# SSD_7081: Development for Faculty of Arts & Social Sciences (FASS), Camperdown Campus

## University of Sydney Response to Submissions

**October 2016**

The University of Sydney has reviewed all submissions received during the statutory public exhibition period of State Significant Application *SSD 7081 – Faculty of Arts & Social Sciences building*, located on the northern edge of the University's Camperdown campus fronting Parramatta Road, south of campus Science Road, and east of the University's Ross Street entrance.

The University of Sydney's response to submissions has been structured into the following categories in order to differentiate between sources of submissions, relevant disciplines, relevant issues, and changes to design.

This submission should be read in conjunction with other accompanying documentation including:

- Schedule of Design Modification
- Schedule of Amended Plans
- Schedule of Appendices

| APPENDICES |
| --- |
| • Appendix 1.01 – Revised Architectural DA Drawings |
| • Appendix 1.02 – Revised Landscape DA Drawings |
| • Appendix 1.03 – TreeiQ letter dated 20 September 2016 |
| • Appendix 1.04 - Surface Design Letter dated 22 September 2016 |
| • Appendix 1.05 – Windtech updated report dated 07 October 2016 |
| • Appendix 1.06 – GTA report dated 06 October 2016 |
| • Appendix 1.07 – Gehl Public Realm Strategy and Campus Design Principles |

# 1. USYD Response to Department of Planning & Environment

| SSD 7081 – FASS Building | |
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| **DPE Issue** | **USYD Project Response** |
| **Built Form & Urban Design**<br>**1.** Given the significant excavation proposed across the site, the Department questions why it is not possible to have designed a building that is fully compliant with the height limit established by the approved CIP building envelope. In this regard, further design refinement should be considered to reduce the height of the proposed building (including plant) to fit within the endorsed RL49.50 CIP envelope height. | As further detailed below, the ground level of the FASS building remains fixed and cannot be lowered or excavated as a result of consequential potential flooding as well as accessibility difficulties.<br>The University has reviewed the FASS building heights against the approved CIP building envelope for this site. The University has now introduced further height reductions to the building comprising:<br>• Reduction in the level 6 ceiling height to lower the overall roof level by 320mm. This has resulted in reducing the skylight projection through the CIP envelope from 600mm to 280mm.<br>• Reduction in skylight area above the CIP from 192m$^2$ to 37m$^2$.<br><br>However, the following three elements will protrude above the CIP building envelope and cannot be further reduced. These protrusions are minor, will not cause any negative environmental impact and will not be visible anywhere from the surrounding public domain.<br>• 10m$^2$ Cooling Tower extending 600mm above the CIP envelope.<br>• 37m$^2$ of skylight extending 280mm above the CIP envelope.<br>• 60m$^2$ of PV panel area extending 242mm above CIP envelope. Note, the addition of extra PV panels is in direct response to a recommendation by the City of Sydney.<br><br>Refer to image below and SK307 illustrating in white colour the minor extent of PV panel, skylight and cooling tower area protruding above the roof area and the CIP building envelope. |

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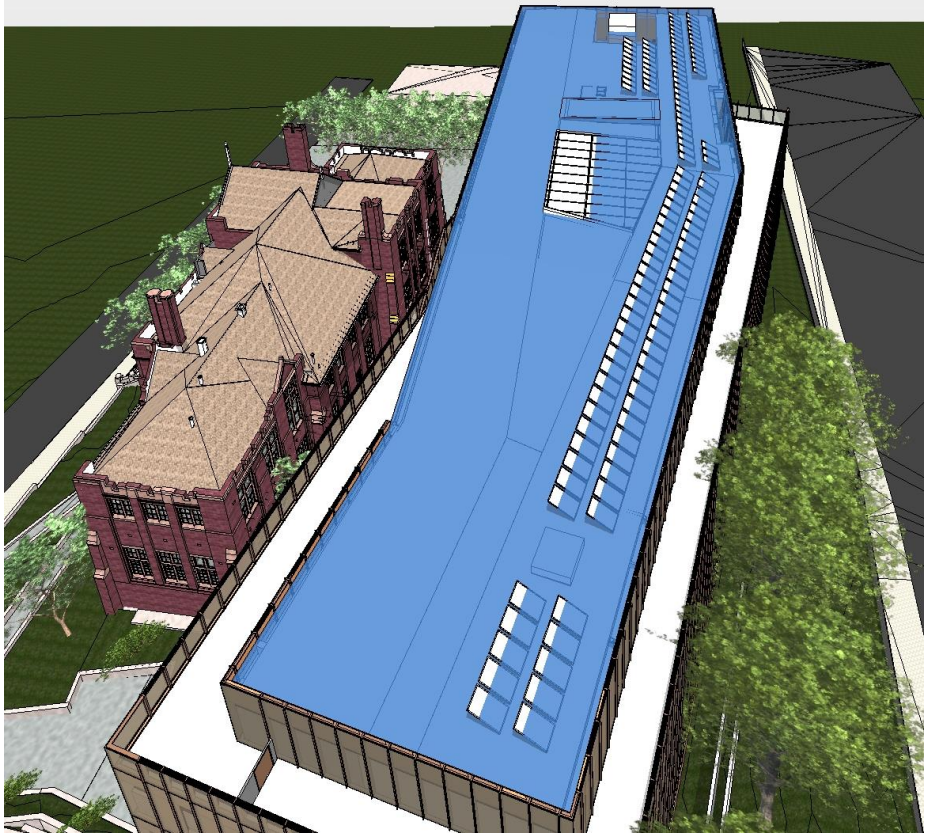
| **DPE Issue** | **USYD Project Response** |
| |  <br><br>Justification for these minor protrusions are substantiated by the following reasons and development constraints:<br>• A minimum floor to ceiling height of 2700mm needs to be provided to levels 3-6 occupied by academic offices. |

| SSD 7081 – FASS Building | |
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| **DPE Issue** | **USYD Project Response** |
| | • The double height lecture theatre is located at the lower ground floor level 1, therefore setting the floor to ceiling heights for Levels 3 to 6 above.<br>• Level 1 has been set above flood level to allow level access from the South East to avoid building flooding issues from Science Road.<br>• The RD Watt Ground level (Level 2) is fixed. This level dictates the RL of level 2 of FASS to ensure an accessible ground level connection between FASS and RD Watt is maintained.<br>• The roof level is now redesigned by reducing Level 6 floor to ceiling heights from 2900 to 2700mm, and reducing the overall level of skylight from 600mm to 280mm above the CIP envelope. The skylight area is also reduced from 192m$^2$ to 37m$^2$ and is set back 6.8m from the facade. Refer to the following Architectus Drawings SK302, 307, DA2500<br>• In relation to the cooling tower (projecting 600mm above the CIP envelope) the University prefers to maintain the water cooled chiller in lieu of air cooled due to a number of environmental advantages being;<br>➢ Water cooled chillers require 30% less energy input when compared to an air cooled chiller.<br>➢ Water cooled chillers generate less noise than air cooled chillers.<br>➢ Water cooled chillers typically last longer than air cooled chillers – this has certainly been the experience on campus with 25 years typical for water cooled and only 15 years for air cooled chillers – this leads to a reduced embodied energy cost.<br>• The most compact water cooled chiller has been selected which has specific dimensional requirements that cannot be reduced below the CIP envelope. Therefore the University wishes to retain the water cooled chiller and associated cooling tower plant due to the reduced energy and embodied energy advantages. |

| SSD 7081 – FASS BUILDING | |
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| **DPE ISSUE** | **USYD PROJECT RESPONSE** |
| **2.** Amended architectural plans are to be submitted detailing the following:<br>○ existing ground level in the context of proposed development;<br>○ elevations of the RD Watt Building, where proposed facade and public domain/landscape setting changes are evident; and<br>○ details of all proposed retaining walls, including bottom and top of wall levels and proposed construction materials. | Refer to the following Architectural Drawings:<br>• DA-1010 Level 1 Plan with existing and proposed levels<br>• DA-1020 Level 2 Plan with existing and proposed levels<br>• DA-2000 North and South Elevations with existing and proposed levels<br>• DA-2500 Section A with existing and proposed levels<br>• DA-2040 RD Watt Elevations<br><br>The following updated landscape plans are attached for clarification of retaining wall details;<br>• Landscape Plan (L-110)<br>• Retaining wall sections with proposed materials (L200-203). |
| **3.** Further assessment is to be undertaken regarding the predicted overshadowing and amenity impacts generated in the central courtyard between the new faculty building and existing RD Watt Building, and how the amenity of this space is proposed to be enhanced to encourage throughout the day. | **Campus Domain Context:** In addressing the amenity of the courtyard, it is important to first identify the function of the courtyard between FASS and RD Watt, as well as the adjoining primary campus domain feeder of Science Road.<br><br>The courtyard between RD Watt and the FASS Building is designed to act primarily as a circulation and entry space to and between both buildings. This is a secondary space to the primary campus domain spine of Science Road which currently serves as both principal pedestrian connections to all buildings fronting Science Road as well as a vehicle feeder for services, emergency vehicles and a variety of small surface parking areas.<br><br>The CIP Concept Landscape Plan (SSD 13_61123 approved on 16 February 2-015), prepared by Clouston, shows the space between RD Watt and the rear future building site (now proposed as FASS), as a very narrow space principally serving as a connection between buildings and with limited landscape opportunities. |

| SSD 7081 – FASS BUILDING | |
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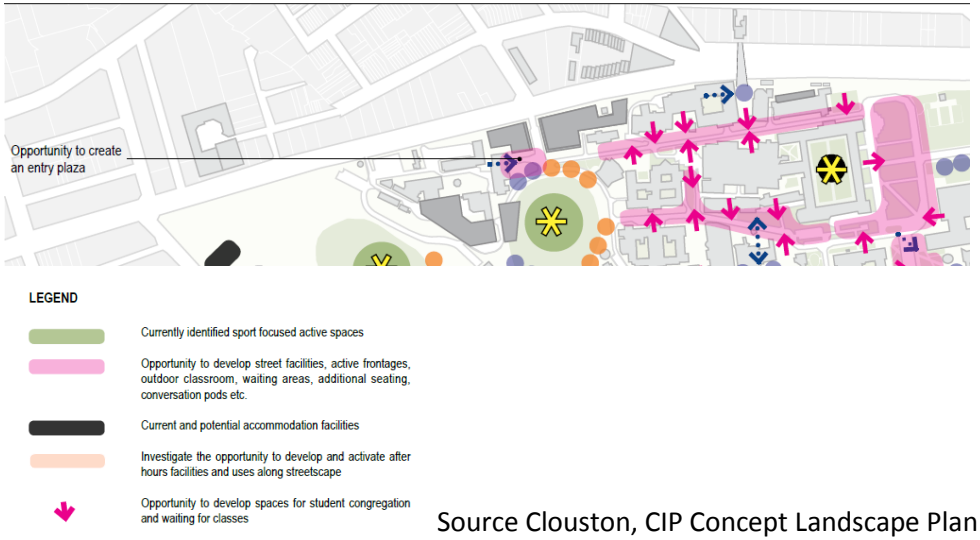
| **DPE ISSUE** | **USYD PROJECT RESPONSE** |
| | ISSUES, OPPORTUNITIES AND CONSTRAINTS - ACTIVE AND PASSIVE SPACES<br>  <br><br>Source Clouston, CIP Concept Landscape Plan<br><br>Opportunities for the future importance and function of Science Road are well articulated by the campus domain strategy being undertaken by international urban designers Gehl, who conclude the following (copy of Strategy at Appendix 1.07):<br>• A busier and more important east-west route when key new buildings arrive.<br>• A road that prioritizes pedestrians and puts limits on vehicle access for a safer route for pedestrians.<br>• An area with an improved evening experience through changes to the campus landscape, lighting and supportive building functions. |

