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ARUP

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Dear John,

Sydney Opera House Tours Immersive Digital Experience Project (TIDE)
Fire Engineering – White Box Population Capacity

To support the Development Approval process for the TIDE Project, Sydney Opera House have requested Arup to provide a letter which outlines the works undertaken which determined the population capacity of the White Box.

The fire engineering analysis undertaken to determine the population capacity is set out below which is as documented within the Arup Fire Engineering Report produced for this project[i]:

- The White Box shall be provided with a single exit via the swing door in the south-west corner of the room. The door shall swing in the direction of egress. Whilst access to the room will be primarily via the sliding door, this is not relied upon and shall not be used for egress.
- From the single exit door, occupants are provided with a choice of egress paths, either via the Bennelong Passage or through the BOH Passage to the Central Passage, as shown in Figure 1.

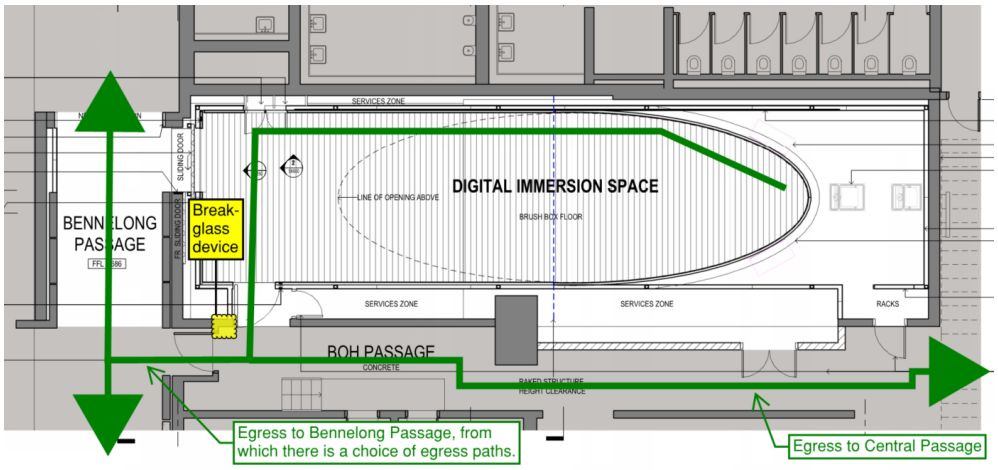

Figure 1: Egress paths from Within the White Box.

- Based on measurements provided by SOH, the narrowest point along either path of travel is 1m. This accommodates up to 100 people in accordance with Clause D1.6 of the BCA (including occupants in the adjacent cool rooms and toilets). As this population is governed by available egress width it is independent of the use of the space, however it is recommended that Table D1.13 be consulted for appropriate occupant densities within the space.
- Applying an occupant load factor of 1m^2/person (Theatre and public hall), Table D1.13 suggest the space can accommodate 66 people. However, Clause D1.13(c), permits the capacity of the space to be calculated using Table D1.13, or by '*any other suitable means of assessing its capacity*'.
- Clause D1.6 of the BCA permits a doorway to have an unobstructed width 250 mm less than the width of the exit path it serves (750 mm in this case). The egress door from the White Box is greater than 750 mm (approximately 1 m as measured from the IFC architectural drawings[ii]), hence can accommodate 100 people.
- The BOH Passage must be kept clear of storage and combustibles to maintain a minimum egress width of 1m through to each final exit.
- It is possible that all occupants in the White Box may need to escape via the Central Passage to reach an exit. This has been reviewed against the existing egress strategy within the Central Passage and considered as part of the egress strategy from within the White Box for this project.

Based on the above assessment, the White Box can accommodate a population of up to 100 people.

Yours sincerely

Oliver Gibson
Graduate Engineer

Alistair Morrison
Associate Principal

cc Chris MacDonald

[i] '*Tours Immersive Digital Experience Project (TIDE) Fire Engineering Report Rev B*' prepared by Arup dated 1 November 2019.
[ii] IFC architectural documentation package received via aconex on 1 November 2019 in aconex '*Transmittal: SC2-TRANSMIT-000451*'.