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SYDNEY • BRISBANE

UTS Central Project

Buildings 1 (CB01) & 2 (CB02)

REPORT 2014/1368 R1.3

April 2016

BCA Assessment Report for DA Submission

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Report Revision History

Revision	Date	Reason for Revision	Prepared by	Reviewed	Approved by
R1.0	16.11.15	60% DA Documentation - DRAFT	Peter Tran	Anthony Ljubicic	
R1.1	18.12.15	DA Submission	Peter Tran	Anthony Ljubicic	
R1.2	12.01.16	Schematic Design	Peter Tran	Anthony Ljubicic	
R1.3.1	21.04.16	Revised DA Submission	Peter Tran	Anthony Ljubicic	

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Introduction

This report presents the findings of an assessment undertaken of the proposed Schematic Design (SD) documentation for the UTS Central Project against the Deemed-to-Satisfy (DtS) provisions of Building Code of Australia (BCA) 2016. It has been prepared by building regulations consultants and certifiers Steve Watson and Partners for University of Technology, Sydney.

Purpose

The assessment is undertaken for the purpose of providing commentary on the high level issues to be considered as part of the detailed design.

Description of proposed development

This State Significant Development Application (SSDA) submitted to the Department of Planning and Environment pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) seeks approval for the following components of the development:

- Site preparation works, including demolition and clearance of existing Building 2 down to approximately ground level and associated tree removal;
- Retention and re-use of existing basement Level 1 and Level 2;
- Construction and use of a new podium building fronting Broadway (Building 1 extension and new Building 2);
- Construction and use of new floors above new Building 2 podium;
- Public domain improvements surrounding the site;
- Landscaping works to roof levels;
- Retention of existing vehicle access and parking arrangements; and
- Extension and augmentation of physical infrastructure / utilities as required.

The new floor space will accommodate a range of educational and ancillary educational uses, such as:

- Library
- Research
- Teaching Space
- Informal Learning Space
- Student Centre
- Student Union Spaces
- Food and Beverage Outlets
- Academic (including Faculty space)

A more detailed and comprehensive description of the proposal is contained in the Environmental Impact Statement (EIS) prepared by JBA.

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Summary of construction determination

Building 1

Classification	Class 5, 6 & 9b (school)
Number of storeys contained	27 (TBC)
Rise in storeys	25 (TBC)
Type of construction required	Type A
Effective height	Over 50m

Building 2

Classification	Class 5, 6 & 9b (school)
Number of storeys contained	17
Rise in storeys	15
Type of construction required	Type A
Effective height	Over 50m

Assessment

A preliminary review of the documentation for the UTS Central Project against the Deemed-to-Satisfy (DtS) provisions of Building Code of Australia (BCA) 2016 has been undertaken. We note the design as shown on the drawings require further detailed design at the design development stage. Some aspects of the design are proposed to be addressed by way of a fire engineered Alternative Solution to meet the relevant Performance Requirements of the BCA.

These aspects include but are not limited to the items specified on page 3, which will need to be addressed by an Accredited C10 Fire Engineer and verified by Steve Watson and Partners prior to the issue of a Construction Certificate.

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Summary of Items BCA Issues

Item	Non-Compliance	DTS Clause	Description
1.	Type of construction required	C1.1	Building 2 (CB02) is proposed to be totally fire-separated from the adjacent building 1 (CB01) from level 1 and above. The podium fronting Broadway (Building 1 extension and new Building 2) will be separated between Building 1 & 2. Further design development to achieve the appropriate separation will be required. The FRL's of the laboratories and retail in CB02 are proposed to be rationalised to 2 hours as part of the Fire Engineered Alternative Solution.
2.	General floor area limitation	C2.2	Buildings 1 & 2 are considered to be separate buildings for the purpose of BCA compliance. The floor area and volume of the fire compartment are greater than those permitted by the DTS provisions of the BCA. Further design development to achieve the appropriate separation will be required. The non-compliance may need to be address via a fire engineered alternative solution satisfying the Performance Requirements of the BCA.
3.	Number of exits required	D1.2	At least two exits need to serve all areas of every storey as follows:- • buildings over 25m in effective height • Each basement level
4.	Exit travel distances to and between exits	D1.4 & D1.5	Travel distances to and between exits are greater than those permitted by the DTS provisions of the BCA. Any non-compliance will be addressed by way of a Fire Engineered Alternative solution.
5.	Dimensions of exits	D1.6	It is likely the buildings will have insufficient egress width. In an entertainment venue where one or more paths of travel merge, the width of the combined path of travel must be not less than the sum of the required widths of those paths of travel. The non-compliance is to be addressed via a fire engineered alternative solution satisfying the Performance Requirements of the BCA. Note: The escalators have not been considered as exits from the storey.
6.	Travel via fire isolated exits	D1.7	Fire isolated exits may discharge within the building or into a covered area which does not comply with the DTS provisions of the BCA.
7.	Discharge from exits	D1.10	Suitable barriers such as bollards are to be provided to prevent the blockage of exits by vehicles, etc. An unobstructed path of travel to the road must be provided with a width not less than the width of the required exit.