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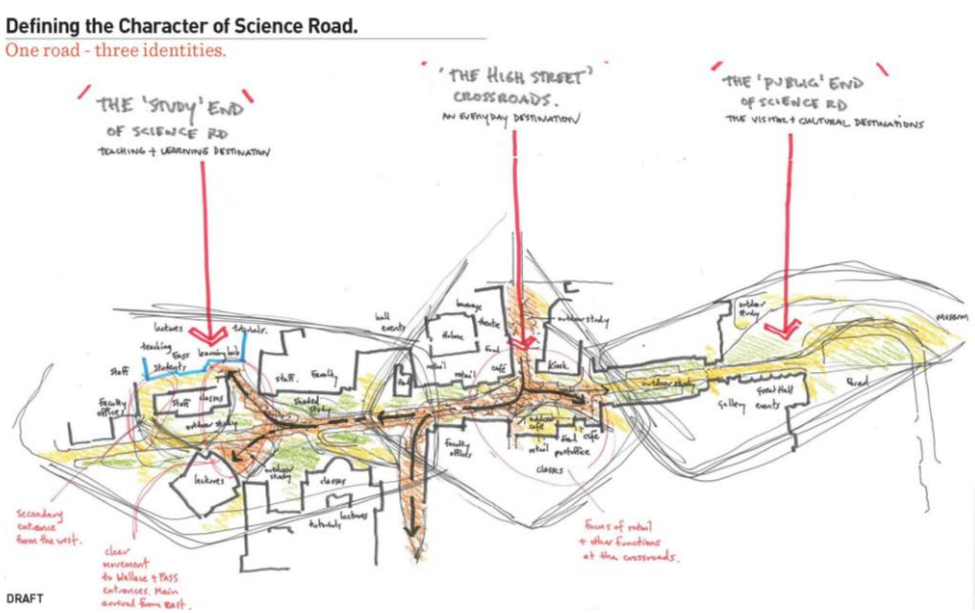
| **DPE ISSUE** | **USYD PROJECT RESPONSE** |
| | • Buildings that have simpler and clearer entrances that support universal access and easy navigation & wayfinding.<br>• A precinct where adjacent buildings focus on Science Road and open up and better express their function and identity.<br>• A pedestrian route that invites for much more outdoor life and activity.<br>• An area that strengthens its green landscape by allowing people to better access and enjoy up-close.<br>• An area that successfully combines indigenous and other cultural heritages as an integral part of the landscape.<br>  |

| SSD 7081 – FASS BUILDING | |
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| **DPE ISSUE** | **USYD PROJECT RESPONSE** |
| | **Courtyard Design:** Having established that the internal courtyard between FASS and RD Watt serves primarily as a pedestrian connector for specific users and visitors to FASS and RD Watt buildings, the design of the courtyard has been deliberately kept largely open in order to allow the movement of people into both buildings. The courtyard is designed as a spine with 2 components on the south side of the FASS building.<br>a) The East courtyard is the principal pedestrian thoroughfare, providing an accessible pedestrian route from Science Road (east) that takes advantage of the higher road topography.<br>b) The West courtyard is a secondary lower and more spatial entry courtyard which also provides controlled periodic maintenance vehicle access. The southern elevation of FASS, which partly frames the courtyard, is setback from Science Road and is not visually prominent from the Science Road streetscape. Due to the significant east-west sloping topography of the site and Science Road, this courtyard is also framed by the RD Watt building, the Lecture Theatre function of lower FASS levels, and by a stair connection to the upper courtyard level.<br><br>The façade of the Lecture Theatre also influences the courtyard design and environment. Ongoing design development and feedback with the faculty user groups has confirmed that the original glass façade to the proposed Lecture Theatre will be detrimental to the privacy, study environment and function of the Theatre, and consequentially an enclosed 'private' teaching environment is required. The Theatre is now also required to be used for digital cinema projection, which would not be possible with the glazed façade. Consequently, a solid façade is proposed which also creates an opportunity to integrate an external public artwork piece or interpretational installation to further encourage awareness of Aboriginal values, art and culture. |

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| **DPE Issue** | **USYD Project Response** |
| | **Courtyard Amenity:** The design of the east and west courtyards has been further developed to integrate the heritage landscaping with the Wingara Mura landscape approach to create a socially, culturally, historically and contextually responsive outcome layered with meaning and resonance.<br><br>In the east courtyard, the planted treatment to R D Watt, which currently exists along the southern and to a lesser extent western sides of the building, have been extended around to the eastern and northern sides to continue the heritage landscape curtilage around RD Watt. Openings in the curtilage allow connections between RD Watt and FASS. The design of the east courtyard references the pre-development landscape of Sydney Sandstone Ridge associated with the former Orphan School Creek with its stone floor materiality, and reference to former tributaries in the expressed meandering drainage grating detail which runs down to the lower west courtyard. A central feature tree and seating have been integrated into the courtyard as a breakout seating area.<br><br>The East courtyard is designed to mitigate wind issues by integrating an awning connection between the two buildings and providing landscaping to the lower courtyard, as recommended by the Wind Consultant.<br><br>In conclusion, the setting of R D Watt and the east courtyard amenity as a pedestrian connection has been considerably enhanced by the proposed development.<br><br>The west courtyard references the pre-development landscape of Sydney Sandstone Gully Forest associated with the former Orphan School Creek with its grove of trees and paving material, extending meaning and memory reference of the site's heritage from the upper courtyard to the lower.<br><br>Windtech has reviewed the updated landscape design and has determined that with the inclusion of additional landscaping the amenity of the courtyard is considered to be satisfactory. |

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| **DPE Issue** | **USYD Project Response** |
| | **Landscape Concept:** The landscape design holistically aims to incorporate the principles of the University's 'Wingara Mura Strategy' which aims to integrate the inclusion of Aboriginal values, art and culture in all developments. The site offers a unique opportunity to reflect the landscape of the past through a variety of strategies including:<br>• Referencing the pre-development landscapes of Sydney Sandstone Ridge and Gulley Forest. Specifically, the design and materiality of the upper (level 2) courtyard references the Sydney Sandstone Ridge landscape and that of the lower (level 1) forecourt design references the Sydney Sandstone Gully Forest.<br>• Interpreting the Orphan School Creek which originally flowed through this part of the campus in the form of a linear drainage element and ground pattern which runs from the upper (level 2) courtyard into the lower (level 1) forecourt.<br>• Using endemic plant species representative of the Sydney Sandstone Ridge and Gully Forest along the Parramatta Road frontage north of the FASS building.<br><br>The shadow diagrams accompanying the SSD application demonstrate that the courtyard spine will provide a satisfactory range and variety of daylight and shade throughout the year. The west courtyard provides seating both in daylight and in the shade year round. The east courtyard provides a generous entry volume and Wi-Fi enabled shaded and sunlit seating throughout the year to encourage pedestrian use.<br>Refer to the additional Solar Analysis diagrams enclosed:<br>- DA9200 Mid-Summer (21 Dec) hourly from 9am-5pm.<br>- DA9201 Mid-Winter (21 June) hourly from 9am-5pm.<br>- DA9202 Equinox (21 Sept) hourly from 9am-5pm. |

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| **DPE Issue** | **USYD Project Response** |
| | The main building entry from Science Road (South East) invites the visitor into a generous and permeable double volume space, layered with memory and meaning of previous topography. SK304 and 305 illustrates the 7m high double volume building setback to create an activated courtyard space between RD Watt and FASS entry level 2. This robust formal expression supports a low maintenance environment. Visual and physical permeability is provided to and from the FASS interiors to strengthen social connectivity and provide passive surveillance, while encouraging activity in technology-enabled fixed outdoor seating as an extension of the internal workplace. |
| **Landscaping and Public Domain**<br>**4.** The Grounds Conservation Management Plan (GCMP) grades the existing mature trees and the landscape setting along the RD Watt Building's frontage to Science Road as 'exceptional'. The Department requires further consideration be given to the provision of additional significant tree plantings, as recommended in the Heritage Impact Statement, to compensate for the changes to the existing landscape setting and loss of mature trees on Science Road. | The landscape significance of Science Road within the campus lies in its overall landscape setting as created by the mature trees lining the road and the building frontages behind. As such, it is the avenue effect created by the trees not individual trees themselves which are significant.<br><br>Only 1 mature tree is proposed to be removed along Science Road (T230) to allow for the new accessible pedestrian pathway to the FASS building. A number of options have been explored with the arborist to avoid the removal of any of the significant trees but the existing levels and proximity of the trees to each other does not allow an accessible pathway of any reasonable width to be provided without removing at least one tree. The existing tree is at a higher topography than Science Road so trying to maintain existing levels around the tree would mean stepping up from Science Road and then stepping down to the level 2 courtyard which would not permit an accessible pathway.<br><br>A replacement Brushbox tree at mature size (800 litre pot size) will be planted along Science Road immediately north of the new accessible pedestrian pathway. Refer to Oculus Drawing Landscape Plan (DA-L-100), extract overleaf. |

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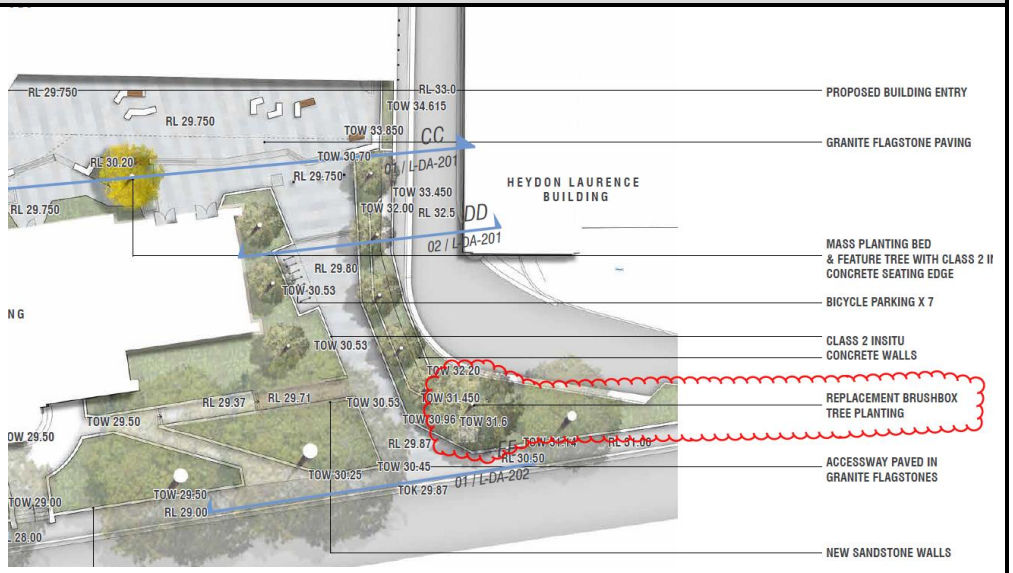
| |  |
| **5.** Opportunity exists to better integrate the landscape and public domain interface between the proposed development and the existing Heydon-Laurence Building to the east. Further, the approximate three metre high retaining wall proposed along this common boundary would limit any future potential to easily link the public domain of the adjoining sites. | Reference is made to the Clouston Concept Landscape Plan (refer to plan extract illustrated in item 3 above) showing the intent for the courtyard as a pedestrian connection. The plan defines the courtyard space between FASS & RD Watt as opportunity to develop spaces for student congregation and waiting area for classes.<br><br>Science Road provides the principle pedestrian connection between Heydon-Laurence, RD Watt and other existing buildings whose collective entry points are off Science Road. The lane to the west of Heydon-Laurence building is a back of house maintenance road frequently occupied by trucks and delivery vehicles both to the building and the switch room to the rear (north) of the building. The Heydon-Laurence building does not provide any active or functional address or use to this service laneway. Nor are there any University plans to alter this arrangement. |

