

Job no SY200240

01/02/2021

Shane McLoughlin  
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The University of New South Wales  
Sydney NSW 2052

Dear Shane,

## **UNSW Health Translation Hub (HTH) Project – Preliminary fire safety engineering review**

### **1. Introduction and Description of Proposed Development**

This report supports a State Significant Development Application (SSDA) for the proposed University of New South Wales Health Translation Hub (UNSW HTH) at the Randwick Hospitals Campus (RHC) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (the Act). Health Infrastructure on behalf of Health Administration Corporation (HAC) is the applicant for the UNSW HTH SSDA submission.

The UNSW HTH project will bring together educational and medical researchers, clinicians, educators, industry partners and public health officials to drive excellence, and support the rapid translation of research, innovation, and education into improved patient care.

#### **1.1 Description of Proposed Development**

The SSDA seeks approval for:

- Relevant site preparation, excavation and enabling works.
- Construction and use of a new, 15-storey (RL 124.80) building and link bridge accommodating research and education uses, comprising:
  - One basement level; and
  - A total GFA of 35,600sqm, including health-related research, education and administrative floor space.
  - Pedestrian link bridges connecting the UNSW Kensington campus to the Randwick Hospitals Campus, via the Wallace Wurth building to the UNSW HTH and through to the Sydney Children's Hospital Stage 1 and Children's Comprehensive Cancer Care Centre (SCH Stage 1 and CCCC)
- Landscaping and public domain works, including the creation of over 2,500m<sup>2</sup> of new publicly accessible open space within the eastern portion of the site, sitting between the UNSW HTH and the SCH Stage 1 and CCCC redevelopment.
- Services and utilities augmentation as required.

## 1.2 Operation and Function of the UNSW HTH

The UNSW HTH will accommodate new health related education, research, and administrative facilities. It will include:

- Purpose-built spaces for health educators and researchers to work alongside clinicians;
- An education hub, including education and training rooms allowing hospital staff to educate and train UNSW medical students;
- Spaces for internal hospital seminars and clinician training events;
- Clinical schools for the Women's and Children's Health, Psychiatry and Prince of Wales Hospital;
- Ambulatory care clinics; and
- Supporting facilities including retail premises.

## 2. Site Description and Location

The site is located approximately 6 kilometres (km) from the Sydney Central Business District (CBD), within the Randwick Local Government Area (LGA). It is located approximately 4km from Sydney Airport. Figure 1 provides a regional context map of the site showing its location in relation to the Sydney CBD and surrounding centres.

This block sits in between the existing Randwick Hospitals Campus and the UNSW Kensington Campus, and directly adjacent to the CBD and South East Light Rail service which runs along High Street (Figure 2). The site of the proposed UNSW HTH has an area of 8,897square metres (sqm).

The UNSW HTH site has been cleared and is devoid of any development or vegetation. It has been subject to some site preparation and early works associated with the broader development of the block. Adjacent to the site, along the High Street and Botany Road frontages, runs a 6-metre (m) wide stormwater and sewage easement.

