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FIRE ENGINEERING LETTER OF INTENT

To:	Western Sydney University C/- Walker Corporation, Garry Pham	Project:	143456.00
Cc:	BVN		
Email:	garry.pham@walkercorp.com.au	Version:	D
Date:	14 October 2021		
Subject:	Lang Walker AO Medical Research Building - Macarthur, 100 Parkside Crescent, Campbelltown, NSW		

Garry,

This letter provides a fire engineering statement to support the DA submission for the proposed Lang Walker AO Medical Research Building - Macarthur, which is to be located at 100 Parkside Crescent, Campbelltown, NSW.

1 INTRODUCTION

The Lang Walker AO Medical Research Building - Macarthur will be a five-storey (Lower Ground 2 to Level 02) multi-faceted research facility (Class 5) with space to provide collaboration, dedicated research, education and office facilities. The upper storeys of the building will be served by two fire-isolated stairs. The building will feature a central communication stairway which connects four storeys from the Lower Ground 1 to Level 02. The building will be sprinkler protected. Holmes Fire understands that the building will be constructed on Crown land.

The Lang Walker AO Medical Research Building - Macarthur will be connected at Level 00 by open walkways to the Western Sydney University Macarthur Clinical School (MCS) to the (project) south-west and Campbelltown Hospital Outpatient Pathology (Building D) to the (project) east.

A BCA Assessment of Building Code of Australia, 2019 Amendment 1 (BCA)[1] has been undertaken by Group DLA, dated 7 October 2021 using drawings referenced in Section 3. There will be a number of non-compliances with the BCA Deemed-to-Satisfy Provisions which will be addressed by Holmes Fire.

2 PROPOSED PERFORMANCE SOLUTIONS

Holmes Fire will address the identified non-compliances using performance based fire engineering solutions. The performance based solutions will comply with the relevant Performance Requirements of the

[1] Australian Building Codes Board, National Construction Code Series 2019 Amendment 1, Volume 1, Building Code of Australia, Class 2 to Class 9 Buildings. Australian Building Codes Board, CAN, Australia, 2020.

BCA. The design approach will be in line with the International Fire Engineering Guidelines[2] and other acceptable guideline documents.

The Performance Solution designs will be developed in line with BCA Clause A2.2, as applicable; i.e. complying with the relevant Performance Requirements or by equivalence comparison with the Deemed-to-Satisfy Provisions.

The identified non-compliances and proposed approach of the Performance Solution for each issue are listed below. Holmes Fire assumes that all other aspects of the building design will comply with the Deemed-to-Satisfy Provisions of the BCA.

1) BCA Specification C1.1 prescribes the floor and structural supports for the link bridges between the Lang Walker AO Medical Research Building - Macarthur and both the neighbouring MCS and Building D. A Performance Solution using an absolute approach will be provided to address Performance Requirements CP1 and CP2 to address non-compliant fire-resistance levels (FRLs) for these elements. This will be based on the relatively low fuel loads around the structures, the ventilation around the structures and construction of the walkway to the MCS being such that local collapse of the bridge will not cause collapse of the Lang Walker AO Medical Research Building - Macarthur. It is noted that the link bridges will not be the only means of egress from the building.
2) BCA Specification C1.1 and indirectly, BCA Clauses C2.8 and C2.8 requires that laboratories be built to achieve fire-resistance levels (FRLs) of generally 240/240/240. A Performance Solution using a comparative approach will be provided to address Performance Requirement CP1 and CP2 to address reduced FRLs for the construction of the Lab Processing Room on Level 1. This will be based on the actual use of the lab and relative fire risks of the processes conducted in the lab, the relatively small size of the lab (approximately 24 m^2), the sprinklered nature of the building and the lab being fire separated from adjacent parts of the building.
3) The BCA consultant has noted that the timber linings to the external soffits are not explicitly covered by the BCA Deemed-to-Satisfy Provisions of BCA Clause C1.10 and therefore a Performance Solution is required to allow for these. The Performance Solution will use a comparative approach to address Performance Requirement CP2 to allow for the timber linings on the basis that the building is sprinkler protected, alternative egress routes, relatively low fuel loads and sources of ignition in the vicinity of subject soffits and overall minimal contribution to the potential for fire spread.
4) BCA Clause C2.2, C2.7, C3.2 and C3.4 set out the requirements for the separation of the Lang Walker AO Medical Research Building – Macarthur from the neighbouring MCS and Building D.

[2] National Research Council of Canada; International Code Council, United States of America; Department of Building and Housing, New Zealand; and Australian Building Codes Board, International Fire Engineering Guidelines, Edition 2005, Australian Building Codes Board, 2005.

A Performance Solution using a comparative approach will be provided to address Performance Requirement CP2 allowing for non-compliant separation of the three buildings via the linking structures. This will be based on the relatively low fuel loads within the linking structures, and the high level of ventilation afforded to them.

5) BCA Clause D1.4(c) requires the travel distance to be not more than 20 m to a point of choice of exits and not more than 40 m from the nearest exit where multiple exits are available. This may be extended to 30 m to a single exit serving a storey at the level of access to a road or open space. BCA Clause D1.5(c)(iii) requires that the distance between alternative exits, measured through the point of choice of exits, does not exceed 60 m. The travel distances to a point of choice of exits from some areas is up to 30 m. The travel distance to the nearest exit from some areas is up to 53 m and the travel distance between alternative exits from some areas is up to 80 m. A Performance Solution using a comparative approach will be provided to address Performance Requirements DP4 and EP2.2 to allow these travel distances. This is based upon the building being sprinklered, the ventilated nature of the central space and some plant areas, that most of the travel occurs in the corridors which are relatively sterile, and in some areas occupants do not have to travel back to the point of choice before choosing a different exit should an exit be blocked.