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| **DPE ISSUE** | **USYD PROJECT RESPONSE** |
| |  <br>South and west elevation from south-west<br>  <br>Basement floor on west elevation<br>  <br>1992 addition from north east<br>  <br>Part of north elevation (the loading dock) from north<br>***Source:*** Heydon-Laurence Conservation Management Plan<br>Consequently, the University does not support the proposition for an internal courtyard connection to the west façade of Heydon-Laurence, preferring instead to pursue the Gehl campus domain strategy for the future of Science Rd as a principal pedestrian feeder. |

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| **DPE ISSUE** | **USYD PROJECT RESPONSE** |
| **6.** Noting the City of Sydney's comments and having regard to the demolition of the former Substation No.54, the Department requests the landscape and public domain design be revised to accommodate and interpret the associated Parramatta Road gate and former stairs that led to Substation No.54. | The former stairs will be interpreted in the landscape design by means of corten steel edging defining the outer edges of the stairs and a band of lower planting within such that the alignment of the former stairs is clearly visible from both the FASS building and Parramatta Road.<br><br>The existing gate on Parramatta Road will be retained.<br><br>The footprint of the former substation will be interpreted by means of a corten steel band and feature paving within the courtyard area. A plaque will inform the former location of the substation and associated items as recommended in the Heritage Interpretation Strategy prepared by Urbis. |
| **Other**<br><br>**7.** In accordance with condition B18 of the CIP, all bicycle parking and associated end-of-trip facilities are to be provided in accordance with the City of Sydney's policies and controls. | Requirements for onsite bicycle parking for individual buildings are guided by the Sydney DCP (SDCP) which requires one bicycle space each for every 10 students and 10 staff respectively. The proposed development does not involve additional student or staff to the Camperdown campus as the development relocates various existing facilities into one consolidated new building. Consequently, the SDCP criteria is not applicable in this instance.<br><br>Notwithstanding, the University's *Sustainable Transport and Mobility Plan* (STAMP), which integrates the campus' mobility provision as a whole, identifies some 1,700 bicycle spaces, 146 showers and 422 lockers available in the campus. A copy of the STAMP was included within the SSDA submission (Appendix V of the EIS document).<br><br>The FASS building will provide the following end of trip facilities in addition to the University's STAMP commitments. Note the FASS building does not provide a permanent working population of staff and students – building occupants will vary throughout the day in accordance with lecture schedules. |

## SSD 7081 – FASS BUILDING

| DPE ISSUE | USYD PROJECT RESPONSE |
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| Population (Peak) | Total | |
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| Staff | 254 | |
| Students | 906 | |
| **Bike Parking Type** | **Total** | **University requirements** |
| Staff | 26 | Provide bicycle parking for 10% of FTE.<br>At least 50% of bicycle parks to be undercover. *(13)* |
| Students | 26 | Provide bicycle parking for 3% of peak number of students.<br>At least 50% of bicycle parks to be undercover. *(13)* |
| **Showers** | **Total** | **University requirements** |
| Staff | 4 | Provide shower facilities for at least 1% of FTE. |
| Students | - | No specific requirement. |
| **Lockers** | **Total** | **University requirements** |
| Staff | 40 | Provide storage lockers for 10% of FTE. *(26)* |
| Students | 26 | Where bike racks are specified, provide one locker per student bicycle park. *(26)* |

## 2. USYD Response to Office of the Government Architect

| SSD 7081 – FASS Building | |
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| **OGA Recommendations** | **USYD Project Response** |
| **1.** Development of a **holistic campus wide public domain, landscape and heritage strategy** that reflects a cohesive approach to the future development of the campus, and the creation of a better-connected pedestrian environment. Greater emphasis on the relationship between the built form and public domain would support the University's interests as a world-class facility. | The University has already engaged international architect and landscape/public domain specialist **Jan Gehl** to inform its strategy of delivering a connected campus through the development of a Public Realm Strategy and Urban Design Principles. The Study has provided principles both for the Camperdown-Darlington campus, and also for connections to other destinations in the surrounding precinct (Broadway, Camperdown, SLHD, Eveleigh, Redfern etc…).<br><br>The Gehl Principles incorporate the following:<br>1. **Knowledge & Innovation for All**… *allowing for a global & local focus*<br>2. **Cultures of Collaboration**…*engagement at a global & local focus*<br>3. **A Unified Campus Landscape**…*unified in vision, strategy & delivery*<br>4. **A More Legible and Accessible Campus**…*simpler - easier to navigate and better connected with its neighbours*<br>5. **A More Polycentric Campus**…*a unified campus with many hearts*<br>6. **An Indoor & Outdoor Learning Landscape**…*making the most of Sydney's climate & lifestyle*<br>7. **A More Inclusive and Welcoming Campus**…*breaking down the barriers physically & metaphorically*<br><br>The development of these Principles includes engagement with other stakeholders to inform the development of strategies which will connect the campus internally and externally.<br><br>Importantly, this approach seeks to invite the community in to the University. The University has identified Broadway, Carriageworks, ATP, Mirvac development and future CBA community, as well as connections to Redfern Station and the Royal Prince Alfred Hospital / Sydney Local Health District. |

| SSD 7081 – FASS BUILDING | |
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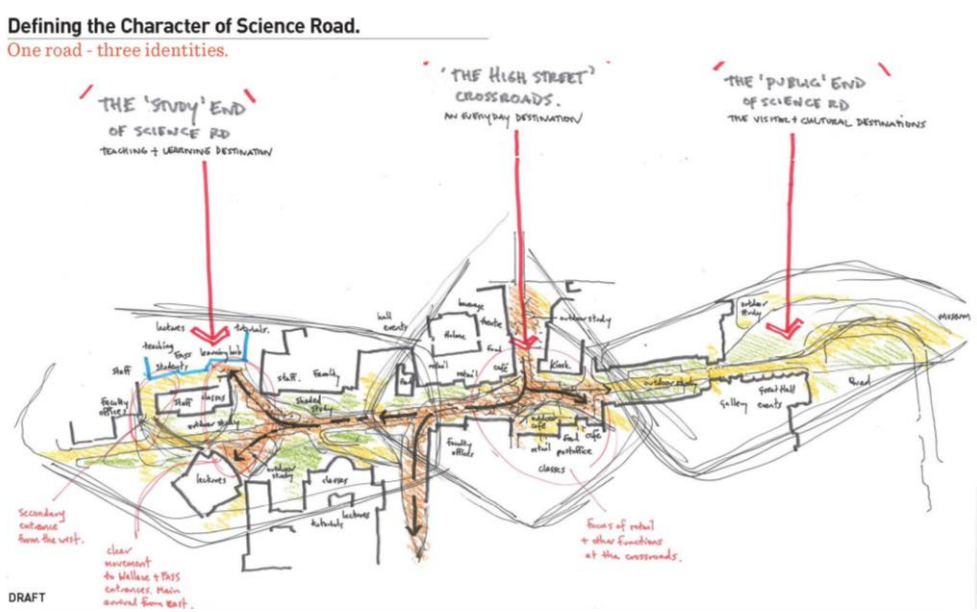
| **OGA RECOMMENDATIONS** | **USYD PROJECT RESPONSE** |
| | Gehl has also referenced the Minister for Planning's approved Campus Improvement Program (SSD 13_6123) for the University's Camperdown-Darlington campus (the CIP), including the CIP Concept Landscape Plan prepared by Clouston. The Landscape plan addresses Landscape principles for the whole campus, and the CIP Life Sciences Precinct including the FASS site.<br><br>Gehl has provided an independent commentary on the Landscape Solution whilst referencing the above-mentioned CIP documents as well as future opportunities for Science Road (copy of Strategy at Appendix 1.07). Refer to this submission comments in response to DPE Issue 3 (page 6).<br><br>  |

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| **OGA RECOMMENDATIONS** | **USYD PROJECT RESPONSE** |
| | With regards to the OGC request for a heritage strategy, the University has already developed a Grounds Conservation Management Plan (GCMP) for the entire campus, prepared in close consultation with the NSW Heritage Council. The GCMP was prepared in parallel with the University's approved Campus improvement Program (SSD 13_6123) and is referred to in the SSD documentation for this FASS project. |
| **2.** An **increased setback** from the R. D. Watt building to improve the wind environment, enable improved solar access to the east-west link across the Life Sciences precinct, and deliver a more sympathetic heritage response. | Reference is made to this submission's response to, and definition of, the internal courtyard and Science Road campus domain – refer to this submission response to the same DPE Issue 3 on page 6.<br><br>The Clouston CIP Concept Landscape Plan (refer to plan on page 7) illustrates the primary intent for the courtyard as a pedestrian connection to and between both buildings, and as an opportunity to develop spaces for student congregation and waiting area for classes.<br><br>The FASS Building adopts an increased setback from the RD Watt than that proposed by the CIP building envelope for the Life Science precinct, and this site (SSD 13_61123 – drawing SSD-F-11). This setback will enable the landscape curtilage to be continued around RD Watt from its Science Road frontage as a more sympathetic response to its heritage context and significance. The setback provides a greater scale and announcement of the proposed FASS building entrance, and integrates seating and landscaping to strengthen the relationship and connection between RD Watt and FASS buildings. The increased setback therefore also facilitates improved direct solar access from the original CIP building envelope, and allows space for landscaping, and an awning between both buildings, to address site wind conditions (refer to details under OGA item 3 below). |
| **3.** That a **wind tunnel study** is conducted to quantify the wind effects of the proposal. | In response to this request Windtech has reviewed the updated landscape design and has determined that unusual wind patterns that would require more detailed wind tunnel testing is not expected for this project due to the extensive shielding of the subject development and relatively low rise form. |

