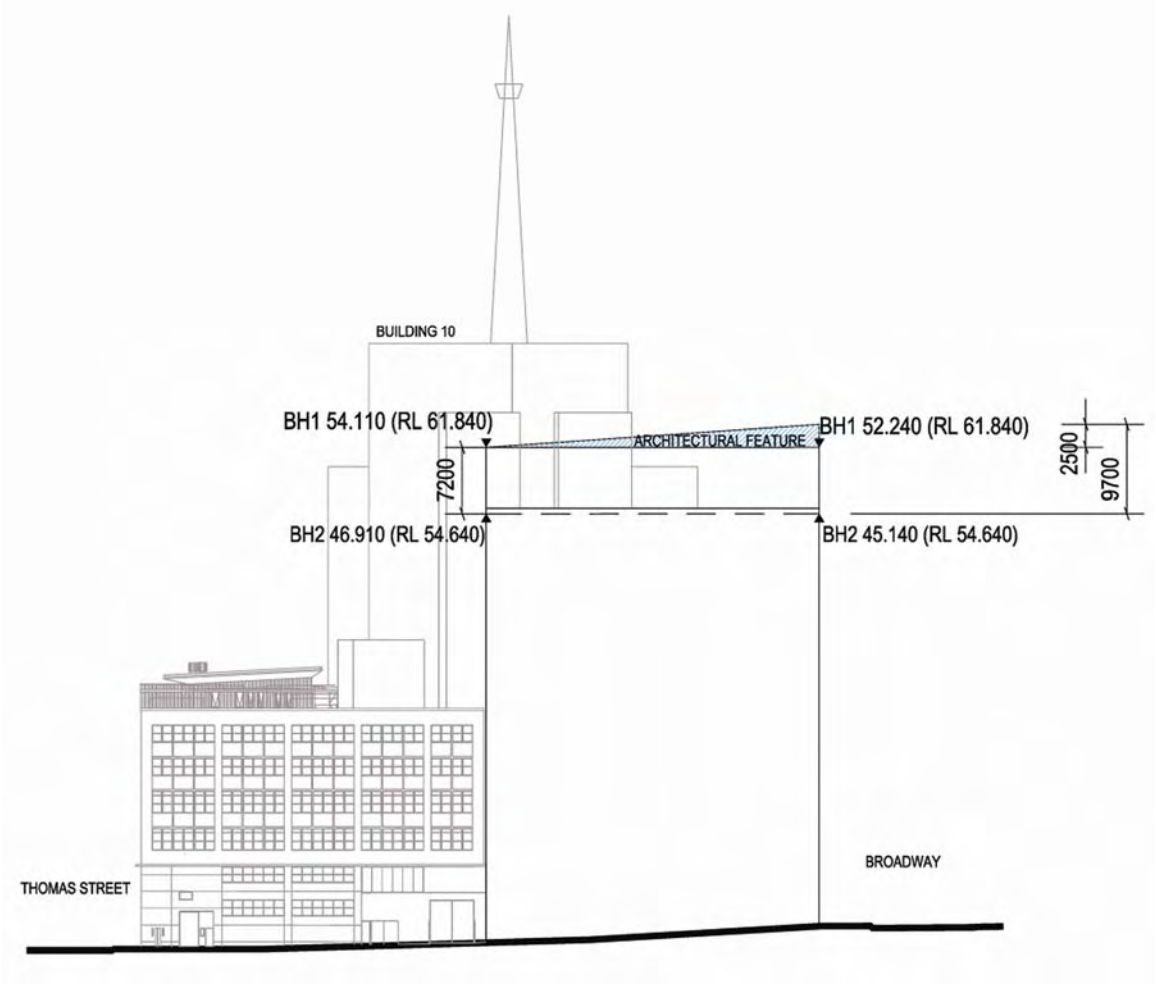

Figure 9 – West (Wattle Street) elevation of architectural feature (Source: DCM)

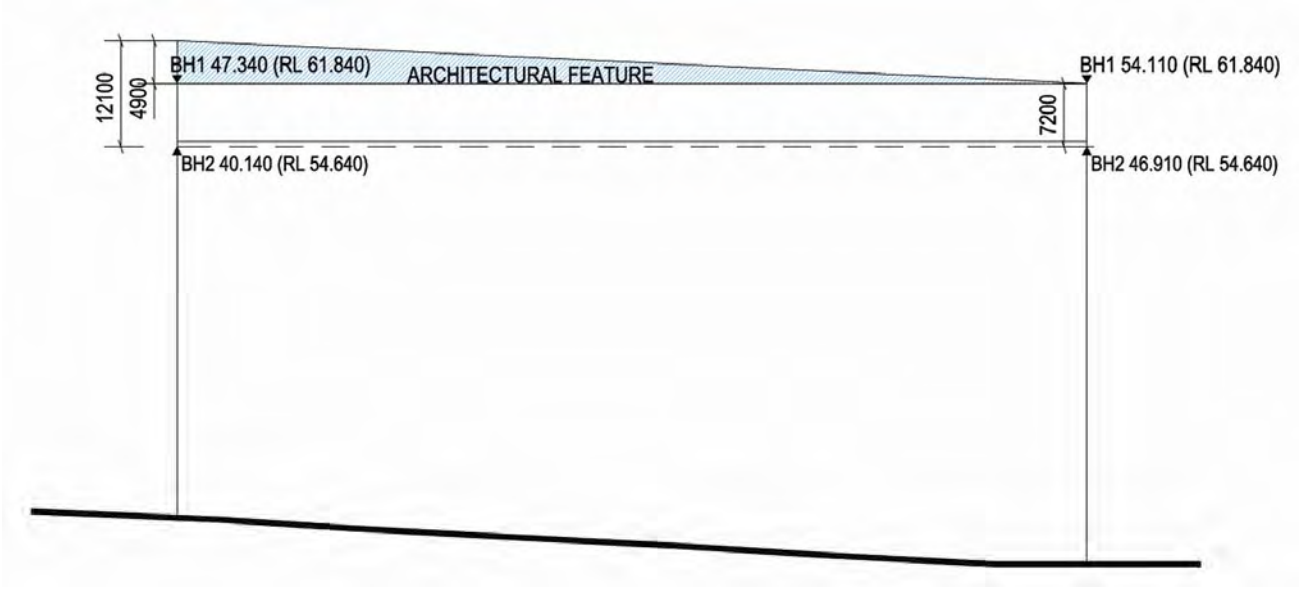

Figure 10 – North elevation of architectural feature (Source: DCM)