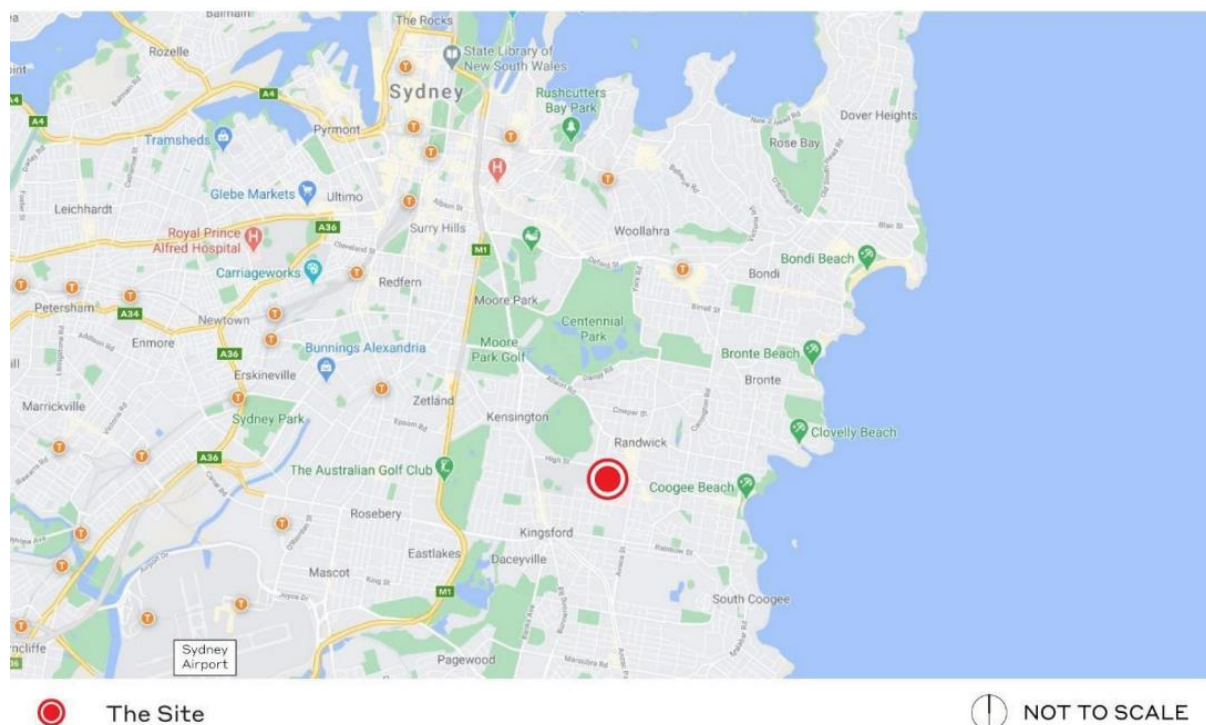


Figure 1 Site context



Figure 2 Site aerial

### 3. Summary of performance solutions

The design of the proposed development at UNSW Health Translation Hub will incorporate performance solutions complying with the performance requirements of National Construction Code Volume One - Building Code of Australia (NCC) 2019 Amendment 1<sup>1</sup>. Warringtonfire has undertaken a preliminary fire safety engineering review of the proposed design for the development application submission at the request of UNSW Estate Management. The review was based on the drawings and information listed in Appendix A.

The intent of the review was to determine whether we believe the design can be demonstrated to achieve compliance with the performance requirements of the NCC.

The performance solutions identified to date are listed in Table 1.

Table 1 Preliminary list of performance solutions

Item	Description of performance solution	DTS provision	Performance requirement	Comment
1.	The basement is classified as Class 7b and parts of level 7 and classified as Class 8. Generally, 4 hour fire rated construction is required under Type A construction for these classification. A Performance Solution will be investigated to reduce the FRL's to 120 mins	Clause C1.1 and Specification C1.1	CP1 and CP2	The performance solution will be based upon: <ul style="list-style-type: none"> <li>A sprinkler system installed throughout the building mitigating fire and smoke spread.</li> <li>The basement level will be provided with a 2 hour fire rating based on the time required for occupant evacuation and fire brigade intervention.</li> </ul>

<sup>1</sup> National Construction Code Volume One - Building Code of Australia 2019 Amendment 1, Australian Building Codes Board, Australia.

Item	Description of performance solution	DTS provision	Performance requirement	Comment
2.	The tower structure is proposed to be lightweight and include the following materials: Cross laminated timber, laminated veneer lengths and timber columns with the potential for steel cross beams and other supports.	Clause C1.1 and specification C1.1	CP1 and CP2	The provision of a lightweight timber or steel hybrid structure will be subject to detailed design with the architect, supplier and structural engineer.
3.	The floor area and volume of the atrium compartment exceeds the maximum limitations outlined by Table C2.2. The area is approximately 10,905m <sup>2</sup> and the volume is approximately 49,000m <sup>3</sup> .	Clause C2.2	CP1, CP2 and EP2.2	The performance solution will require the following: <ul style="list-style-type: none"> <li>A sprinkler system in accordance specification E1.5 of the NCC and AS 2118.1-2017 to be provided throughout the building, with fast response sprinkler heads.</li> <li>Combined fire and smoke curtains are proposed to separate the top floor in fire mode.</li> </ul>
4.	Enclosed bridge links are proposed between the following areas: <ul style="list-style-type: none"> <li>The UNSW HTH and the Wallace Wurth building across Botany Street</li> <li>The UNSW HTH and the SCH Stage 1 and CCCC</li> </ul>	Clauses C2.7, C3.2, C3.3 and C3.5	CP2	In both instances notional boundaries are crossed and separation of openings in different buildings are required to be addressed.  This is proposed with a combination of fire rated construction, fire rated doors, fire and smoke rated curtains and fixed glazing with wall wetting sprinklers.
5.	The following areas have been identified with distances exceeding 20m to a point of choice: <ul style="list-style-type: none"> <li>The distance to a point of choice from the fire tank and mech plant on basement level is approximately 32m</li> <li>The distance to a point of choice from substation 2 in the basement is approximately 25m</li> <li>The following areas have been identified with exit travel distances exceeding 40m: <ul style="list-style-type: none"> <li>Levels 2 to 7 have distances up to 42m in a straight line with no fitout. Distances are likely to be extended to 50m.</li> <li>Level 8 with the podium roof terrace has distances up to 48m in a straight line with no fitout. Distances are likely to extend up to 55m.</li> </ul> </li> </ul>	Clause D1.4	DP4 and EP2.2	The performance solution will require the following: <ul style="list-style-type: none"> <li>A sprinkler system in accordance specification E1.5 of the NCC and AS 2118.1-2017 to be provided throughout the building, with fast response sprinkler heads.</li> <li>Additional smoke detectors spaced in accordance with AS 1670.1-2018 to be provided.</li> <li>Fire / smoke separation of rooms along the path of travel within the basement corridor.</li> <li>Fitouts will need to be designed such that a point of choice is available within 30m.</li> </ul>