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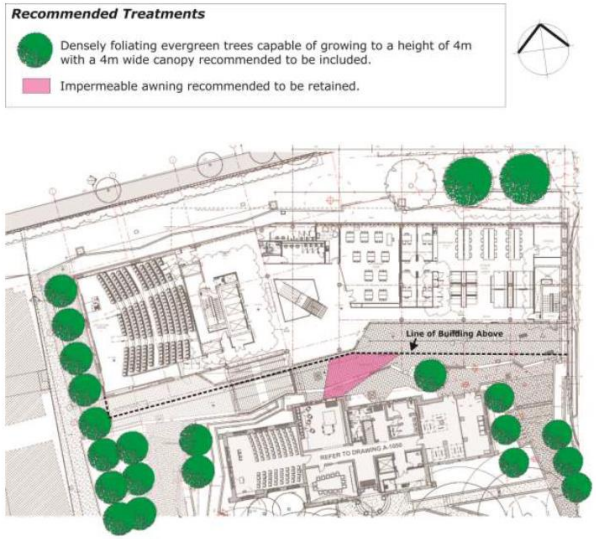
| **OGA RECOMMENDATIONS** | **USYD PROJECT RESPONSE** |
| | Windtech concluded that the inclusion of the additional tree planting along the western boundary of the site, and the western and eastern aspects of RD Watt will be effective in baffling any approaching winds to the forecourt area of the subject development. Furthermore, this layout will assist in helping to stagnate any down-washed southerly winds. The effect of down-washed winds off the southern façade to the forecourt below will be minimal given the height of the proposed development with respect to the RD Watt Building roof.<br><br>The Windtech report (Appendix 1.05) acknowledges the amended Landscape Plan which includes a considerable amount of additional tree planting along the western aspect of the site to mitigate potential wind effects (plan extract report below from Windtech report).<br><br>  <br>Figure 3b: Landscape Design with Recommended Treatments – Ground Level |

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| **OGA RECOMMENDATIONS** | **USYD PROJECT RESPONSE** |
| **4.** Further information is required to assess the design excellence of the proposed **façade and 'warm interlayer'**. Submission of a sample board and 1: 20 typical cross sections is recommended. | The FASS façade has been designed as a warm coloured sophisticated skin comprising a simple well detailed, double glazed curtain wall system with integrated bronze coloured micro mesh interlayer and expressed mullion blades, which provides the thermal protection required and a warm coloured façade in response to the earthy masonry tones of the RD Watt Building. This façade will express itself differently throughout the day – shimmering in the sunlight and glowing after sunset.<br><br>The facade provides the University with a robust and durable building which is low maintenance and will retain its visual presentation over a long period of time. Refer to 1:20 typical North Façade Section drawing SK-410.<br><br>The image below is a reference building Europaallee in Switzerland which illustrates a similar warm façade expression albeit in gold, whereas the FASS building façade finish will be in bronze.<br><br>  |

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| **OGA RECOMMENDATIONS** | **USYD PROJECT RESPONSE** |
| **5.** Further detail of the **entry awning** is required to ensure no negative visual or material impacts on the R.D.Watt building. | The amended awning design between FASS and RD Watt presents the awning designed as a folded out plane from the warm mesh FASS façade supported on fabricated structural downpipes, located away from the RD Watt façade. A clear glazing plane continues the weather coverage to the RD Watt façade with a light wall connection to respect the heritage RD Watt masonry façade. Refer to SK306, extract below.  |

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| **OGA RECOMMENDATIONS** | **USYD PROJECT RESPONSE** |
| | The amended awning design therefore minimises physical connection and impact to the RD Watt building, with structural support provided independent of the heritage building, and only minimal intervention and fixing required to the heritage façade.<br><br>The awning is contemporary and consistent with the façade articulation of the proposed FASS building, but its glazed materiality ensures minimal visual impacts to the northern façade of the heritage item.<br><br>A Heritage Impact Statement was submitted with the application. The HIS supported provision of the awning in principle and the proposed detailed designs are consistent with the recommendations of the HIS, which required that the awning should be designed to be largely reversible (i.e. can be removed with minimal intervention or repair to the building fabric). |
| **6.** Targeting a formal **certification against an accredited ESD rating** scheme would demonstrate the University's commitment to achieving design excellence and industry best practice. | The University notes, by contrast, the City of Sydney's submission that states:<br>*"The University of Sydney's Sustainability Framework is considered acceptable in lieu of industry tools. The University used the same rating system for another recent proposal (LEES1 proposal for 8 storey science, teaching and research building facing City Road) and documentation provided was strong compared to that commonly submitted to the City by the private sector when the city is the consent authority."*<br><br>The University has developed The University Sustainability Framework (SFW), a bespoke ESD rating tool for major construction projects. The University has conducted a comparison of the SFW to Green Star and it demonstrates that the SFW aligns with greater than 75% of the Green Star initiatives of the Design & As-built v1.1. Further, the SFW exceeds the initiatives set-out in Green Star through 13 other environmental initiatives and targets that are specific to the needs of the University.<br><br>The SFW is integrated in the University's Capital Projects Gateway process. |

| SSD 7081 – FASS Building | |
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| **OGA Recommendations** | **USYD Project Response** |
| | The Gateway process consists of 6 phases and is a structured process which examines and confirms critical decision points from project request through to project realisation. This ensures the aspiration target of the SFW is committed and appropriately costed throughout the project cycle from design, construction and as built / hand over.<br>The SFW and associated documentation are required to be submitted and signed off by the University at relevant points in the process. Submissions are peer reviewed by credible ESD consultants. |
| **7.** Consider **relocation of the GTS lecture theatre** to enable the location of active programs along the full length of the southern façade and in particular at this key junction of north/south and east/west running pedestrian pathways. | Please refer to this submission response to the function of the courtyard, as detailed under the same DPE Issue 3 (page 6).<br>In terms of functional location, many different locations were tested for the Lecture Theatre to determine the best location, proposed in its current Western location. As a student space, it primarily needs to be on Levels 1 and 2 as these are the Teaching and Faculty Hub levels and Levels 3-6 are academic office levels. The site falls 8 meters from east to west and locating the ground floor of the Lecture Theatre from the West allows courtyard access from both Levels 1 and 2. If located only from the east courtyard level, the Lecture Theatre would require significant excavation and would be inaccessible from the lower level 1 (west). On the East it's added width would remove the current Level 2 East courtyard cantilever and double volume entry space, significantly reduce the courtyard width and eliminate courtyard activation.<br>The primary pedestrian and accessible approach to the FASS and RD Watt buildings will be from Science Road from the east, feeding into a connector courtyard, and activated by landscaping, seating and visual connection into the FASS Building. A double volume internal stair within the FASS façade will provide visual activation along the building transition to the lower courtyard and access to the lower Level 1. |

| SSD 7081 – FASS BUILDING | |
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| **OGA RECOMMENDATIONS** | **USYD PROJECT RESPONSE** |
| | The design of the Lecture Theatre facade has been changed to address University stakeholder concerns relating to sunlight penetration and mitigation of external distractions to student occupants attending lectures, by proposing a solid façade treatment. Notwithstanding, this solid wall presents the potential location for a future public art location. Integrated into the updated Lecture Theatre façade design is a proposed strong reference to the ridge and gully of the former Orphan Creek. The Level 2 floor stone materiality runs from the courtyard through the building where it folds down externally to form the north façade cladding. The stone cladding then wraps around the west façade to the south to angle down to ground at Level 1 as a strong reference to transition from the ridge to the lower gully of the former Orphan Creek, providing contextually responsive meaning and resonance to students, academics, visitors and the site.<br><br>A relief aboriginal artwork integrated into the stone façade is being investigated as a point of engagement, interest and delight when viewed from Science Road, along the west pedestrian walkway and from the south, adding character to the urban fabric, and thereby contributing the streetscape and campus domain of Science Road. |
| **8.** The recommendations advanced by the Arboricultural Impact Assessment are supported. Reconsider the scope of landscaping works and alignment of the eastern entry path to preserve the health of significant trees. | A number of options have been explored with the arborist to avoid the removal of any of the significant trees but the existing levels and proximity of the trees to each other does not allow a pathway of any reasonable width to be provided without removing at least one tree. The existing tree is at a higher level than Science Road so trying to maintain existing levels around the tree would mean stepping up from Science Road and then stepping down to the level 2 courtyard which would not permit an accessible pathway. Only 1 mature tree is proposed to be removed along Science Road (T230) to allow for the new pedestrian pathway to FASS building.<br><br>A replacement Brushbox tree at mature size (800 litre pot size) will be planted along Science Road immediately north of the new accessible |

| SSD 7081 – FASS BUILDING | |
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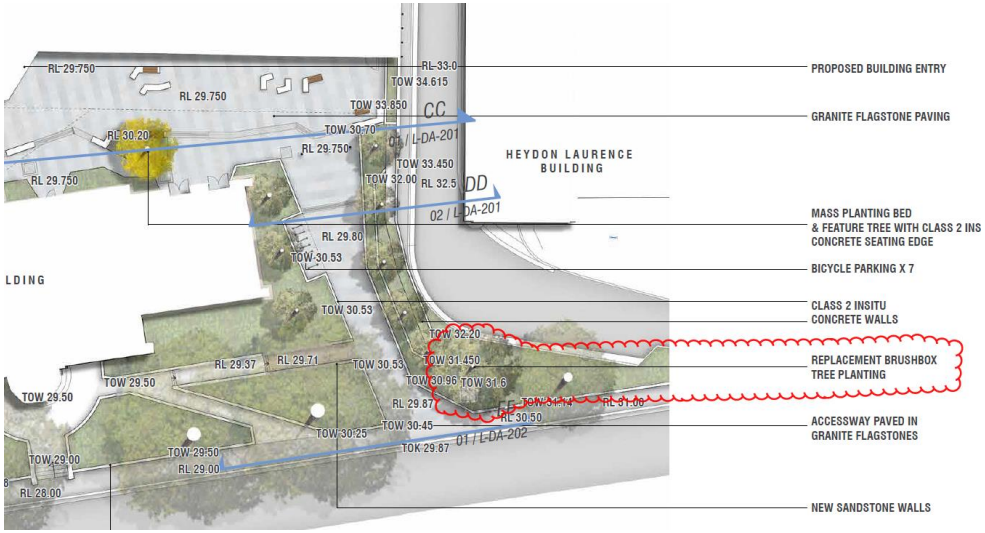
| **OGA RECOMMENDATIONS** | **USYD PROJECT RESPONSE** |
| | pedestrian pathway, as part of the proposed landscape works to offset the loss of the existing tree and infill this part of the avenue of trees. Refer to Oculus Drawing Landscape Plan (DA-L-100) and the plan extract below.   |