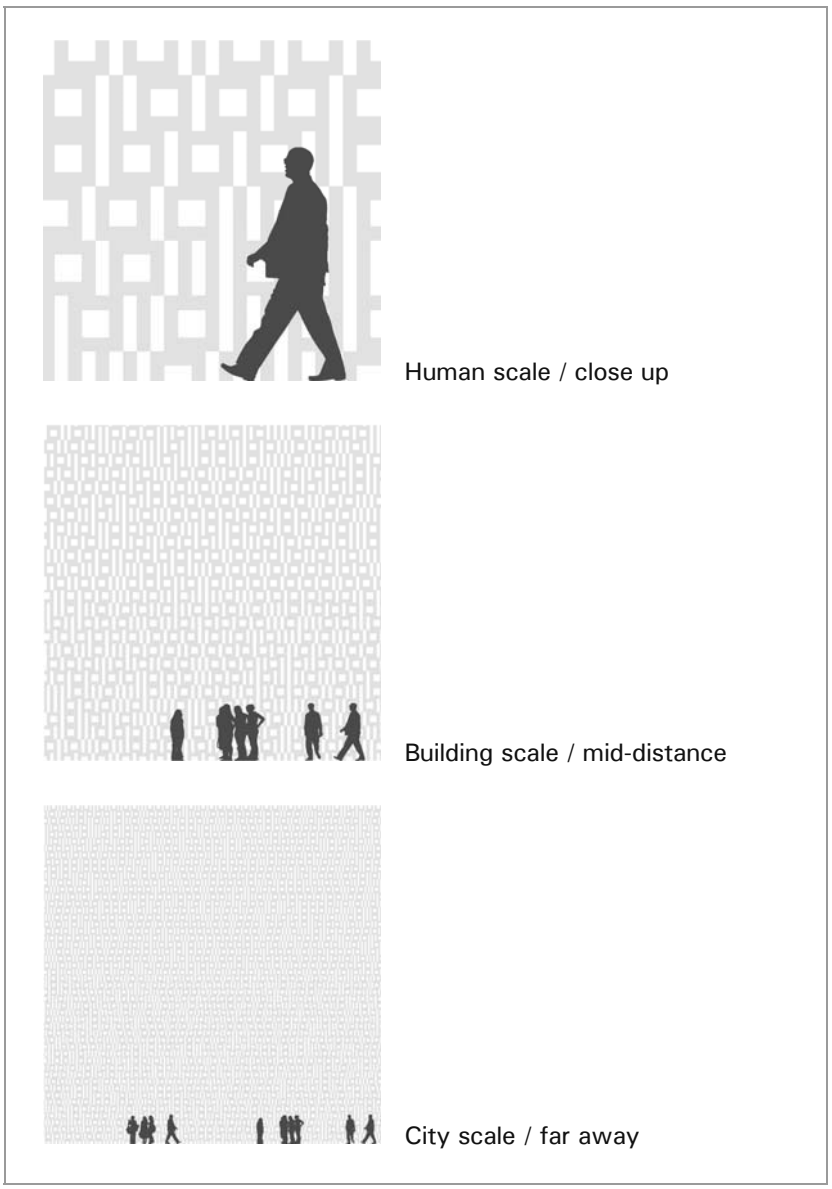

Figure 11 – View of proposed screen at different scales (Source: DCM)

3.1.3 Design Quality Controls

As result of the Design Excellence competition the proponent has revised the Design Quality Controls for the Broadway Building. Accordingly, the following controls replace those in Section 3.10 of the EAR.

- Create a gateway to the city from the west and a distinctive building form which contributes positively to important views from the city, the west, Broadway and local streets.
- Limit the height of the building to 54.11 metres from ground level (measured in accordance with the Standard Instrument).
- Maximise the extent of permeability of the ground plane through retail and student union shop fronts and student and public facilities.

- Enable pedestrian connections through the site from Broadway through to Jones and Wattle Streets.
- Articulate the building façade along Broadway and Jones Street through openings and pedestrian connections, modulation and material quality.
- Provide pedestrian protection along the length of the Broadway frontage, with additional protection on the Jones Street and Wattle Street frontages.
- Respond respectfully to the existing Building 10.
- Provide at grade and above ground pedestrian connections to Building 10.
- Provide vehicular connections to the new building through the Building 10 car park to avoid dangerous and unsightly driveways off Broadway and Jones Street.
- Incorporate design solutions to address wind conditions in the locality.

3.2 Assessment of Impacts

3.2.1 Height

As explained in Section 4.3 of the EAR, Clause 93 of SLEP 2005 establishes a maximum building height of 42 metres for the UTS site. Clause 10 of SLEP 2005 enables the building height development standard to be varied by up to 10%, providing that the proposed development will improve or contribute positively to the public domain and would achieve design excellence. The further design of the Broadway Building has been the subject of a design competition and thorough assessment by a jury of eminent professionals including nominees of DOP, the City of Sydney and UTS. The winning design was judged to achieve design excellence and contribute positively to the public domain in general and the Broadway gateway to the city in particular.

When measured in accordance with SLEP 2005, the revised building envelope increases the height of the building by 0.67 metres to a maximum 40.20 metres (RL 54.64) at the eastern (or Jones Street) edge of Broadway and to 45.14 metres at the western (or Wattle Street) edge. Due to the slope of the site, the maximum height along Wattle Street is now 46.91 metres (RL 54.64).

In accordance with the design excellence provisions of SLEP 2005 the maximum permissible height for the site would be 46.2 metres (42 metres + 10%). On this basis, the revised envelope complies with SLEP 2005 along Broadway at the corners of Jones Street and Broadway and Wattle Street and Broadway. It is approximately 6% above the building height standard at these points, comfortably within the 10% variation permitted by Clause 10.

Due to the slope of Wattle Street, the envelope exceeds the 10% variation by 0.71 metres at the Building 10 (western) end of the Wattle Street elevation, but the average height of the building along this elevation is 46.02 metres (under SLEP 2005) - within the 10% variation. The exceedance at the western end is considered reasonable for the following reasons:

- it is entirely the result of the topography of Wattle Street at this point;
- the envelope has been the subject of exhaustive analysis and design development for both the Concept Plan and the design competition;
- the additional height on the corner is not expected to impact on views of the Building 10 radio tower nor increase overshadowing; and
- reducing the height would result in the loss of essential educational floor space.

During detailed design it is likely that the building will not achieve this height at this point as a pedestrian thoroughfare (and a void) is proposed between Building 10 and the Broadway Building (see **Figure 4**).

The revised envelope (without the architectural feature) remains below the maximum height of the Frasers development which ranges from 57.50 metres directly opposite the Broadway Building to 116.50 metres opposite Building 1. Elevations of the new envelope are illustrated in the drawings at **Attachment 13** of **Volume 2** and reproduced in **Figures 12** and **13** below.