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Item	Non-Compliance	DTS Clause	Description
8.	Non-required stairs, ramps or escalators	D1.12	The escalators in Building 2 and podium connects more than 3 storeys (Level 4 to Level 7) The escalators in Building 1 connects 3 storeys (Level 4 to Level 6), further details of fire separation between buildings 1 & 2 to be provided. The non-compliance is to be addressed via a fire engineered alternative solution satisfying the Performance Requirements of the BCA.
9.	Swinging doors	D2.20	A swinging door in a required exit or forming a part of a required exit must swing in the direction of egress.
10.	Access for People with a Disability	Part D3	Access for people with disabilities to be reviewed by an Access Consultant.
11.	Hearing augmentation	D3.7	A hearing augmentation system must be provided where an inbuilt amplification system, other than one used only for emergency warning, is installed— (i) in a room in a Class 9b building; or (ii) in an auditorium, conference room, meeting room or room for judicatory purposes; or (iii) at any ticket office, teller's booth, reception area or the like, where the public is screened from the service provider An induction loop must be provided to not less than 80% of the floor area of the room or space served by the inbuilt amplification system; or A system requiring the use of receivers or the like, it must be available to not less than 95% of the floor area of the room or space served by the inbuilt amplification system, and the number of receivers provided must not be less than— (A) if the room or space accommodates up to 500 persons, 1 receiver for every 25 persons or part thereof, or 2 receivers, whichever is the greater; and (B) if the room or space accommodates more than 500 persons but not more than 1000 persons, 20 receivers plus 1 receiver for every 33 persons or part thereof in excess of 500 persons; and (C) if the room or space accommodates more than 1000 persons but not more than 2000 persons, 35 receivers plus 1 receiver for every 50 persons or part thereof in excess of 1000 persons; and (D) if the room or space accommodates more than 2000 persons, 55 receivers plus 1 receiver for every 100 persons or part thereof in excess of 2000 persons

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Item	Non-Compliance	DTS Clause	Description
12.	Fire Hydrants	E1.3	Building CB02 (Level 3 and above) and the podium extension and new facades for both buildings CB01 and CB02 along Broadway are to be provided with a fire hydrant system throughout in accordance with current code requirements. The hydrant system serving CB01 does not require an upgrade except that the hydrant booster will need to be relocated due to the construction of the new podium. The booster should then be upgraded to comply with current code requirements. Investigation into the relocation of the existing hydrant pumps for CB01 should be undertaken to determine if it is feasible to locate them in a compliant location.
13.	Sprinklers	E1.5	Building CB02 (Level 3 and above) and the podium extension and new facades for both buildings CB01 and CB02 along Broadway is to be provided with a sprinkler system throughout in accordance with current code requirements. A sprinkler valve enclosure must be located in a secure room or enclosure that has direct egress to road or open space. Investigation of the existing sprinkler systems of CB01 should be undertaken to determine if the construction of the new podium will result in a reduction in fire safety of the existing sprinkler system to CB01.
14.	Fire control centre	E1.8	A fire control room serving Building CB02 (Level 3 and above) and the podium extension and new facades for both buildings CB01 and CB02 along Broadway is to be provided and comply with the requirements of Specification E1.8 of the BCA. The fire control room must have egress to road or open space which does not involve a change in level of more than 300mm. Investigation into the relocation of the FIP for CB01 should be undertaken to determine if it is feasible to locate them within the same fire control room. Mimic panels and some controls may need to be provided for CB01 in the new fire control room as a minimum. Further details to be developed with the Fire Engineered Alternative solution.