# 3. USYD Response to City of Sydney Council Submission

| SSD 7081 – FASS Building | |
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| **CoS Issue** | **USYD Project Response** |
| **Urban Design**<br>**1.** <u>Architectural expression</u><br>Opportunities are present to articulate the Parramatta Road façade of the FASS Building further. The building's Parramatta Road elevation is approximately 70m long and has high reliance on the glazed curtain wall facade system providing interest. The building will be highly prominent from Parramatta Road and Arundel Street. Folds, steps, a break or alternating colour in the facade of the building, particularly when viewed in the westerly direction, would assist in its presentation. | The FASS building is a background building to RD Watt set in its landscape. The form of the building integrates into the immediate landscape so as to only reveal parts of the building at one time, rather than the whole. The key elements of the landscape design include:<br>• Four large sized Fig trees planted along the Parramatta Road frontage to screen the building and provide additional amenity.<br>• Retention of the existing fence along Parramatta Road<br>• Retention of the existing hedge along Parramatta Road from the Ross St Gates up to the existing pedestrian gate.<br>• Mass planting of the sloped area between the existing fence and the building.<br><br>The building's Parramatta Road façade is screened behind four proposed tall new trees to allow the building to present as sleeving out from behind the northern boundary landscaping when viewed in the westerly direction. From the east the cantilevered building appears sleeve out of the same landscaping to float over the existing boundary hedge along Parramatta Road, reinforcing the FASS building as a landscape backdrop building. |

| SSD 7081 – FASS BUILDING | |
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| **COS ISSUE** | **USYD PROJECT RESPONSE** |
| |  <br>Above: North East View looking west down Parramatta Rd.<br><br>The building's architectural expression lies in a simple singular, well detailed and sophisticated primary glazed skin, with expressed vertical mullions, that wraps around the two interlocking forms to generate its overall formal composition. This upper level skin has an integrated bronze coloured mesh to provide a warm presentation in acknowledgement of the warm masonry materiality of RD Watt. The expression of these interlocking forms lies in a highly articulated building section along Parramatta Road providing a setback top floor and deep cantilever over a sloping stone base. The stone references the ridge and gully of the former Orphan Creek and provides material variation. Clear low iron glazing to Level 2 creates a clear separation between warm mesh glazing and the stone base, while a long slot window provides articulation within the stone base at level 1.<br><br>A visual break has been designed within the bronze coloured upper façade as a clear low iron glazed deep cantilevered picture window, with expressed vertical fins, which provides long distant views down Parramatta Rd. |

| SSD 7081 – FASS BUILDING | |
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| **COS ISSUE** | **USYD PROJECT RESPONSE** |
| **2.** <u>Materials and finishes</u><br>The Department is requested to seek further details on the proposed mesh façade system for the FASS Building to satisfy itself that the elevations of the building can be adequately assessed. There seems to be no certainty in regard to the apparent aspiration for materials in the project. | The University's has adopted a building façade system comprising a bronze coloured fine mesh interlayer laminated into the double glazed curtain wall unit. This bronze colour is continued in the anodised mullion treatment to provide a singular, sophisticated, cantilevered textural skin that lowers to meet the ground and rises up again on the south, engaging its clear glass and stone base. |
| **3.** <u>Crime Prevention through Environmental Design</u><br>The Department is requested to form a view whether the commentary within the planning report satisfies the Stage 1 Campus Improvement Plan conditions for a Crime Prevention through Environmental Design (CPTED) Assessment. In this regard, a CPTED Report prepared by a qualified consultant is generally a more targeted assessment of actual medium-to-high risk criminal or anti-social issues within the local context based on empirical research, which then sits alongside recommendations that reduce the potential for these issues to occur within and around the development. It is the City's view that the commentary within the planning report is not sufficient. More succinct design approaches may emerge from expert analysis. | An assessment of the relevant CPTED principles has been carried out and included within the EIS – refer to the table extract below:<br><br>**TABLE 7** – CPTED ASSESSMENT PRINCIPLE — DESIGN RESPONSE/CONSIDERATION OF ISSUE<br><br>**(1) Surveillance**<br><br>**(a) Casual Surveillance** — Casual surveillance is promoted through the predominantly open layout of the building design with the central atrium, which allows for clear sightlines extending in all directions around the building. This is further enhanced by the extensive glazed curtain wall facades overlooking the central courtyard and Parramatta Road, allowing passive surveillance of these areas. The building design and layout incorporate some ground level active uses to reinforce positive street level design and encourage use of common areas to promote a sense of safety through activity. Common areas will be appropriately lit at night for surveillance. |

| SSD 7081 – FASS Building | | |
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| **CoS Issue** | **USYD Project Response** | |
| | **(b) Sightlines** | The predominantly glass façade reduces the potential for concealment by avoiding the creation of hiding spaces or blind corners.<br>Pedestrian entries and paths extending to and from the building are linear in nature and free of blind corners. Sightlines within and through public domain and spaces are preserved by low level planting to preserve visibility and avoid concealment. Low level lighting used at night will enhance visibility and not produce glare. |
| | **(2) Access Control** | Access to the building is through the main entry point at the southern façade of the building, demarcated by the double height awning connecting to the RD Watt Building. This centralised access limits the number of building entries, thereby increasing security of access. Out of hours, access will be provided by security tag only to relevant staff and students. |
| | **(3) Territorial reinforcement** | The building is sited within the University's Camperdown campus, a clearly demarcated space. The design of the FASS building itself and its landscaped surrounds delineates the building boundaries from the remainder of the campus. Clear delineation of space is achieved through a mix of landscaping treatments and finishes within the new Courtyard space. |

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| **CoS Issue** | **USYD Project Response** |
| | **(4) Space Management** Space management strategies include activity coordination, site cleanliness, rapid repair of vandalism and graffiti, the replacement of worn pedestrian and car park lighting, and the removal or refurbishment of decayed physical elements. The University has a dedicated grounds management team that manage all publicly accessible domain areas of the Campus. Where damage to the premises occurs the grounds staff are on call to manage all repairs as well as ongoing management of the grounds. Following completion of the FASS building the University will include management of the building surrounds as part of its' maintenance schedule. |
| **4.** Public Art<br>The proposal does not provide details with respect to incorporating public art into the buildings or the public domain. The EIS states that public art is required with all new buildings within the University. Details should be provided with the application to ensure that public art is integrated into the proposal at this stage. | The University has identified the southern façade of the lecture theatre as an opportunity to display public artwork. As this façade abuts the southern courtyard which represents the Sydney Sandstone Gully Forest (one of the principles of the interpretation of the Wingara Mura Strategy), the potential artwork is an opportunity to further integrate the inclusion of Aboriginal values, art and culture into this development.<br>The University is currently in discussions with artists to define and scope and execution of this artwork opportunity. |
| **Landscaping**<br>**5.** Tree Planting<br>A significant quantity of mature trees is being lost as a result of the Campus Improvement Masterplan across the University, including on this site. There is adequate space to plant additional large specimen trees, particularly along Parramatta Road, as part of the proposal. In combination with the above | Three large sized Fig trees are already proposed to be planted along the Parramatta Road frontage. An additional 4th Fig tree will be added on this side of the building to further screen the building and provide additional amenity. Being large sized trees at maturity, these Fig trees are shown as being planted at spacing that will provide a balance between short-term impact and allowing room for them to develop into mature specimens. |

| SSD 7081 – FASS Building | |
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| **CoS Issue** | **USYD Project Response** |
| comments regarding visual prominence from Parramatta Road, mature planting that provides some screening to the westerly view to the building should be considered. | This planting is also augmented by the proposed:<br>• retention of the existing hedge along Parramatta Road from the Ross St Gates up to the existing pedestrian gate; and<br>• mass planting of the sloped area between the existing fence and the building. |
| **6.** Interface with Heydon-Lawrence Road<br>Heydon-Lawrence Road to the east reaches levels of approximately 3m higher than the front courtyard to Level 2 of the proposed FASS Building.<br>The scope of works under the SSD DA are unclear, however, it seems there is an opportunity to improve the level change between the road and the site. The current proposal appears to be limited to some awkward terraces and a 3m high wall.<br>Further resolution is required to the interface with Heydon-Lawrence Road to the east, to ensure the level changes are well integrated into the landscape design, and that welcoming, safe spaces are created between buildings. | Refer to this submission's response to the same DPE Issue 5 at page 13.<br>The building and public domain levels have been carefully considered in order to provide maximum accessibility within the public domain. In particular, the eastern courtyard and pathway connect with level 2 of the FASS building, the R D Watt building and Science Road all at-grade.<br>The western forecourt space connects with level 1 of the FASS building, Science Road and the future Life Sciences Building all at-grade. However, the site has steep grade changes from east to west and these inevitably create some constraints in trying to link areas and result in some significant level changes within the public domain. One of these level changes occurs at the boundary between FASS and Heydon Laurence. Notwithstanding, this level change is minimised by treating this interface as a series of landscape terraces rather than a single visually dominant change in level. The key public domain connection between the FASS / RD Watt buildings and Heydon-Laurence is Science Road. Consequently the introduction of another internal courtyard connection further north into the west side of Heydon Laurence is considered neither to be necessary nor likely to be required in the future. |
| **Heritage**<br>**7.** Whilst there is an overall separation between the new FASS Building and the RD Watts Building, there is inadequate details about the proposed awning connection between the two | Refer to this submission response to the same OGA Issue 5 at page 22. |

<table>
<tr><th colspan="2">SSD 7081 – FASS Building</th></tr>
<tr><th>CoS Issue</th><th>USYD Project Response</th></tr>
<tr><td>buildings. Detailed drawings showing the overall design, materials, finishes, colours and fixings to the heritage building, prepared with input from a suitably qualified heritage consultant, should be submitted. The design and extent of the awning should be detailed to minimise visual and physical impacts on the RD Watts Building.<br><br>Despite the demolition of the heritage Substation No. 54 under a separate Part 5 Review of Environmental Factors, the SSD is requested to require the retention of the existing Parramatta Road gate and use of interpretation devices to demarcate the former stairs and structure.</td><td>Refer to this submission response to the same DPE Issue 6 at page 15.</td></tr>
<tr><td>Transport<br>8. The provision of an additional 26 staff bicycle spaces and 85 student bicycle spaces (in addition to that proposed by the GTA report) should be considered as a minimum.<br>It is recommended that numbers similar to what is required per Council's DCP be applied. This would require:<br><table><tr><th>Bicycle Parking Type</th><th>Total</th><th>Requirements</th></tr><tr><td>Staff</td><td>26</td><td>Spaces must be</td></tr><tr><td>Non-residential Visitor / Student</td><td>85</td><td>Spaces must be Class 2 or Class 3</td></tr><tr><td>End of Trip Facility</td><td></td><td></td></tr><tr><td>Showers with</td><td>13</td><td></td></tr><tr><td>Personal lockers</td><td>111</td><td></td></tr></table>Note: Australian Standard AS 2890.3:2015 refers to class 1 as class 'A', class 2 as class "B', and class 3 as class 'C'.</td><td>Refer to this submission response to the same DPE Issue 7 at page 15.</td></tr>
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| SSD 7081 – FASS Building | |
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| **CoS Issue** | **USYD Project Response** |
| **9.** The also recommends the preparation of a Green Travel Plan for the development. A Green Travel Plan would demonstrate that the site will encourage modal shift away from car use and to the use of Sustainable Transport options (for staff and students) such as walking cycling and public transport. | The University has prepared a Sustainable Transport and Mobility Plan (STAMP) and Sustainable Access Strategy, a holistic strategy on movements to and through the University's main Camperdown-Darlington campus. A copy of the STAMP report is found within EIS Appendix V - STAMP Report.<br><br>The STAMP prioritises active travel, walking and cycling to campus and details initiatives / strategies to achieve this. Main STAMP objectives are:<br>a. increases public transport and active travel uptake by staff and students;<br>b. improve health outcomes of students and staff living close to the University through active modes of transport;<br>c. manages car parking demand through appropriate pricing;<br>d. reduces vehicle movements through the University to improve amenity and ease congestion;<br>e. considers social equity requirements of community members with specific car parking, transport and mobility needs;<br>f. provides accessible, affordable and quality active transport infrastructure;<br>g. improves connections to the city's bicycle and public transport networks;<br>h. reduces vehicle carbon emissions by avoiding travel where possible.<br>i. promotes staff telecommuting; and<br>j. monitors, measures and reports on staff and student travel patterns.<br><br>The Active Planning section under the STAMP Infrastructure and Planning chapter identifies the location of bicycle parking and their associated connectivity with the wider cycle network between the campus and its surrounding road network. Further, the report documents:<br>• the availability, location and connectivity of other modes such as motorcycles, trains and finally car parking; and |