As an architectural feature, the screen is not subject to the height standard under SLEP 2005. Notwithstanding this, the Broadway Building plus the architectural feature would, at the tallest point on the corner of Jones Street, be 58.10 metres. This is commensurate with the 59.5 metres height of the Frasers development directly opposite. The difference in height is likely to be undetectable as the combined height of the Broadway Building slopes down to 54.84 metres at the corner of Wattle Street.

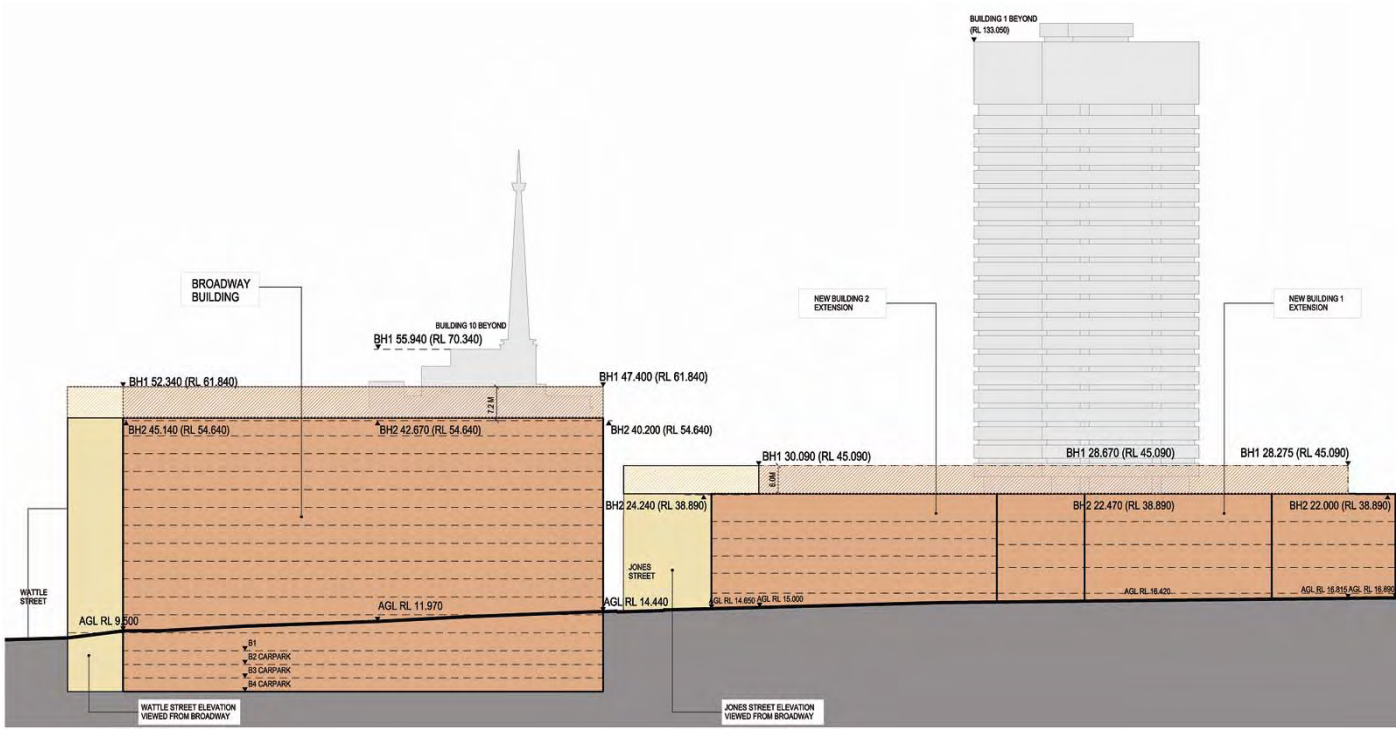

Figure 12 – South elevation – Broadway (Source: BVN and DCM)