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15.	Smoke Hazard Management	E2.2 and Spec G3.8	Building CB02 (Level 3 and above) and the podium extension and new facades for both buildings CB01 and CB02 along Broadway is to be provided with automatic smoke exhaust system in accordance with Specification E2.2 and G3.8. An air-handling system that does not form part of the smoke hazard management system and recycles air from one fire compartment to another must be designed and installed to operate as a smoke control system in accordance with AS/NZS 1668.1 or incorporate smoke dampers and automatically shutdown upon activation of smoke detectors in accordance with Clause 4.10 of AS/NZS 1668.1. Fire isolated exits serving an atrium or a storey which is over 25m in effective height are to be provided with an automatic stair pressurisation. A zone smoke control system is to be provided and operate in accordance with AS/NZS 1668.1. Where the floor area of a Class 6 part of a fire compartment is more than 2000m^2, the fire compartment, must be provided with— a) (i) an automatic smoke exhaust system complying with Specification E2.2b; or (ii) automatic smoke-and-heat vents complying with Specification E2.2c, if the building is single storey; or (iii) if the floor area of the fire compartment is not more than 3500m^2 and the building— (A) is single storey, an automatic smoke detection and alarm system complying with Specification E2.2a; or (B) has a rise in storeys of not more than 2, a sprinkler system complying with Specification E1.5. b) The provisions of (a) do not apply to— (i) a Class 6 sole-occupancy unit that— (A) has a floor area of not more than 2000 m^2; and (B) is single storey with a main public entrance opening to a road or open space; and (C) is separated from other parts of the fire compartment by construction, including openings, penetrations and junctions with other building elements, that prevents the free passage of smoke; and (ii) parts of any other classification that are smoke separated from a Class 6 part by construction complying with (i)(c) An assembly building or part of the building used as an assembly building, where the floor area of a fire compartment is more than 2000m^2, the fire compartment must be provided with- i) an automatic smoke exhaust system complying with Specification E2.2b; or ii) roof mounted automatic smoke-and-heat vents complying with SpecificationE2.2c, in a single storey building or the top storey of a multi storey building; or iii) if the floor area of the fire compartment is not more than 5000m^2 and the building has a rise in storeys of not more

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			than 2— (A) an automatic smoke detection and alarm system complying with SpecificationE2.2a; or (B) a sprinkler system complying with Specification E1.5. Note, school classrooms are exempt from the above provisions. An assessment of the impact the proposed works may have to the existing smoke hazard management within CB01 is to be undertaken to ensure it is not affected.
16.	Sounds systems and intercom systems for emergency purposes	E4.9	Building CB02 (Level 3 and above) and the podium extension to CB01 and new facades for both buildings CB01 and CB02 along Broadway is to be provided with SSISEP in accordance with AS 1670.4 The new system will need to communicate with the existing CB01 system. Further details to be developed with the Fire Engineered Alternative solution.
17.	Facilities in Class 3 to 9 buildings	F2.3	It is proposed that staff and students will be sharing the same sanitary facilities, this non-compliance will be addressed by way of an Alternative Solution.
18.	Atrium Construction	Part G3	The atrium connect more than 3 storeys. The construction of the atrium does not comply with the DTS provisions of the BCA. The interconnecting stairway in Building 2 connect more than 3 storeys. Further development with the fire safety engineer will be required to deliver an appropriate solution in relation to fire separation and smoke hazard management within the building.
19.	Atrium – Fire and smoke control systems in building containing atrium	Spec G3.8	The following fire and smoke control systems are required to a building containing an atrium : • Automatic Fire Sprinkler System • Smoke Control System • Fire Detection and Alarm System • Sound System and Intercom Systems for Emergency Purposes • Standby Power Systems Systems for Excluding Smoke from Fire Isolated Exits

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Item	Non-Compliance	DTS Clause	Description
20.	Energy Efficiency	Sec. J	The building is not proposed to comply with the DTS provisions of Section J. Verification Method JV3 is required to address to non-compliance. The Verification Method JV3 requires a comparison between a reference building (constructed according to Specification JV and the Deemed to Satisfy (DTS) provisions detailed in Section J Energy Efficiency of Volume One of the BCA) and the proposed building design. In addition, the design must include: (i) the ability to achieve all the criteria used in the *annual energy consumption* calculation method such as having an automatic operation controlling device capable of turning lighting, and *air-conditioning* plant on and off in accordance with the occupancy and operating profiles used; and (ii) compliance with— (A) J1.2 for general thermal construction; and (B) J1.3(c) for compensation for a loss of ceiling insulation; and (C) J1.6(a)(ii), J1.6(c), J1.6(d) and J1.6(e) for floor edge insulation; and (D) BS 7190 for testing a water heater; and (E) AS/NZS 3823.1.2 at test condition T1 for testing package *air-conditioning* equipment not less than 65 kWr; and (F) AHRI 550/590 for testing a refrigeration chiller; and (G) Part J8 for facilities for energy monitoring. However, should the JV3 assessment specify that certain building element are compliant with Deemed to Satisfy provisions of the BCA, such as building seals, hot/chilled water pipe insulation, access to building services and equipment, we will require certification for these measures from the relevant consultants. These certification should form part of the JV3 assessment.

If you have any queries please do not hesitate to contact me.

Kind regards

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