| SSD 7081 – FASS Building | |
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| **CoS Issue** | **USYD Project Response** |
| | • the University's progressive initiatives to encouraging trip reductions, i.e. working from home, telecommunication, work base learning etc.<br><br>In conclusion, the University's STAMP sufficiently demonstrates the availability of sustainable transport option for its users. |
| **Sustainability**<br>**10.** Construction Environmental Management Plan<br>Further detail on monitoring and reporting above and beyond that done by the Principal Certifying Authority as a standard part of inspections regime is requested such that the CEMP's ESD commitments are checked and recorded. | Agreed – recommended consent condition. |
| **11.** Waste and Materials<br>The *Demolition & Construction WMP* ESD commitments should be obligated by conditions of consent. The City suggests that any such condition refers to *"All standards in the ESD Report are to be implemented throughout the project"* or similar. | Agreed – recommended consent condition. |
| **12.** Water Conservation<br>There is inconsistency between Sections 3.3 and 3.3.2 of the ESD Report – in the later, use of rainwater for toilet flushing is not a clear commitment. A clear commitment to dual plumbing or other design solution to ensure toilet flushing by non-potable source (using the 110kl water tank that has been designed in) with mains potable back up should be provided. It is also unclear why the proponent is not opting for waterless urinals in Section 3.3.1. | The University confirms the following:<br><br>1. Waterless urinals are not proposed for the building as these are considered a maintenance issue for the University's Facilities Management team and a hygiene issue for education buildings which has large volumes of students who will use the facility on a daily basis. Urinals with a flow rate of 0.7 L per flush have been specified for the project which are considered to be water efficient and will reduce potable water consumption within the building.<br><br>2. The building will incorporate a water harvesting system that will capture rainwater from the Level 6 roof and fire test water expelled during maintenance tests. Non-potable water and potable water sources are to be installed to the Toilets, End of Trip facilities, Irrigation and Cooling Tower |

| SSD 7081 – FASS BUILDING | |
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| **COS ISSUE** | **USYD PROJECT RESPONSE** |
| | plant within the building. As such dual plumbing will be provided to these areas. The rainwater harvesting and reuse tank size has been optimised to 85kL based on additional water balance studies by the Hydraulic consultant. The water collected into this tank will serve irrigation, toilet and urinal flushing and cooling tower makeup demands. |
| **13.** Renewable Energy – Photovoltaics<br>A P.V. system is proposed and described as follows:<br>*"The array will utilise the area of the rooftop not used for plant and areas that fall below the planning height restrictions which is approximately 85m2. The final details of this system are subject to further design development."*<br>The size (expressed in kilowatt peak (kWp) of the p.v. system should be maximised – at present, as indicated on the roof plan, it is considered tokenistic. The cost of p.v. has fallen dramatically, the University has research and teaching expertise in solar energy / p.v., and the proposal needs to demonstrate the genuineness of its commitment proven technology. An array of capacity of approx. 40 kWp could readily be accommodated on the roof space available. A commitment to a system size should be locked down prior to consent. | Additional rooftop PV panels are now proposed to be incorporated on the roof level in direct response to a recommendation by the City of Sydney Council. However, in order to achieve maximum solar efficiency, the array panels need to be fixed at a 30-degree angle, and which will result in the panels protruding through the CIP envelope. Refer to this submission response to the same DPE Issue 1 on page 3.<br>Notwithstanding, the University notes that the *Sydney LEP 2012* Dictionary excludes attachment structures such as solar panels from the definition of *Building Height*, and consequently the solar panels can be accommodated on the FASS rooftop that marginally exceed the CIP envelope.<br>***building height*** (or ***height of building***) means:<br>(a) in relation to the height of a building in metres—the vertical distance from ground level (existing) to the highest point of the building, or<br>(b) in relation to the RL of a building—the vertical distance from the Australian Height Datum to the highest point of the building,<br>including plant and lift overruns, but excluding communication devices, antennae, satellite dishes, masts, flagpoles, chimneys, flues and the like. |
| **14.** Solar water heating options also exist in line with Sydney University strategic direction but is not indicated in the SSD. | Solar hot water was originally considered, but then omitted, from the design due to the entire system extending above the site's CIP envelope. Following the redesign of level 6 to reduce the overall building height (refer to DPE Item 1 on page 3), solar hot water is now able to be included within the design with only a nominal projection above the CIP envelope. Refer to sketch SK_302. |

## 4. USYD RESPONSE TO NSW HERITAGE COUNCIL

| SSD 7081 – FASS BUILDING | |
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| **HC ISSUE** | **USYD PROJECT RESPONSE** |
| **FASS Design Strategy**<br>**1.** The FASS proposal provides a clean separation between the heritage building and proposed new building but the courtyard does not demonstrate a sympathetic abutment to the rear (north façade) of the R.D. Watt Building. | Refer to this submission response to the same DPE Issue 3 at page 6. |
| **2.** The architectural relationship between the R.D. Watt Building and the FASS proposal needs further refinement, in terms of their internal spatial arrangements and relationship with the shared courtyard spaces; and further setback of the proposed FASS building's southern façade is needed to ensure an appropriate setting is retained around the R.D. Watt Building (refer to montage entitled *South Façade and RD Watt, viewed from Campus, Science Road*). | Refer to this submission response to the same DPE Issue 3 at page 6. and OGA Issue 2 at page 19. |
| **3.** The proposed FASS design presents a large, continuous bulk to Parramatta Road. A change of façade material, rhythm, and/or colour to this north façade and the setback upper floor would reduce the visual dominance of the proposed FASS building. In addition, further consideration should be given to materiality and articulation of the FASS façades to break up the monolithic warehouse appearance. | The FASS building is both background building to RD Watt and a well landscaped building. On Parramatta Road, the building presents as a landscape building so as to only reveal parts of the building at one time, rather than the whole. The façade is screened behind four proposed new Fig trees to allow the building to present as sleeving out from the landscaping when viewed from the west. From the east the cantilevered building appears to sleeve out from behind the Fig trees to float over the existing boundary hedge along Parramatta Road.<br><br>Its architectural expression lies in a simple singular, well detailed and sophisticated primary glazed skin, with expressed vertical mullions that wrap around the two interlocking forms a generate the overall form. This primary skin has an integrated bronze coloured mesh to provide a warm presentation in acknowledgement of RD Watt's warm masonry facade. |

| SSD 7081 – FASS Building | |
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| **HC Issue** | **USYD Project Response** |
| | The expression of these interlocking forms lies in a highly articulated building section along Parramatta Road providing a setback top floor and deep cantilever over a sloping stone base. This stone façade references the ridge and gully of the former Orphan Creek and provides material variation. Clear low iron glazing to Level 2 creates a clear separation between warm mesh glazing and the stone base, while a long slot window provides articulation within the stone base at level 1. Set within the bronze coloured façade is a clear low iron glazed deep cantilevered picture window, with expressed vertical fins, to allow long distant views down Parramatta Rd. |
| **4.** The attachment of the large glass canopy link to the rear of the R.D. Watt Building has problematic technical and structural implications for that building. | Refer to this submission response to the same OGA Issue 5 at page 22. |
| **Public Domain Design**<br>**5.** The character and materiality of the courtyard spaces should enhance the architectural relationship between the R.D Watt Building and the FASS proposal. Further refinement of the courtyard spaces is required to improve the spatial quality. | Refer to this submission response to the same DPE Issue 3 at page 6. |
| **6.** The University of Sydney Grounds CMP (Jan 2016) notes that 'the architecture and planning of the place as a whole has been very well considered and generally well maintained. However, opportunities do exist to restore or reconstruct internal views to significant buildings in order to benefit their interpretation. There are also opportunities to restore/reconstruct visual axes and historic roadways in order to better explain the earlier, historically significant phases of development.' (p119) | The east west axis of Science Road is of high heritage significance, and is retained in the subject proposal with additional landscaping works proposed to enhance the setting of the RD Watt Building and in conjunction with the proposed FASS building. There are no additional historical significant axes to be reinstated relevant to the proposal.<br>Views from Science Road to the RD Watt and adjoining Heydon-Laurence buildings are retained and the subject proposal further activates and enhances the rear of the RD Watt Building through creation of an internal courtyard space, while currently the area is used as a back of house/ utility area. |

<table>
<tr><th colspan="2">SSD 7081 – FASS BUILDING</th></tr>
<tr><th>HC ISSUE</th><th>USYD PROJECT RESPONSE</th></tr>
<tr><td>7. The Heritage Impact Statement must address how the public domain design proposal will enhance and reinstate the landscape character of the exceptionally significant Science Road Character Area and approach to the R.D Watt Building (refer to Grounds CMP policy nos 18 and 20 below).<br><br>Policy 18 (Ground CMP)<br>Significant views to and from the expanded curtilage and internal views within the University Grounds (Science Road) should be retained and if possible enhanced.<br><br>Policy 20(Ground CMP)<br>As opportunities arise components of the place could be restored/reconstructed to date/configuration indicated subject to the qualifications indicated (in the table below):<br><table><tr><th>Element</th><th>Date</th><th>Qualification</th></tr><tr><td>Science Road, Western Avenue, Fisher Road and Manning Road</td><td>N/A</td><td>Adjust landscape to show significant buildings to their best advantage and to enhance internal view lines</td></tr></table></td><td>The submitted Heritage Impact Statement addressed all relevant policy in the Grounds CMP including the noted policies 18 and 20. The proposal retains key views and vistas from Science Road to the RD Watt and Heydon-Laurence buildings. Within the Grounds CMP only the axial vista east and west along Science Road is relevant to the subject proposal. The character of this is largely unchanged by the subject works; the historic character remains, as does the avenue of plantings, albeit with the loss of one significant tree planting which has been separately assessed by the arborist. Various options were considered and removal is mitigated by the provision of a replacement Brushbox tree at mature size (800 litre pot size).<br><br>Detailed landscape plans have been prepared by Oculus. The proposal retains significant tree plantings and the landscaped setting of the heritage item, with mass planting in front of the building; however it is noted that the extant garden beds are not original. Landscaping is sympathetic and maintains views to the principal façade from Science Road.</td></tr>
<tr><td>8. Consider replacement of significant tree removed from Science Road, to retain the line of trees that define the significant Road.</td><td>Refer to this submission response to the same DPE Issue 4 at page 12.</td></tr>
<tr><td>R.D. Watt Building (A04): building fabric survey and digital photographic archival recording<br>9. As per the conditions of consent for SSD application no. 6123 (condition nos B13-B14), ‘the building fabric survey must include a façade condition survey and a schedule of internal and external conservation and repair works; and the digital archival recording including the building and its curtilage.</td><td>A fabric survey was prepared and submitted with the SSDA submission, which detailed required internal and external conservation works incorporating measured drawings and elevations and site photos.<br><br>A separate archival recording was also submitted in accordance with the conditions of consent and Heritage Council guidelines for digital recording.</td></tr>
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| SSD 7081 – FASS Building | |
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| **HC Issue** | **USYD Project Response** |
| The measured survey and digital recording should provide the graphic base for recording, analysis and conveying information. Include background documentary research, structural archaeology and other specialist investigations. | |
| **Interpretation Plan**<br>**10.** The Heritage Council encourages the University to seek its comment on the Interpretation Plan prior to lodging the EIS for the SSD application no. 7081. | An Interpretation Plan was included with the SSDA submission which incorporates interpretation within built form and media to communicate the following identified significant themes:<br>• Beginnings of Agricultural Education; and<br>• Science and Technology.<br>Interpretation is proposed as part of the landscaping of the site and in central circulation spaces, in publically accessible areas. In addition, public art is proposed which will also assist to interpret the sites indigenous values, in accordance with the *Wingara Mura-Bunga Barrabugu Strategy.*<br>Following approval, it is intended that a detailed Interpretation brief will be prepared to finalise recommended interpretation media. |
| **Ongoing dialogue between the University of Sydney and Heritage Council of NSW**<br>**11.** The Heritage Council invites Mr Greg Robinson, Director, Campus Infrastructure Services to present on the subject of The University of Sydney's CIP (SSD 6123). | **Agreed and completed:** The Director CID Greg Robinson presented the university's CIP and future projects to the Heritage Council, HC Parramatta offices, on Thursday 8 September 2016. |

