

Job no SY150159

23/08/2017

Jeremy Tompson
Lend Lease
Tower Three, International Towers Sydney
300 Barangaroo Avenue
Barangaroo NSW 2000

Dear Jeremy

Barangaroo South C1 – Preliminary fire safety engineering review

The design of the proposed C1 commercial development at Hickson Road, Barangaroo South will incorporate performance solutions complying with the performance requirements of National Construction Code Series Volume One – Building Code of Australia (BCA)¹. Defire has undertaken a preliminary fire safety engineering review of the proposed design for the development application submission at the request of Lend Lease. The review was based on the drawings and information listed in Attachment 1.

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 BCA.

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

Item	Description of performance solution	DTS provision	Performance requirement
1.	<p>Timber is proposed to be used in the construction of the building, including fire stairs. This includes the following:</p> <ul style="list-style-type: none"> • Determination of fire rating in accordance with Eurocode 5 instead of AS 1720.4-1990. • Finish to the CLT stair treads / risers exceeds 1mm thickness and is attached to combustible substrate. • Lift shafts and service shafts are constructed of combustible material. • Openings for tested penetrations that do not achieve the insulation criteria are allowed to be within 100mm of combustible building element. • Use of timber within façade component. • Wall and ceiling linings of fire stairs do not achieve group 1. • Electrical board / comms board installed in paths of travel to required exits are enclosed in timber. <p>Reduction in fire rating in commercial areas to 90 minutes instead of 2 hours. This includes fire rating of lift shafts and service shafts.</p> <p>Reduction of fire rating in ground floor retail to 2 hours instead of 3 hours. This includes the following:</p>	<p>Clauses C1.1, C1.10, C2.7, C2.8, C2.9, C2.10, C3.12, C3.15, D1.3 and D2.2 and specifications A2.3, C1.1 and C1.10</p>	<p>CP1, CP2, CP4 and DP5</p>

¹ National Construction Code 2016, Volume One – Building Code of Australia, Australian Building Codes Board, Australia.



Item	Description of performance solution	DTS provision	Performance requirement
	<ul style="list-style-type: none"> Fire separation between the retail and commercial portions on the ground floor. Fire separation between the retail ground floor and the commercial storeys above. 		
2.	Fire-isolated stair shafts are required to achieve a fire resistance level (FRL) of 120/120/120. It is proposed to incorporate fire-rated glazing into the two fire-isolated stairs serving the office levels. The fire-rated glass will typically achieve an FRL of -/60/- with low emissivity.	Specification C1.1 and clause C3.8	CP2, DP4 and DP5
3.	A -/90/- fire curtain is proposed to be provided at the lift lobbies from levels 1 to 6. The lifts and the lobbies form part of the ground floor commercial lobby fire compartment.	Clauses C2.10 and C3.10 and specification C1.1	CP2
4.	Timber achieving a group 3 rating is proposed to be used in the linings of lift cars.	Specification C1.10	CP2 and CP4
5.	The following travel distances apply to the office levels after tenancy fitout: <ul style="list-style-type: none"> 30m to a point of choice 60m to the nearest exit 90m between alternative exits 	Clauses D1.4 and D1.5	DP4 and EP2.2
6.	Shortfalls in aggregate exit width – 2.3m provided for a population of 217 persons instead of 2.5m.	Clause D1.6	DP4, DP6 and EP2.2
7.	Fire isolated stairs discharge to Scotch Row. Openings located within 6m of the path of travel from the point of discharge are not proposed to be protected.	Clause D1.7	DP4
8.	A number of doors swing against the direction of evacuation.	Clause D2.20	DP2 and DP4
9.	<p>The booster assembly is not provided with fire rated protection extending 2m on each side of and 3m above the upper hose connections in accordance with AS 2419.1-2005.</p> <p>The external fire hydrants are located less than 10m from the building and are not provided with fire rated protection extending 2m each side of the fire hydrant outlet and not less than 3m above the ground adjacent to the fire hydrant.</p>	Clause E1.3 and AS 2419.1-2005	EP1.3

Table 1 Preliminary list of performance solutions

It is Defire'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 BCA 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)².

² International Fire Engineering Guidelines – Edition 2005, Australian Building Codes Board, Australia.



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

Victor Tung
Accredited fire safety engineer
Defire – Innovative fire safety



Attachment 1 Drawings and information

Drawing title	Dwg no	Date	Drawn
Site plan	17012 BCC1AD00001 rev 1	21/08/17	Tzannes
GA plan – basement 1	17012 BCC1AD1B100 rev 1	21/08/17	Tzannes
GA plan – basement 2	17012 BCC1AD1B200 rev 1	21/08/17	Tzannes
GFA summary	17012 BCC1AD00007 rev 1	21/08/17	Tzannes
GA plan – ground floor	17012 BCC1AD20000 rev 1	21/08/17	Tzannes
GA plan – mezzanine	17012 BCC1AD30000 rev 1	21/08/17	Tzannes
GA plan – level 01	17012 BCC1AD30100 rev 1	21/08/17	Tzannes
GA plan – levels 02-05	17012 BCC1AD30200 rev 1	21/08/17	Tzannes
GA plan – level 06	17012 BCC1AD30600 rev 1	21/08/17	Tzannes
GA plan – roof	17012 BCC1AD30700 rev 1	21/08/17	Tzannes
Contextual street elevation	17012 BCC1AD40000 rev 1	21/08/17	Tzannes
South elevation	17012 BCC1AD41000 rev 1	21/08/17	Tzannes
West elevation	17012 BCC1AD42000 rev 1	21/08/17	Tzannes
North elevation	17012 BCC1AD43000 rev 1	21/08/17	Tzannes
East elevation	17012 BCC1AD44000 rev 1	21/08/17	Tzannes
Section AA	17012 BCC1AD50001 rev 1	21/08/17	Tzannes
Section BB and CC	17012 BCC1AD50002 rev 1	21/08/17	Tzannes

Other information	Ref no	Date	Prepared by
Building Code of Australia Report – Commercial Building C1 Barangaroo South	073904-03 BCA	23/08/17	McKenzie Group Consulting