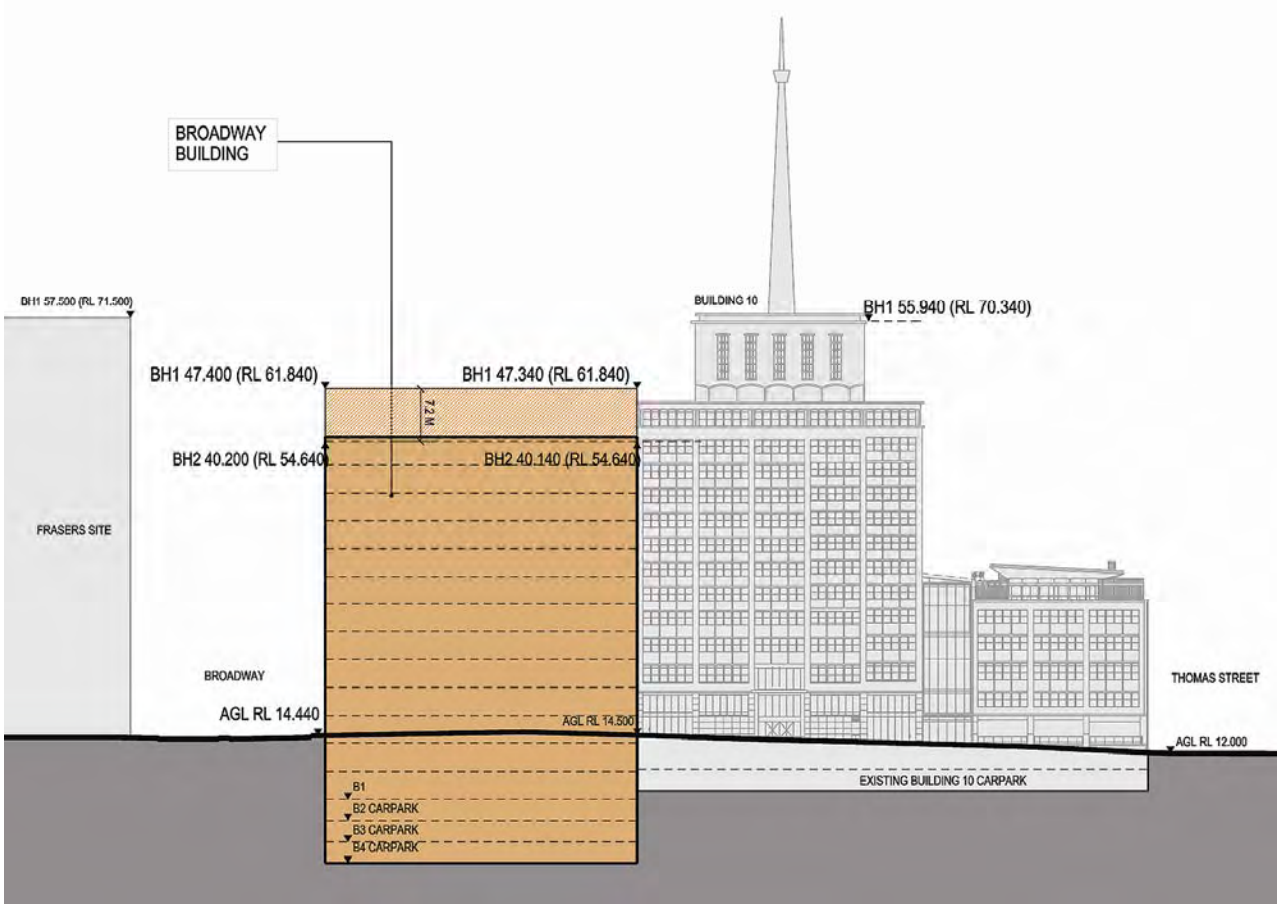

Figure 13 – East elevation – Jones Street (Source: BVN and DCM)

3.2.2 Visual Impact

The Visual Impact Assessment of the Concept Plan undertaken by Clouston Associates has been updated to assess the impact of the new building envelope for the Broadway Building and the proposed architectural feature (screen). The amended report replaces the report at Appendix P of the EAR and is attached as **Attachment 3** to this PPR.

As discussed in the EAR (Section 6.6) the Broadway Building will create a significant built form that may restrict or block the views of some permanent residential and commercial receptors at Frasers, education receptors at the University of Notre Dame Australia (UNDA), and residential receptors on the western side of Wattle Street. In Cloustons' opinion, the impact on these receptors still range from slightly adverse to moderately adverse, although there is a slightly greater impact on two receptors as a result of the revised envelope and architectural feature.

On the other hand, development of the Concept Plan will result in a significant upgrade to the Broadway frontage of the site, replacing the current poor quality buildings with contemporary and sympathetic architecture, affecting commercial and residential receptors directly viewing the site from Frasers and UNDA.

Some views to the lower and mid levels of Building 10 will be obscured by the Broadway Building – the revised building envelope does not change this. However, there will be some impact on views of the radio tower located above Building 10 as a result of the architectural feature – as follows.

- Some views of the tower within 100 metres of the Broadway Building will be entirely lost, but at a slightly greater distance the tower will be visible again as it is taller than the Broadway Building including the architectural feature. Other views in the immediate locality will be blocked or obscured by the Broadway Building as well as by Buildings 1 and 2.
- Views of the radio tower from the south will be part blocked by the Frasers development. The remaining views on either side of Frasers within 100 - 500 metres of the site may suffer minor adverse impacts as the architectural feature is expected to block the lower part of the radio tower. Longer distance views from the south (more than 500 metres) are not expected to be impacted due to the angle of the view.
- Views from the Princes Highway to the south west of Building 10 and the radio tower are anticipated to be blocked by the Broadway Building, and the architectural feature may block the lower part of the tower. However, the majority of the tower is expected to be visible.
- Long distance views – more than 500 metres – from the west along Broadway will not be affected as the architectural feature is lowest on the western elevation. However, within the 100 - 500 metre range, the architectural feature may block the lower part of the radio tower.

The assessment indicates that there could be some impacts on more distant views of the radio tower as a result of the proposed architectural feature. These impacts are off-set by the positive contribution of an iconic, landmark and unique building to the Broadway locality and the south western gateway to the city. In scale and quality it marries the high quality architecture and design anticipated across Broadway on the Frasers site.

The architectural feature has the potential to reflect light. UTS will undertake a reflectivity assessment of the architectural feature once the material for the screens has been finalised as part of the project application.

3.2.3 Wind

The Wind Assessment of the Concept Plan undertaken by CPP has been updated to assess the impact of the new building envelope for the Broadway Building and the proposed architectural feature (screen). The amended report replaces the report at Appendix Q of the EAR and is attached as **Attachment 4** to this PPR.

The assessment concluded that the changes to the Concept Plan as a result of the revised Broadway Building envelope would have a negligible impact on wind conditions and accordingly no change was made to the recommendations to ameliorate wind impacts. **Figure 14** illustrates the interaction of westerly winds with the site, including the new Broadway Building envelope. A further assessment of the potential wind impact of the building with the architectural feature will be undertaken for the project application.

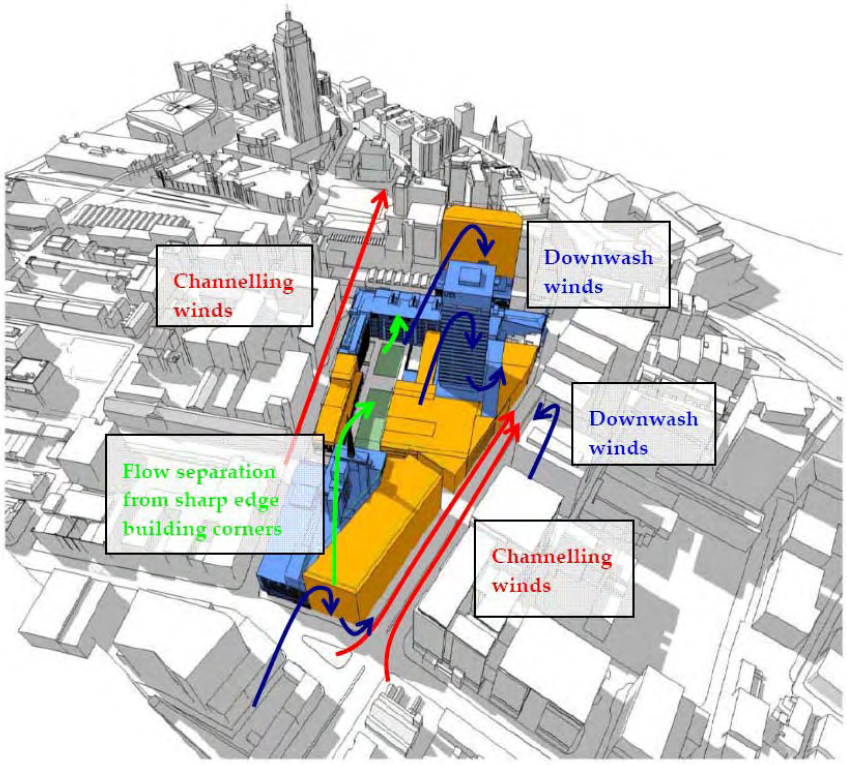

Figure 14 – Interaction of westerly winds with the site (Source: CPP)

3.2.4 Solar Access

Shadow diagrams of the Broadway Building prepared by DCM are located at **Attachment 16** of **Volume 2**. The Broadway Building casts shadows on Broadway itself and the northwest part of the now cleared Frasers site opposite that will accommodate Blocks 1 and 4 of the Frasers development. As demonstrated in the shadow diagrams, there is no loss of solar access to any areas of public open space such as parks, squares and the like, although the Broadway Building will cast shade over the northern façades of the buildings fronting Broadway and onto the public throughway off Broadway between Blocks 1 and 4 of the Frasers site.

