Job no SY120272

17/08/2015

Dean Dallwitz
Lend Lease
30 The Bond, 30 Hickson Road
Millers Point NSW 2000

Dear Dean

One Sydney Harbour – Stage 1B Basement

Preliminary fire safety engineering review

This letter supports a State Significant Development Application (SSD6960) submitted to the Minister for Planning pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). The Development Application (DA) seeks approval for construction of the Stage 1B Basement and associated works at Barangaroo South as described in the Overview of Proposed Development section of this report.

The Stage 1B Basement DA seeks approval for the construction of a four level basement to accommodate parking for the Stage 1B Residential Buildings (subject to separate SSD applications). The works include the construction of common plant and services, loading docks, waste rooms and storage areas, as well as structural cores and associated building services for the Stage 1B Residential Buildings. The proposed development also includes above ground elements such as roads, car park ramps and risers, and temporary public domain and landscaping works.

It is noted that site preparation works, including demolition, remediation and most of the required excavation, are covered under SSD 5897.

Defire has undertaken a preliminary fire safety engineering review to determine whether the design can be demonstrated to achieve compliance with the performance requirements of the National Construction Code Series 2015 Volume One – Building Code of Australia (BCA). The review was based on the drawings and information listed in Attachment 1.

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

No	Description of alternative solutions	DTS provision	Performance requirements
1.	The basement is proposed to be fire separated from the buildings above via a combination of vertical and horizontal elements – ie ground floor slab.	Clauses C2.7, C2.8 and C2.9	CP1, CP2, EP1.3, EP1.6 and EP2.2
	The basement and individual buildings above are to be treated as separate buildings for the purposes of determining compliance with sections C, D and E of the BCA with the following exceptions: • All buildings are to be considered when demonstrating safe occupant egress by way of a precinct wide evacuation strategy. • Fire services are to be shared between all buildings as part of a precinct wide fire services strategy.		

No	Description of alternative solutions	DTS provision	Performance requirements
2.	The maximum travel distances within the basement carpark are generally proposed as follows: • 30m to a point of choice in lieu of 20m. • 70m to the nearest exit in lieu of 40m. • 100m between alternative exits in lieu of 60m. There may also a number of specific areas which exceed the above parameters.	Clauses D1.4 and D1.5	DP4 and EP2.2
3.	The proposed sprinkler system will adopt in part AS 2118.1-2006 in lieu of AS 2118.1-1999 for 1,200kPa pressure to sprinkler heads to align with the fire hydrant standard. High pressure valves manufactured by Victaulic not covered under AS 4118.1.6-1995 are to be utilised on the high pressure stage of the combined sprinkler / hydrant system.	Clause E1.5 and AS 2118.1-1999, AS 2118.6-2012 and AS 4118.1.6-1995	EP1.4
4.	In lieu of providing a single fire control room which would be typically required for a united building greater than 50m in effective height it is proposed to provide a fire control room for each tower with an effective height of 50m or greater. It is proposed to provide a fire control room within the basement which will have indication from the precinct fire control rooms above basement and be able to initiate evacuation of the respective building as selected by attending fire brigades. The basement fire control room location involves a change in level to a road or open space in excess of 300mm.	Clause E1.8 and specification E1.8	EP1.6
5.	Due to the multiple entry points for each building the combined sprinkler / hydrant booster assemblies may not technically be within sight of the main building entry. The fire rated protection around the booster assembly does not extend 2m on each side of and 3m above the upper hose connections in accordance with AS 2419.1-2005.	Clause E1.3 and AS 2419.1-2005	EP1.3
6.	Fire rated fibre optic network communication is proposed throughout the precinct. These fire rated fibre optic cabling systems are not referenced within any Australian Standard which would otherwise be required under the BCA.	Specification E2.2a, AS 1670.1-2004, AS 1670.4-2004 and AS 3013-2005	CP7 and EP2.2
7.	The sound system and intercom system for emergency purposes (SSISEP) within the basement will not necessarily meet the requirements under clause 4.3.6 of AS 1670.4-2004 for intelligibility.	Clause E4.9 and AS 1670.4-2004	EP4.3
8.	The basement and buildings above merge and do not provide independent egress by way of its own fire isolated passageway. It is noted that the exits from the basement and buildings above are considered separate exits.	Clause D1.7	DP4 and DP5
9.	By-pass lines are not proposed to be provided around the intermediate relay pumps to pressure stages higher than 1,000kPa.	Clause E1.3 and AS 2419.1-2005	EP1.3
10.	Paths of travel reduced to 600mm in width in some areas.	Clause D1.6	DP6
11.	Direct access to the fire stairs from the private substations / diesel generator.	Clause D1.7	DP5
12.	Doors from a number of rooms swing against the direction of egress.	Clause D2.20	DP2

No	Description of alternative solutions	DTS provision	Performance requirements
13.	There are a number of rooms which are located off the fire rated smoke lobbies which will not be provided with fire hose reel coverage.	Clause E1.4	EP1.1
	The fire rated smoke lobbies are not provided with fire hose reel coverage.		
14.	Use of multi-stage relay pump (diagram in AS 2118.6-2012) in lieu of relay pumps at each pressure stage (AS 2419.1-2005 and words in AS 2118.6-2012).	Clause E1.3 and AS 2118.6-2012 and AS 2419.1-2005	EP1.3

Table 2 Preliminary list of alternative solutions

The areas of the design which impact upon fire brigade operations will be discussed with Fire & Rescue NSW. This includes perimeter vehicular access, location of fire control centres, fire hydrant booster and pump locations.

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

The details of the proposed alternative 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. The alternative solutions 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 alternative 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

Victor Tung
Accredited fire safety engineer
Defire – Innovative fire safety

Attachment 1 Drawings and information

Drawing No.	Revision	Drawing Title	Drawn
BB2_PA2_A000	Rev A	Title Sheet	Lend Lease
BB2_PA2_A001	Rev A	Aerial Location Plan	Lend Lease
BB2_PA2_A100	Rev A	Basement Plan Level B0	Lend Lease
BB2_PA2_A101	Rev A	Basement Plan Level B1	Lend Lease
BB2_PA2_A102	Rev A	Basement Plan Level B2	Lend Lease
BB2_PA2_A103	Rev A	Basement Plan Level B3	Lend Lease
BB2_PA2_A104	Rev A	Basement Plan Level B4	Lend Lease
BB2_PA2_A105	Rev A	Basement Plan Level B5	Lend Lease
BB2_PA2_A300	Rev A	Section 01	Lend Lease
BB2_PA2_A301	Rev A	Section 02	Lend Lease
BB2_PA2_A302	Rev A	Section 03	Lend Lease
BB2_PA2_A303	Rev A	Section 04	Lend Lease

Other information	Ref no	Date	Prepared by
BCA report – One Sydney Harbour	066819-04BCA	14/08/2015	McKenzie Group Consulting