6) BCA Clause D1.7(c) requires that for occupants discharging from a fire-isolated exit to road or open space that have to travel within 6 m of openings in the building that the exit serves, then those openings are protected internally in accordance with BCA Clause C3.4. A Performance Solution using a comparative approach will be provided to address Performance Requirement DP5 to address the path of travel from the eastern fire-isolated stairs to Parkside Crescent passing within 6 m of fixed open louvres in the northern plant room. This will be based on the openings being not less than 1.8 m above the finished floor level of the egress path and the building being sprinkler protected.

7) BCA Clause D1.12 requires that non-required stairways not connect more than three storeys. A Performance Solution using an equivalent approach will be provided to address Performance Requirements CP2 and EP2.2 to allow the central stairway to connect four storeys. This will be based upon the stair being separated from the uppermost storey by drenchered glazing.

8) BCA Clause E1.3(b) and AS 2419.1-2005 Clause 6.4.2(a) requires that internal fire hydrant pump rooms shall have a door opening to road or open space, or a door opening to a fire-isolated passage or stair which leads to a road or open space. A Performance Solution using an absolute approach will be provided to address Performance Requirement EP1.3 to address the access to the pump room not being directly from open space or a fire-isolated passageway/stair. This will be based on the use of remote pump switches.

9) BCA Clause E1.5, Spec E1.5 Clause 6 requires that sprinkler alarm valves be located in a secure room or enclosure which has direct egress to a road or open space. A Performance Solution using an absolute approach will be provided to address Performance Requirement EP1.4 to allow for the sprinkler alarm valves to be located in the fire hydrant pump room which is not connected directly to open space. This will be based upon the relatively short and sterile accessway to the pumproom and requirements for isolation to most likely required during accidental failure of a sprinkler head.

10) BCA Clause E1.5, Spec E1.5 and AS 2118.1-2017 requires sprinklers to be provided throughout the building. It is proposed to omit sprinklers from the following areas:

    a. The Communications Rooms. A Performance Solution using an absolute approach will be provided to address Performance Requirement EP1.4 to allow for the deletion of sprinklers from these rooms. This will be based upon the relatively low fuel load in these spaces and them being separated from adjacent spaces by FRLs achieving 120/120/120 and fire rated doorsets achieving an FRL of -/120/30.

    b. The link bridges to the adjacent buildings. A Performance Solution using an absolute approach will be provided to address Performance Requirement EP1.4 to allow for the omission of sprinklers from these link bridges. This will be based upon the relatively low fuel load in these spaces and them being separated from adjacent spaces by FRLs achieving (120)/120/120 and fire rated doorsets achieving an FRL of -/120/30.

11) BCA Part G3 and Specification G3.8 set out the requirements for provisions in atriums. A Performance Solution using a comparative approach will be provided to address Performance Requirements CP2, EP1.4, DP4, EP2.2 and EP4.3 to allow for the omission of atrium provisions based upon BCA Clause G3.1(b) application of part. This clause says that the BCA Part G3 atrium provisions do not apply to an atrium in a sprinklered building with direct access to the road or open space that connects three storeys. The central atrium is proposed to connect four storeys in lieu of three however the uppermost storey of the central stair is separated from the landing by drencher protected glazing and a fire rated glazed doorset. Consideration will be given to the ventilated nature and multiple egress stairs available from the lower floors.

3 SUMMARY

Based on Holmes Fire's review of the project documentation, it is considered that performance-based fire engineering can be utilised to demonstrate compliance with the Performance Requirements of the BCA without major changes to the current design. Additional non-compliances may be identified as the design is further developed; however, it is considered that there are no significant issues that would affect the building layout.

The information contained within this letter is based on the architectural drawings prepared by BVN Architects, as listed below.

Dwg no.	Title	Date	Issue
AR-BVN-AR-11B-B01-000	GENERAL ARRANGEMENT PLAN - LEVEL LOWER GROUND 02	07/10/2021	03
AR-BVN-AR-11B-B02-000	GENERAL ARRANGEMENT PLAN - LEVEL LOWER GROUND 01	07/10/2021	03
AR-BVN-AR-11B-L00-000	GENERAL ARRANGEMENT PLAN - LEVEL 00	07/10/2021	03
AR-BVN-AR-11B-L01-000	GENERAL ARRANGEMENT PLAN - LEVEL 01	07/10/2021	03
AR-BVN-AR-11B-L02-000	GENERAL ARRANGEMENT PLAN - LEVEL 02	07/10/2021	03

Dwg no.	Title	Date	Issue
AR-BVN-AR-11B-L03-000	GENERAL ARRANGEMENT PLAN - LEVEL ROOF	07/10/2021	03
AR-BVN-AR-11C-A00-001	BUILDING - ELEVATIONS	07/10/2021	02
AR-BVN-AR-11C-A00-002	BUILDING - ELEVATIONS	07/10/2021	02
AR-BVN-AR-11D-A00-001	BUILDING - SECTIONS	07/10/2021	03

Please do not hesitate to contact Holmes Fire, should there be any queries about the above.

Regards,

Richard Green
Fire Engineer