The following are the specific shadow impacts on Blocks 1 and 4 of the Frasers site:

- At the winter solstice (21 June):
  - the maximum shadow from the Broadway Building (including the architectural feature) will be at 1pm; at this time the architectural feature adds a very narrow 9 metres to the shadow of the building envelope;
  - the proposed public throughway will be entirely in shade for most of the day from the combined effect of the Broadway Building and Frasers' own buildings, but the Broadway Building contributes less than 50% before 11am and after 2pm; and
  - at noon the Broadway Building, including the architectural feature, will shade all of the groundplane of the throughway; the bridge (cover) over the throughway also shades the southern end of the throughway.

- At the autumn equinox (20 March):
  - the Broadway Building itself does not cast a shadow onto the Frasers throughway, however the shadow of the perforated screen will cast dappled light and shadow onto the throughway between approximately 9:45am and 3:30pm. The maximum projection into the throughway is approx 4.5m (measured from Frasers building) at around 10:30am to 11am.

It is noted that the proposed architectural feature does not significantly increase the extent (length and width) of the shadow cast by the Broadway Building and that for most of the day the shadow cast by the building alone would be more or less commensurate with that cast by a development that complies with the SLEP 2005 height control (the envelope being 670mm higher than a complying development). Moreover, the shadow from the feature is likely to be dappled as the proposed pattern has a free-air opacity of 45%.

It is further noted that the public throughway on the Frasers site is bridged (covered) at around Level 7 for about 60% of its length. This in itself will cast shadows and reduce some of the light to the throughway.

Given that the shadow from the architectural feature will be dappled, that the feature itself contributes very little to the extent of shade, and that the shade from the Broadway Building would be akin to that of a complying development, the shadow impacts of the Broadway Building are considered reasonable. Nevertheless, the proponent will undertake a detailed shadow impact study of the Broadway Building as part of the project application.

4.0 Multi Purpose Sports Hall

Since lodging the EAR, UTS has designed the Multi Purpose Sports Hall (MPSH) and wishes to commence excavation and construction as soon as possible to coincide with the university 2009-2010 summer vacation:

- in programming terms, the MPSH must be excavated and constructed before the other proposed buildings around Alumni Green being built;
- disruption during term time from noise and vibration associated with excavation and construction has to be avoided or minimised; and
- part of Alumni Green needs to be made available to students during term time.

As part of this PPR, the proponent is requesting that the Minister direct that no further assessment be required for this element of the Concept Plan and has, accordingly, undertaken an assessment of the potential impacts of the development of the MPSH. These and a detailed description of the facility are described in this section.

4.1 Description of MPSH

The approximately 1,733 m^2 MPSH is to be located entirely underground (under the proposed Alumni Green) and on completion will become part of UTS Building 4 – see **Figure 15** and in the architectural plans in **Attachment 17** of Volume 3. This is entirely consistent with the Concept Plan described in the EAR which proposed an underground MPSH of up to 1,800 m^2 in this location. See **Table 3** for a detailed description of the development. In the short term, the area above the structure will be covered before being landscaped on the completion of nearby construction in accordance with the Concept Plan for the campus.

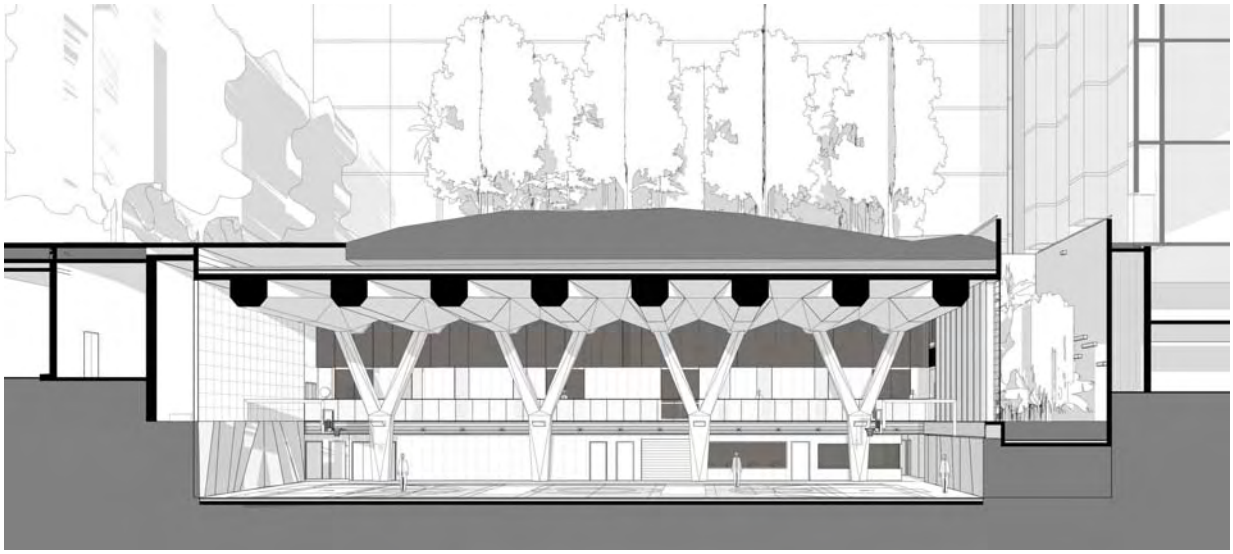

Figure 15 – UTS Multi Purpose Sports Hall, located below Alumni Green (Source: PTW)

The facility is to be used for teaching and academic coursework by the Faculty of Arts and Sciences and the School of Leisure and Tourism in the Faculty of Business. It will also be made available to UTS sports clubs for a range of indoor sports – both training and competition.

Table 3 – Description of the Development

	Use	Sydney LEP definition (m^2)	Standard LEP definition (m^2)
Level 0	Sports Hall Tutorial room Office Male and female amenities	1,142	1,059
Level M	Dance studio Gymnasium	397	352
Level 1	Access from Building 4 Bicycle storage	177	147
Alumni Green	Access from Alumni Green	17	3
Total		**1,733**	**1,561**

4.1.1 Facility Features and Dimensions

The architectural plans at **Attachment 17** in Volume 3 illustrate the proposed development. The main indoor sports court in the MPSH can be used for basketball, netball, volleyball, futsal (indoor soccer), indoor cricket, badminton and other activities such as gymnastics and martial arts. The MPSH includes a separate dance studio and gymnasium with exercise equipment. Supporting these uses are amenities for staff and students including lockers, showers and toilets for staff and students. Separate unisex disabled change rooms and toilets are also provided. The MPSH also includes a tutorial room for 30 students, an office, a reception counter and storage for up to 50 bicycles.