Item	Description of performance solution	DTS provision	Performance requirement	Comment
6.	Distances between alternative exits exceeds 60m on most of the tower floors. Worst case distance without any fitout is approximately 85m.	Clause D1.5	DP4 and EP2.2	The performance solution will require the following: <ul style="list-style-type: none"> <li>• A sprinkler system in accordance specification E1.5 of the NCC and AS 2118.1-2017 to be provided throughout the building, with fast response sprinkler heads.</li> <li>• Additional smoke detectors spaced in accordance with AS 1670.1-2018 to be provided.</li> <li>• An emergency warning and intercom system (EWIS) to be provided in accordance with clause E4.9 of the NCC and AS 1670.4:2018.</li> <li>• Fitouts will need to be designed such that the maximum distance between alternative exits is limited to 90m.</li> </ul>
7.	The proposed scissors stairs merge at the ground floor into a single passageway which is proposed to be only 2.25m and 1.5m in width for the north east and south east discharge locations respectively.	Clauses D1.6 and D1.7	DP4 and EP2.2	The performance solution will require the following: <ul style="list-style-type: none"> <li>• No connection of the ground floor to other parts of the building, thereby mitigating fire and smoke spread into the stair affecting both stairwells.</li> </ul>
8.	The fire stairs serving the basement and the upper levels are not separated.	Clause D2.4	DP5 and EP2.2	The performance solution will require the following: <ul style="list-style-type: none"> <li>• A -/120/30 self closing fire door with medium temperature smoke seals is required to be provided between the two stair shafts.</li> <li>• Wall signage at the discharge location stating 'EXIT AT THIS LEVEL'</li> <li>• Signage provided to the first flight below the level of discharge stating 'GO BACK, EXIT AT THE LEVEL ABOVE'</li> <li>• Smoke seals to be provided to the basement fire-isolated stair entry.</li> </ul>
9.	The atrium is proposed to be designed on a performance basis. This includes the provision of measures to fire separate the top floor from other floors, so that in fire mode only three levels remain connected.	Clauses E2.2 and G3.1	CP2, EP1.4 EP2.2, EP4.3	Combined fire and smoke curtains are proposed to separate the top floor in fire mode.

It is Warringtonfire's professional opinion that it is possible to develop performance solutions for the issues identified to demonstrate compliance with the relevant performance requirements of the NCC without major changes to the proposed design.

The details of the proposed performance solutions are subject to the outcome of the fire engineering brief and analysis which will be carried out in accordance with the International Fire Engineering Guidelines (IFEG)<sup>2</sup>.

The performance solutions for the building will be developed as part of the ongoing design and development process and documented in a format suitable for submission to the relevant approval authorities. It is noted that additional performance solutions may be identified during the ongoing design development process in consultation with the design team.

Please contact me on 02 9211 4333 if you have any questions.

Yours sincerely



Andrew Stevens  
Senior fire safety engineer  
**Warringtonfire**

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<sup>2</sup> International Fire Engineering Guidelines – Edition 2005, Australian Building Codes Board, Australia.

## Appendix A Drawings and information

Drawing title	Dwg no	Date	Drawn
Architectural draft – issued for coordination	DA0000-2000	16/11/20	Architectus

Other information	Ref no	Date	Prepared by
BCA Assessment Report	2020/2315 R2.0	4 December 2020	Steve Watson & Partners