## 5. USYD Response to Office of Environmental Heritage

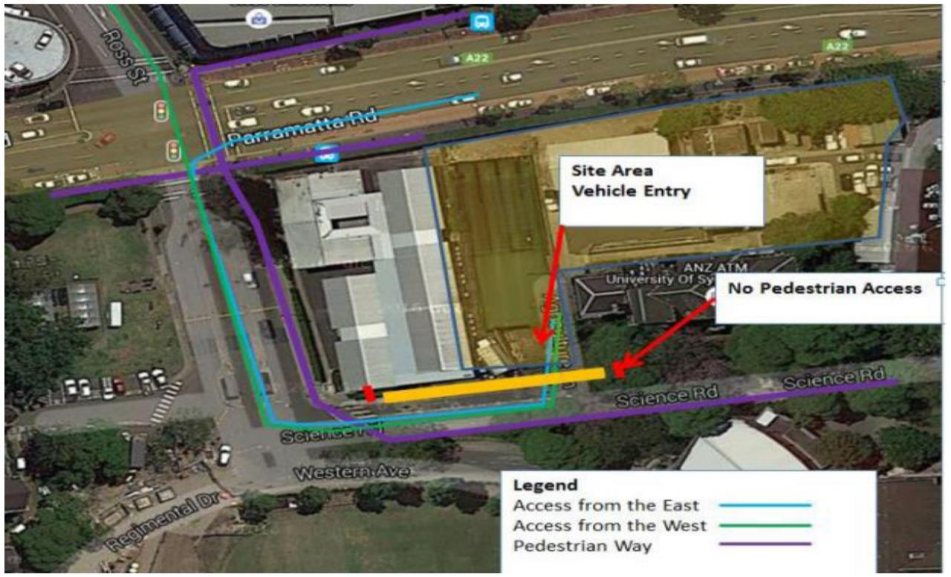
| SSD 7081 – FASS Building | |
|---|---|
| **OEH Issue** | **USYD Project Response** |
| **1.** After reviewing the relevant documents, OEH's Greater Sydney Planning Team has concluded that the matter does not contain biodiversity, natural hazards or Aboriginal cultural heritage issues that require a formal OEH response. We have no further need to be involved in the assessment of this project. | **Noted** |

# 6. USYD RESPONSE TO TRANSPORT FOR NSW SUBMISSION

## SSD 7081 – FASS BUILDING

| TFNSW ISSUE | USYD PROJECT RESPONSE |
|---|---|
| **1.** Concern with construction vehicles accessing the site via Parramatta Road at Ross Street in the lane utilised by all Parramatta Road bus services. It is noted there is a bus stop positioned 27m from the intersection where these construction vehicles will be turning into the site.<br><br>Construction vehicles will have to merge into the bus lane, before the intersection so they can turn into the site. This may have an impact on bus operations in the corridor which is not adequately addressed in the TAIA or the Construction Management Plan (CMP).<br><br>Therefore it is recommended that an addendum to the TAIA is developed as part of the response to submissions that addresses the following additional criteria:<br><br>• Cumulative impacts associated with other construction activities;<br><br>• Anticipated peak hour and daily truck movements to and from the site anticipating that peak movement times for students will be avoided;<br><br>• A detailed assessment of how traffic and transport impacts during construction will be mitigated for any associated traffic, pedestrians, cyclists and public transport operations. | GTA has reviewed this comment and provided a complete response within Appendix 1.06. A summary of their comments are as follows:<br><br>The FASS project will occur in line with the following campus projects:<br><br>• F23 Administrative Building (F23)<br>• Lees 1 Building (Lees)<br><br>The construction of FASS is scheduled to occur between November 2016 and May 2018 (i.e. 15 months) while those of F23 and LEES1 are expected to commence in December 2016 and have an expected completion date of May 2018, i.e. 18 months.<br><br>Comprehensive Construction and Traffic Management Plans (CTMP) have been prepared for all three projects and indicate the following construction traffic frequencies:<br><br>Table 1: Construction traffic movements by projects<br><br>Project / Excavation / Construction (core)<br>FASS / 15 vpd / 40 vpd (peak) – during concrete pours only; 20 vpd (average) – incl. 5-6 van deliveries<br>F23 / 13 vpd / 30 vpd (peak) – during concrete pours only; 15 vpd (average) – incl. up to 5 van deliveries<br>Lees / No excavation / 60 vpd (peak); 30 vpd (average)<br><br>Note<br>1. vpd = Vehicle Per Day |

| SSD 7081 – FASS BUILDING | |
|---|---|
| **TFNSW ISSUE** | **USYD PROJECT RESPONSE** |
| | The FASS CTMP indicates that the site will be accessed primarily from the west via Ross Street and from the north and east via Parramatta Road. The CTMP's for F23 and LEES1 each indicated that their site accesses are provided via City Road and are therefore independent of the intersection at question.<br><br>Based on the above, some 75% of the FASS construction access movements is anticipated to involve the Parramatta Road and Ross Street intersection, i.e. some 11 vpd during the excavation phase and subsequently 15 vpd during construction period with occasional concrete pours being up to some 30 vpd.<br><br>Based on the approved daily construction duration of 11 hours (i.e. 7am to 6pm), expressing the above traffic generation on an hourly basis would indicate the following projections:<br>• 1 vehicle per hour (vph) during the excavation phase<br>• 1-2 vph during the construction phase<br>• 3 vph during peak concrete pours.<br><br>A review of the Transport NSW database reveals that the bus stop (westbound direction) situated east of the subject intersection accommodates some 50 bus services during the peak periods (i.e. 7am-9am and 4pm-6pm). On this basis, the construction traffic represents some 4% of the peak hourly bus movements while during peak concrete pours, 6%. It is considered that although a truck would 'straddle' between two lanes during its entry manoeuvre to the site, the frequency at which it occurs is not anticipated to be averse to existing bus operation.<br><br>The CTMP also identifies the existing pedestrian desire lines surrounding the site (Figure 1 overleaf). |

| SSD 7081 – FASS BUILDING | |
|---|---|
| **TFNSW ISSUE** | **USYD PROJECT RESPONSE** |
| | Figure 1: Pedestrian Desire Lines<br>  <br>Traffic consultants GTA conclude that the CTMP has appropriately addressed the safety of pedestrians by introducing a 'No Pedestrian Access' zone in front of the site. However, it is considered that this can be further enhanced by appointing accredited traffic controllers at the Science Road marked pedestrian crossings, in particular during the university term, to provide additional protection to students travelling between Ross Street and Western Avenue. In addition, water-filled barriers may be appointed at the boundaries of trucks' travel path to provide physical deterrence to students/pedestrians from interfering with truck movements/activities. |

| SSD 7081 – FASS Building | |
|---|---|
| **TfNSW Issue** | **USYD Project Response** |
| **2.** The proponent should also consider liaison with State Transit Authority (STA) regarding bus stop operation, site access and movement of construction vehicles. STA (in consultation with the of Sydney City Council and subject to the relevant approvals) may consider temporarily moving the bus stop throughout initial stages of construction which involves significant excavation providing it would be safe to do so. | The University of Sydney and their Traffic Consultant GTA are willing to meet TfNSW if required to discuss any concerns but believe the response above addresses the issues raised. |

## 7. USYD Response to Roads & Maritime Services

| SSD 7081 – FASS Building | |
|---|---|
| **RMS Issue** | **USYD Project Response** |
| **1.** A Construction Traffic Management detailing construction vehicle routes, number of trucks, hours of operation, access arrangements and traffic control should be submitted to Council prior to the issue of a Construction Certificate. | Agreed – recommended as consent condition. |
| **2.** All demolition and construction vehicles are to be contained wholly within the site as a construction zone will not be permitted on Parramatta Road. | Agreed – recommended as consent condition. |
| **3.** A Road Occupancy License should be obtained from Transport Management Centre for any works that may impact on traffic flows Parramatta Road during construction activities. | Agreed – recommended as consent condition. |
| **4.** Any associated works with the subject development should not impact the Parramatta Road/Ross Street intersection | Agreed – recommended as consent condition. |

## 8. USYD Response to Environment Protection Authority Submission

| SSD 7081 – FASS Building | |
|---|---|
| **EPA Issue** | **USYD Project Response** |
| **Site investigation and remediation**<br>**1.** The proponent be required to undertake further assessment of soil contamination following demolition of existing structures and prior to undertaking any earthworks. | Agreed – recommended as consent condition. |
| **2.** The proponent be required prior to commencing works to prepare and implement an appropriate procedures for identifying and dealing with unexpected findings of site contamination, including asbestos containing materials and lead-based paint, during demolition and site preparation. | Agreed – recommended as consent condition. |
| **3.** The proponent be required to satisfy the requirements of the *Protection of the Environment Operations Waste Regulation 2014* with particular reference to Part 7 'asbestos wastes'. | Agreed – recommended as consent condition. |
| **4.** The proponent be required to consult with SafeWork NSW concerning the handling of any asbestos waste that may be encountered during the course of the project. | Agreed – recommended as consent condition. |
| **Noise and vibration**<br>**5.** The proponent be required to ensure that demolition, site preparation, construction and construct-related work is undertaken only during the standard construction hours recommended in Table 1 Chapter 2 of the Interim Construction Noise Guideline, July 2009 | Agreed – recommended as consent condition. |
| **Construction hours (intra-day respite periods)**<br>**6.** The proponent be required to schedule intra-day 'respite periods' for construction activities identified in the Interim Construction Noise Guideline as being particularly annoying to | Agreed – recommended as consent condition. |

| SSD 7081 – FASS Building | |
|---|---|
| **EPA Issue** | **USYD Project Response** |
| noise sensitive receivers, including surrounding residents and both nearby hospitals. | |
| **Queuing and idling construction vehicles and vessels**<br>**7.** The proponent be required to ensure construction vehicle (including concrete agitator trucks) involved in construction and construction-related activities do not arrive at the project site or in surrounding residential precincts surrounding that site. | Agreed – recommended as consent condition. |
| **Dust control and management**<br>**8.** The proponent be required to:<br>(a) minimise dust emissions on the site, and<br>(b) prevent dust emission from the site. | Agreed – recommended as consent condition. |
| **Erosion and sediment control**<br>**9.** The proponent be required to ensure that:<br>(1) all waste generated during the project is assessed, classified and managed in accordance with the "Waste Classification Guidelines Part 1: Classifying Waste: (Department of Environment and Climate Change and Water, December 2009);<br>(2) the body of any vehicle or trailer, used to transport waste or excavation spoil from the premises, is covered before leaving the premises to prevent any spill or escape of any dust, waste, or spoil from the vehicle or trailer; and<br>(3) mud, splatter, dust and other material likely to fall from or be cast off the wheels, underside or body of any vehicle, trailer or motorised plant leaving the site, is removed before the vehicle, trailer motorised plant leaves the premises. | Agreed – recommended as consent condition. |

| SSD 7081 – FASS Building | |
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| **EPA Issue** | **USYD Project Response** |
| **Waste control and management**<br>**10.** The proponent be required to ensure that appropriate waste and rinser water on not disposed of on the development site. | Agreed – recommended as consent condition. |
| **Noise Impacts**<br>**11.** The proponent be required to only use level 6 function room and adjoining terrace between the hours of:<br>(a) 7.00 am to 10.00 pm Monday to Saturday (excluding public holidays), and<br>(b) 8.00 am to 10.00 pm during Sundays and public holidays. | Agreed – recommended as consent condition. |