The primary entrance to the MPSH will be through Level 1 of UTS Building 4 which provides level access from both Harris Street and Thomas Street.

4.1.2 Design

PTW Architects has prepared a detailed design statement describing the MPSH (see **Attachment 5**).

The interior of the MPSH is carved out of sandstone bedrock. This natural material is used as part of the building fabric bringing a unique character to the major space as well as sustainability benefits by moderating fluctuations in the internal temperature and reducing new construction materials. The sandstone contrasts with the use of in situ concrete 'wishbone' columns which form an elegant visual separation between functions – see **Figure 16**. Plywood and painted fibrous-cement acoustic panels are used for the perimeter walls above the rock face, while glazing allows light to penetrate through the ventilation shaft.

Circulation within the MPSH is via a stair and lift in the north east area connecting all levels of the facility. A shaft for light and ventilation located to the east of the facility defines the edges of the main sports court and includes a "sunken garden".

Figure 16 – Underground sports hall with 'wishbone' columns (Source: PTW)

Visual Impact

As the proposed Multi-Purpose Sports Hall is essentially underground, it has minimal visual impact on surrounding streets and buildings. The landscaped roof will improve the external appearance of the MPSH.

Materials

Natural materials will be used throughout the MPSH to minimise waste and environmental impacts. The interior of the MPSH will be carved out of the existing quality bedrock will remain exposed. Plywood paneling will be used to manage the acoustic performance of the sports hall and concrete will contain industry recycled product such as fly ash.

Sustainability

A naturally ventilated shaft and sunken garden between UTS Building 4 and the MPSH provides additional natural pre-filtering to air for circulation within the MPSH. The top section of the glazed wall separating the light and ventilation shaft from the main hall will be operable, thus releasing air and smoke exhaust.

The sports hall itself will be mechanically ventilated rather than air conditioned. External air will be naturally cooled as it passes through the ventilation shaft and over the sandstone bedrock, while the landscaped roof assists to stabilise and regulate indoor air temperatures, thus reducing the need for additional air conditioning across the entire MPSH.

4.1.3 Landscaping

The design incorporates a light shaft. The light shaft will be vegetated with rainforest species to integrate with the landscaping of Alumni Green above – see the landscape plan at **Attachment 18** in Volume 3. As result of this feature, the landscaping and layout of Alumni Green proposed in the Concept Plan is modified (see **Section 5.0** and **Attachment 14** in Volume 2).

4.1.4 Bulk Earthworks

Up to 24,000 cubic metres of spoil (soil, clay and rock) is to be removed from the site and transported to the Port Botany Expansion Site for disposal. Any contaminated spoil will be disposed of separately at an appropriately licensed landfill.

In their assessment of the impacts of construction traffic associated with the proposal (see **Attachment 6**), Halcrow MWT estimates that approximately 1,525 trucks, over a six week period, would be needed to transport the spoil from the site to Port Botany. The route between the site and Port Botany is entirely via RTA controlled arterial roads that are suitable for use by excavation trucks. The number and frequency of trucks is estimated as relatively low and would not adversely impact on the proposed routes.

The earthworks will be carried out to minimise environmental impacts:

- Removed spoil will be reused at the Port Botany Expansion Site;
- All trucks will be loaded and covered within the site;
- Excavation trucks will only use roads that are suitable for use by heavy vehicles; and
- The overall number and frequency of truck movements will not have an adverse impact on the proposed routes.

4.1.5 Development Program

Construction of the MPSH is expected to commence in late 2009 – see Indicative Staging Plan at **Attachment 15** of Volume 2, and be completed in approximately 12 months. Works associated with construction of the MPSH will be carried out in the following stages:

- Site establishment;
- Excavation;
- Building construction and fitout; and
- Restoration of the site and landscaping of Alumni Green.

To minimise disturbance to University students and staff, site preparation and excavation works will be carried out over a period of approximately three months. Interior works will be carried out largely during semester and are expected to take approximately 9-10 months. Particularly noisy activities such as rock breaking will be stopped during examination periods and the location of examinations will be managed to mitigate impacts.

Final landscaping of Alumni Green will occur following the completion of the MPSH and will complement other foreshadowed construction activities at the Broadway Campus.

4.2 Assessment of Environmental Impacts

The proposed MPSH is consistent with applicable provisions of the Sydney Local Environmental Plan 2005, Sydney Development Control Plan 2006 and Urban Development Plan for Ultimo Pyrmont – 1999 Update. In addition, it has been designed to accord with the scope of the proposed elements and Statement of Commitments in the Concept Plan for the UTS Broadway Precinct. Consequently, there are very few potential impacts from the development and operations of the facility, and none that cannot be managed. The assessment of impacts follows.

4.2.1 Hydrogeology and Geotechnical Conditions

The MPSH will have a finished floor level of approximately RL 3.4 AHD which will require excavation to between 9.5 and 10.5 metres below the existing surface of Alumni Green (approximately RL 14 AHD). The excavation will terminate approximately three metres above the lowest level of UTS Building 1.

Jeffrey and Katauskas Pty Ltd has prepared a Geotechnical Report for the site (see **Attachment 7**) which provides information on subsurface conditions and makes recommendations on excavation, shoring, footing design and hydrological conditions.

The assessment found that the site is underlain by fill and residual clay over sandstone bedrock. Groundwater was not encountered in the augered portion of any boreholes, and laboratory assessment of water flowing near the subterranean eastern face of the adjoining UTS Building 1 was found to include fluoride, which suggests the water is from a leaking town water supply (which UTS has addressed), rather than groundwater. The addendum to Jeffrey and Katauskas Pty Ltd's report found the water level in monitoring well number BH101 was approximately 14.07 metres below ground level, which equates to approximately RL 0 AHD, well below the lowest finished floor level of the MPSH.

In addition, any seepage encountered from existing sandstone joints or ingress of rainwater can be readily controlled using conventional sump and pump techniques.

4.2.2 Soils and Contamination

Due to previous uses of the site having potentially contaminated material, Environmental Investigation Services (EIS) prepared a Stage 2 environmental assessment in accordance with State Environmental Planning Policy 55 – Remediation of Land and the *Guidelines for Consultants Reporting on Contaminated Sites* (NSW Department of Environment, Climate Change and Water [DECCW], formerly EPA, 1997) to assess the likelihood of contamination of subsurface soils and groundwater (see **Attachment 8**).

Although soil testing commissioned by EIS found contaminants in the soil, all were at levels less than the appropriate Health Investigation Levels and the *Waste Classification Guidelines Part 1: Classifying Waste* (DECCW, 2009). In addition, no asbestos was encountered on the site and groundwater, which is 3-4 metres below the proposed MPSH, was not found to be contaminated. However, slightly elevated levels of zinc were encountered in some fill soil samples. EIS noted that elevated levels of zinc in soil may affect plant growth.

All excavated material is to be disposed of off-site. Any contaminated or potentially contaminated material will be disposed of at an appropriately licensed landfill, while the remainder will be disposed of at the Port Botany Expansion Site.

Based on EIS's test findings and the intended disposal of all excavated material off site, the site is suitable for the proposed development of the MPSH.

4.2.3 Noise and Vibration

Wilkinson Murray has assessed the noise and vibration impacts associated with the construction and operation of the MPSH (see **Attachment 9**).

Wilkinson Murray's assessment concludes that residential, commercial and educational properties outside UTS are unlikely to be impacted by noise and vibration during construction of the MPSH, however there may be noise impacts to the interior of UTS Buildings 1, 4 and 10, particularly when rock breakers and rock saws are being used. No adverse impacts on UTS buildings associated with vibration are expected during construction. To manage potential impacts, noisiest construction activities will be controlled to limit potential disturbance to teaching activities.

The internal walls of the sports court, gymnasium and dance studio will be lined with acoustically absorbent panels to control internal acoustics and minimise noise transfer beyond the MPSH. Consequently, operational noise from the MPSH will be inaudible at residential, commercial and educational properties outside UTS due to separation from the facility, shielding from surrounding UTS buildings and as the facility is to be located underground.

Noise from within the MPSH may sometimes be audible on Alumni Green, depending on the nature of the internal activities and if the MPSH louvres are open. Noise from inside the MPSH will generally be inaudible at other UTS internal spaces, such as in Buildings 1, 4 and 10. This will be managed by UTS.

In conclusion, there will be negligible acoustic impacts on properties outside UTS during construction and operation of the MPSH. Construction impacts on UTS buildings will be carefully monitored by UTS and the Head Contractor.

4.2.4 Sustainability

The MPSH has been designed to satisfy the requirements of a 4 star rating under the Green Building Council of Australia's Green Star Education V1 tool. Although the rating does not currently apply to sports facilities of the type proposed, UTS is committed to ensuring a high level of sustainability for the MPSH – see ESD report prepared by the VOS Group at **Attachment 10**.

As the MPSH is located below ground in a sandstone pit, the usual requirement of providing air conditioning to the entire facility to address high solar load is negated. Similarly, temperature fluctuations typical of above ground facilities are minimised due to the sandstone walls and landscaped roof. Incoming air will be drawn across the large sandstone plenum wall and will be cooled prior to its introduction into the main hall and into the individual rooms. The air will be delivered to the hall using jet diffusers to ensure suitable levels of air movement. The main sports hall will be mechanically ventilated rather than air conditioned, which will reduce the overall energy usage of the building.

The gymnasium, dance room, tutorial room and office will be air conditioned. The chiller serving these areas will also receive its air subsequent to it passing across the face of the sandstone walls. This pre-cooling of the air for heat rejection will improve the efficiency of the chillers.

Combined with the water and energy efficient building materials, fixtures and fittings, and its location within an existing urban university campus that is well served by public transport, the MPSH will have minimal environmental impact.

4.2.5 Mobility Impaired Access

The MPSH has been designed to maximise the reasonable provision of access for people with disabilities. Access Associates Sydney Pty Ltd has assessed how access for people with a disability has been considered and incorporated into the design of the proposal, including compliance with relevant provisions of Australian Standard 1428 and the additional requirements of AS1428.2, the UTS Design Guidelines and the provisions of the *Disability Discrimination Act 1992* (Cth) (see **Attachment 11**).

Access for persons with disabilities to all levels of the MPSH will be via Building 4 from either Harris or Thomas Street, via ramps and lifts. Toilets and change rooms for mobility impaired users of the MPSH will be located on Level 0. Access Associates Sydney Pty Ltd has determined the proposed paths of travel are appropriate for disabled access and the lifts provided are of a sufficient size to accommodate wheelchair users and provide adequate space for manoeuvrability.

In Access Associates Sydney Pty Ltd's opinion, the objectives of the Disability Discrimination Act, UTS access requirements, AS1428.1, AS1428.2 and the Building Code of Australia will be achieved through the design of continuous accessible paths of travel from the entrances to all relevant facilities for visitors, students and staff and the equitable provision of emergency refuge areas and unisex accessible sanitary facilities. In addition, the proposal complies with the relevant provisions of the City of Sydney Access Development Control Plan 2004.

4.2.6 Building Code of Australia and Fire and Safety

The proposed development has been assessed for compliance with the Building Code of Australia (BCA) by Advance Building Approvals Pty Ltd (see **Attachment 12**).

In Advance Building Approvals Pty Ltd's opinion, the proposed development will comply with the Deemed-to-Satisfy (DTS) and Performance requirements of BCA 2009. However, in circumstances where DTS requirements cannot be met, Alternative Solutions will be adopted.

In their assessment, Advance Building Approvals Pty Ltd states that all required essential fire safety measures will be satisfied in accordance with the Building Code of Australia and relevant Australian Standards.

4.2.7 Construction Traffic Management

The Construction Traffic Management Plan prepared by Halcrow MWT (see **Attachment 6**) for the MPSH demonstrates construction works will have minimal impact on the surrounding road network.

A dedicated access driveway onto the site and works zone will be established on Thomas Street to enable all construction vehicles to enter and exit the site in a forward direction to limit interruptions to local traffic flow. Delivery of large equipment, such as cranes, will occur at night to minimise disruption to vehicles and pedestrian flows. Qualified site personnel will be on site throughout the construction period to maximise safety for vehicles and pedestrians.

The existing pedestrian footpath on Thomas Street will be retained throughout construction, and signage and fencing will be installed to direct staff and students across the Alumni Green in safety.

4.3 Summary

As demonstrated above, the proposed MPSH will have no adverse environmental impacts. The MPSH will be effectively integrated into the existing UTS campus, and construction works will be scheduled to minimise disturbance to staff and students of the University.

The proposed works and the management of any impacts do not change the proposed Concept Plan described in the EAR.