## 9. USYD Response to Sydney Water Submission

Sydney Water's submission recommends the imposition of certain SSD consent conditions.

| SSD 7081 – FASS Building | |
|---|---|
| **SW Issue** | **USYD Project Response** |
| **1. Building Plan Approval**<br>The approved plans must be submitted to the Sydney Water Tap in™ online service to determine whether the development will affect any Sydney Water sewer or water main, stormwater drains and/or easement, and if further requirements need to be met.<br><br>The Sydney Water Tap in™ online self-service replaces our Quick Check Agents as of 30 November 2015. The Tap in™ service provides 24/7 access to a range of services, including:<br>* building plan approvals<br>* connection and disconnection approvals<br>* diagrams<br>* trade waste approvals<br>* pressure information<br>* water meter installations<br>* pressure boosting and pump approvals<br>* changes to an existing service or asset, e.g. relocating or moving an asset. | Agreed – recommended as consent condition. |
| **2. Section 73 Certificate**<br>A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be obtained from Sydney Water.<br>It is recommended that applicants apply early for the certificate, as there may be water and sewer pipes to be built and this can take some time. This can also impact on other services and building, driveway or landscape design. | Agreed – recommended as consent condition. |

# 10. DESIGN AMENDMENTS

Minor design amendments have been incorporated into the SSD application through a combination of responding to design matters raised in submissions, and identification of superior materials to best serve the building purpose. The tables below identify the design amendments introduced, and list the updated schedule of SSD architectural plans.

| SSD 7081 – FASS BUILDING | |
|---|---|
| **DESIGN CHANGE** | **RATIONALE FOR CHANGE** |
| 1. Relocation of offices off the northern and southern facades | Positioning the majority of enclosed offices off the northern and southern facades provides many benefits, including functional, technical and social.<br>Building energy efficiency is improved by providing circulation and collaboration spaces as buffer zones.<br>Stakeholder concerns regarding close-range vision through the mesh façade are alleviated by placing the office occupant further away from the façade, and therefore enjoying more distant views.<br>The internal spatial reorganisation also subsequently introduces north-south corridors to improve circulation and wayfinding, whilst drawing natural light deep into the centre of the floor plate, and punctuating the floor layout with views.<br>The southern façade of the building is now free from offices, which provides collaboration or “bump” spaces, and visually opens up and activates this edge of the building back to RD Watt and the wider University campus. |
| 2. Smaller atrium, reduced skylight and an additional lift (now 3) | In response to the Department of Planning’s comments, the atrium has been reduced in size to allow the skylight to also reduce in area and thereby minimise the area projection through the CIP envelope.<br>The reconfigured atrium size has allowed an increase to the usable floor area within the academic zones, whilst maintaining a stimulating and engaging space, with inter-floor travel now more legible and dynamic. |

| SSD 7081 – FASS Building | |
|---|---|
| **Design Change** | **Rationale for Change** |
| | Lowering the height of the lift car overrun to ensure it is under the CIP envelope slowed down the speed of the lift cars and increased waiting times to an unacceptable level. The University has therefore added an additional lift to improve the efficiency of the movement of staff and students throughout the building.<br>The reconfigured central atrium staircase has been increased in width from 1.3m to 2m, which allows users ascending and descending to pass each other more freely.<br>Improved circulation on Levels 1 & 2 by relocating the lifts to the western side of the atrium in lieu of the east, creating a more generous unimpeded assembly and milling space on Level 1. |
| 3. Southern façade to the lecture theatre changed from glass to stone/aluminium panel | Ongoing design development and feedback with the faculty user groups has confirmed that the original glass façade to the proposed Lecture Theatre will be detrimental to the privacy, study environment and function of the Theatre, and consequentially an enclosed 'private' teaching environment is required. The Theatre is now also required to be used for digital cinema projection, which would not be possible with the glazed façade. Consequently, a solid façade is proposed which also creates an opportunity to integrate an external public artwork piece or interpretational installation to further encourage awareness of Aboriginal values, art and culture. |
| 4. Amended Landscape Design | The landscape design has been further developed through the integration of the Wingara Mura principles into hard and soft landscape elements.<br>The landscape curtilage around RD Watt has been increased to improve amenity of the courtyard space in response to the Department of Planning's comment. |

| SSD 7081 – FASS Building | |
|---|---|
| **Design Change** | **Rationale for Change** |
| 5. Vertical façade fins have been added along North/West facade | In response to general design issues raised by the City of Sydney Council with regards to building articulation, the vertical fins are introduced to provide a clearer break between the junction of the two axial alignments of the building and to further articulate the bronze mesh façade. |
| Updated Schedule of Architectural SSDA Drawings: | |
| • DA0000 Cover Sheet Rev D 10/10/16 | |
| • DA0003 Proposed Site Plan Rev G 10/10/16 | • Skylight area reduced |
| • DA0004 Site Analysis Plan Rev C 10/10/16 | • Skylight area reduced |
| • DA1010 Level 1 Plan Rev H 10/10/16 | • Interior Layout updated |
| • DA1020 Level 2 Plan Rev H 10/10/16 | • Interior Layout updated |
| • DA1030 Level 3 Plan Rev H 10/10/16 | • Interior Layout updated |
| • DA1040 Level 4 Plan Rev H 10/10/16 | • Interior Layout updated |
| • DA1050 Level 5 Plan Rev H 10/10/16 | • Interior Layout updated |
| • DA1060 Level 6 Plan Rev H 10/10/16 | • Interior Layout updated |
| • DA1070 Roof Plan Rev G 10/10/16 | • Skylight area reduced |
| • DA2000 Elevations Rev G 10/10/16 | • Skylight height reduced |
| • DA2020 Elevations Rev G 10/10/16 | • Skylight height reduced |
| • DA2500 Building Section Sheet 1 Rev G 10/09/16 | • Skylight height reduced |
| • DA9200 Shadow Analysis Rev F 04/10/16 | • Skylight area reduced, Extra analysis diagrams provided. |
| • DA9201 Shadow Analysis Rev A 10/10/16 | • Skylight area reduced, Extra analysis diagrams provided. |
| • DA9202 Shadow Analysis Rev A 10/10/16 | • Skylight area reduced, Extra analysis diagrams provided. |
| • DA9300 Proposed External Finishes Rev C 10/10/16 | • Design development of external finishes. |
| • DA9301 Proposed Interior Finishes Rev C 10/10/16 | • Design development of internal finishes. |

| SSD 7081 – FASS Building | |
|---|---|
| **Design Change** | **Rationale for Change** |
| • DA9302 Proposed RD Watt Interior Finishes Rev C 10/10/16 | • Design development of internal finishes. |
| • NE View 10/10/16 | • Additional planting detailed |
| • NW View 10/10/16 | • Vertical fins detailed |
| • SW View 10/10/16 | • Updated L1 Lecture Theatre Façade |
| • NE View CIP envelope 10/10/16 | • Illustrate non visible location of roof and cooling tower through CIP. |
| • NW View CIP envelope 10/10/16 | • Illustrate non visible location of roof and cooling tower through CIP. |
| • SW View CIP envelope 10/10/16 | • Illustrate non visible location of roof and cooling tower through CIP. |
| • SK_300 Existing Roof Plan 30/09/16 | • Illustrate existing roof area through CIP Envelope. |
| • SK_301 Proposed Roof Plan 30/09/16 | • Illustrate proposed roof area through CIP Envelope. |
| • SK_302 Proposed Roof Plan with additional PV Panels (30 degree) 30/09/16 | • Illustrate proposed roof area through CIP Envelope with additional PV. |
| • SK_304_East Courtyard Level 02 Plan 28/09/16 | • Illustrate extent of Level 2 courtyard. Read with Landscape Plan. |
| • SK_305_East Courtyard View 29/09/16 | • View of Courtyard. |
| • SK_306_Awning Design 29/09/16 | • View of Awning. |
| • SK_307_NE Aerial View 05/10/16 | • Aerial view detailing minor protrusion through CIP envelope. |
| • SK_410_Facade Section 05/10/16 | • Further detail of Façade construction |
| Updated Schedule of Landscape SSDA Drawings: | |
| • FASS-L-DA-000 Cover Page Rev E - 4/10/16 | • Update showing additional planting |
| • FASS-L-DA-100 Landscape Plan Ground Rev E - 4/10/16 | • Update showing additional planting |
| • FASS-L-DA-101 Tree Protection Plan Rev E - 4/10/16 | • Update showing additional planting |
| • FASS-L-DA-110 Landscape Finishes Rev E - 4/10/16 | • Update showing additional planting |
| • FASS-L-DA-120 Landscape Plan Roof Rev E - 4/10/16 | • Updated seating detail |

| SSD 7081 – FASS BUILDING | |
|---|---|
| **DESIGN CHANGE** | **RATIONALE FOR CHANGE** |
| • FASS-L-DA-121 Landscape Finishes Roof Rev E - 4/10/16<br>• FASS-L-DA-200 Landscape Sections 1 Rev E - 4/10/16<br>• FASS-L-DA-201 Landscape Sections 2 Rev E - 4/10/16<br>• FASS-L-DA-202 Landscape Sections 3 Rev E - 4/10/16<br>• FASS-L-DA-203 Landscape Sections 4 Rev E - 4/10/16<br>• FASS-L-DA-204 Landscape Sections 5 Rev E - 4/10/16<br>• FASS-L-DA-400 Planting Images Ground Rev E - 4/10/16<br>• FASS-L-DA-401 Planting Images Roof Rev E - 4/10/16 | • Updated seating detail<br>• Update showing additional planting and new booster location<br>• Eastern boundary detail updated<br>• Booster assembly removed<br>• Drainage details updated<br>• Updated seating detail<br>• Revised proposed species of plants<br>• Revised proposed species of plants |