5.0 Summary of Revisions to the Concept Plan

As a result of the design revisions and other changes detailed in this PPR, the proponent has revised the Concept Plan for the UTS City Campus Broadway Precinct. The full set of drawings for the revised Concept Plan is located at **Attachment 13** in **Volume 2**. The changes are summarised below in **Table 4**.

The changes have also necessitated revisions to other figures, tables and drawings presented in the EAR, as well as replacement of some specialist reports. These are tabulated in **Table 5**.

Table 4 – Revisions to Concept Plan

Concept Plan element	Revisions
Broadway Building	▪ New Design Quality Controls at Section 3.1.3 of the PPR replace the controls in the EAR. ▪ Maximum building height: 46.91 metres (SLEP 2005) or 54.11 metres (Standard Instrument) ▪ Adjustment to building footprint to remove 'overhang' of Building 10. ▪ Inclusion of architectural feature to a maximum height of 58.10 metres (under the Standard Instrument). ▪ New pedestrian thoroughfare between Jones Street and the corner of Wattle Street and Broadway.
Alumni Green	▪ Landscape Plan revised – see **Attachment 14**
Indicative Staging	▪ New staging of construction for Building 6, Building 1 Podium, the MPSH and the Broadway Building – see **Attachment 15**

Table 5 – Replacement of tables, drawings, reports and figures

Item	Location in EAR	Location in PPR
Plans and drawings		
Concept Plan, Proposed Built Form and Photomontages	Appendix D	Attachment 13
Landscape Concept Plan	Appendix E	Attachment 14
Indicative Staging Plan	Appendix F	Attachment 15
Specialist reports		
Transport Management and Accessibility Plan	Appendix O	Attachment 2
Visual Impact Assessment	Appendix P	Attachment 3
Wind Assessment	Appendix Q	Attachment 4
Table		
Concept Plan heights	Table 3	Table 1

Item	Location in EAR	Location in PPR
Figures		
3D model of building envelopes	Figure 16	Figure 1
Building envelopes in relation to SLEP height limit	Figure 18	Figure 2
Pedestrian circulation	Figure 19	Figure 4
Indicative Staging	Figure 20	Attachment 15
South elevation of Broadway Building	Figure 22	Figure 3
South elevation – Broadway	Figure 25	Figure 12
East elevation – Jones Street	Figure 27	Figure 13
Interaction of westerly winds with the site	Figure 31	Figure 14

6.0 Final Statement of Commitments

In accordance with Part 3A of the *Environmental Planning and Assessment Act 1979*, the following are the commitments made by UTS to manage and minimise potential impacts arising from the proposal. These commitments replace the draft commitments included with the EAR.

6.1 Design Excellence

The proponent will adopt the design excellence process at Section 3.9 of the EAR and incorporate the design quality controls at Section 3.10 of the EAR and Section 3.1.3 of the PPR for new development on the site.

6.2 Heritage

To minimise impacts on the heritage significance of buildings on and around the site, the proponent will implement the following measures:

- Prepare an interpretation plan that communicates the heritage significance of relevant components of the site.
- Undertake photographic archival recording prior to the commencement of demolition works.
- Limit the built form of the proposed Broadway Building to maintain distant views of the Building 10 radio tower from the south and west.
- Ensure that demolition of Building 11 (the Bradshaw Building) is contingent on the architectural design of the Broadway Building achieving design excellence.
- Undertake archaeological investigations conducted in accordance with an Archaeological Research Design prior to, or in conjunction with, ground disturbance of areas with historical archaeological potential.

6.3 Traffic, Transport and Access

To facilitate cycling and the use of public transport, the proponent will undertake the following:

- Prepare a Transport Access Guide to promote the use of public transport to staff and students;
- Investigate opportunities for the consolidation of bus shelters along Broadway in consultation with the State Transit Authority and the City of Sydney; and
- Provide facilities for cyclists.

To manage any impacts on traffic and pedestrian movements during construction, the proponent will require the preparation of Construction Traffic Management Plans for every development on the site.

UTS will consult with Sydney Metro during detailed design of the Broadway Building in relation to any potential impacts on the West Metro tunnel alignment.

6.4 Visual Impacts

To minimise visual impacts, the proponent will implement the following:

- Use architectural treatment of facades to break down the perceived scale and massing of new buildings; and
- Retain street trees or provide additional mature plantings to improve the streetscape.

The proponent will undertake a reflectivity assessment of the architectural feature proposed for the Broadway Building during detailed design.

6.5 Solar access

The proponent will undertake a detailed shadow impact study of the Broadway Building during detailed design.

6.6 Wind

The proponent will incorporate the following measures into the detailed design of buildings to mitigate any adverse effects of wind conditions:

- Undertake detailed wind impact assessments for each new building during the detailed design stage;
- Articulate the facades of Buildings 1 and 2 and the Broadway Building to ameliorate the impacts of westerly winds at ground level on Broadway;
- Plant mature trees and shrubs, and provide colonnades or awnings along the boundaries of Alumni Green; and
- Locate pedestrian entrances to new buildings along internal pedestrian links to intercept strong wind flows.

6.7 Landscape Design

UTS will undertake the following in relation to landscaping on the site:

- The removal of any significant trees will be subject to an arborist's report.
- Sustainable design principles will be incorporated into the landscape design, including selection of plants with low irrigation requirements and minimising the use of potable water.

6.8 Contamination

To identify any adverse impacts associated with potentially contaminating activities on the site, the proponent will undertake the following:

- A Stage 2 Environmental Assessment that includes soil and groundwater sampling;
- Waste classification for offsite disposal of soil and bedrock; and
- A Hazardous Building Material Survey for buildings that are to be refurbished or demolished.

Management and mitigation, if required, will be a function of the outputs of these investigations.

6.9 Ecologically Sustainable Development

UTS will adopt the following sustainability targets for the site:

- 6 star Green Star Education target for the new Thomas Street Building;
- 5 star Green Star Education target for the new Broadway Building;
- 4 star Green Star Education target for major refurbished buildings and podium extensions to Buildings 1 and 2;
- Reduction in overall water campus consumption by up to 20 percent by 2010 (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:

- Ensure the new Building 6 Tower for student accommodation meets the energy and potable water targets for residential flat buildings;
- Work with the proponents of the nearby Frasers Broadway development to investigate opportunities to incorporate complementary sustainability projects on both sites;
- 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 reuse 80% of demolition waste and investigate strategies.

In addition, UTS will investigate the following ESD initiatives as part of the Concept Plan:

- Integrating a 1.2-1.5 megawatt trigeneration plant into the UTS City Campus utilities system;
- Installing of a bio-digester plant in Building 2 to reduce operational waste; and
- Installing blackwater recycling system with sewer mining capacity (to enable black water to be used for chiller and toilet flushing purposes).