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Enquiries: Sebastian Roache
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Built Construction
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Attention: Jamel Sadiki

Dear Jamel

**RE: Sandstone – Lands Building – Fire Engineering Process – Response to
SSDA7484 MOD 18 RTS**

This letter relates to the Fire Engineering approvals process in New South Wales through consultation with Fire Rescue New South Wales (FRNSW). This process has been used to support fire engineering performance outcomes for the redevelopment of the Department of Lands Building located at 23-39 Bridge Street, Sydney, NSW 2000.

The Fire Engineering Process in Australia for Class 2 to 9 buildings is governed by the National Construction Code (NCC) Volume 1, with NCC 2019 Volume 1 Amendment 1 being the current revision. Part A2 of the NCC explains the possible methods of demonstrating compliance with the NCC. Compliance can be achieved by complying with:

- the governing requirements of the NCC; and
- the Performance Requirements,

Satisfying the Performance Requirements can be achieved by:

- A Performance Solution,
- A Deemed-to-Satisfy (DtS) Solution; or
- A combination of the two.

A Performance Solution is the instrument in which a design that doesn't comply with the Deemed-to-Satisfy requirements can achieve compliance with the NCC through recognised Assessment Methods.

BCA Clause A2.2(4) outlines the steps required to demonstrate satisfaction of a Performance Requirement by way of a Performance Solution:

- Part (a) states that a performance-based design brief (PBDB) must be prepared in consultation with relevant stakeholders;
- In NSW, the relevant fire brigade authority is Fire Rescue New South Wales (FRNSW); and
- FRNSW should be engaged in the PBDB process as a stakeholder.

The development of a PBDB is presented in the International Fire Engineering Guidelines (IFEG) and is referred to as a Fire Engineering Brief (FEB). Relative to NSW:

- the PBDB/FEB is referred to as the Fire Engineering Brief Questionnaire (FEBQ);
- The FEBQ is prepared by a Fire Engineer and presented to FRNSW; and
- The FEBQ contains the proposed assessment methodologies to demonstrate compliance with the relevant Performance Requirements.

The FEBQ is the formal process that allows FRNSW as a stakeholder to:

- Make comments and recommendations on the proposed assessment methods,
- Provide in-principle support for the Performance Solutions,
- Indicate satisfaction that the proposed Performance Solutions comply with the Performance Requirements.

FRNSW will not provide support to Performance Solutions they deem do not support the safety of:

- Building occupants;
- The attending fire brigade; and
- Building assets.

During the FEBQ process specific for the Department of Lands Building, FRNSW responded to FEBQ V01 on 11/10/2019. Regarding the Rationalisation of FRL Performance Solution (Performance Solution 1) FRNSW provided 10 comments, specifically (emphasis added):

- The structure remains for the time which is commensurate to the hazard, risk and fuel load as well as the time taken to **evacuate the occupants and for FRNSW to carry out search and rescue and firefighting operations (fire service intervention)** unless otherwise justified.
- Fire spread to other buildings and external fire attack needs are to be within acceptable BCA verification methods. Any reduction in FRL should also demonstrate that it is adequate to prevent fire spread to and from neighbouring buildings/compartments. The assessment should also demonstrate that the FRL **is adequate to maintain structural adequacy under exposure from a fire in neighbouring buildings/compartments.**
- It is noted that a reduction in FRL of 50% or more may eventuate as certain members require an FRL of 180, in accordance with Table of the BCA for Type A construction (if these are to be constructed with a FRL of 60) as per the abovementioned performance solution. This is to be clarified and it should be noted that **a reduction in the required FRLs of greater than 50% will not be supported by FRNSW.**

The FRNSW response to FEBQ V01 became FEBQ V02 and FRNSW responses were addresses in V03 and subsequent revisions.

Upon receiving in-principle support from FRNSW, the Performance Solutions proposed in the FEBQ are typically developed in a Fire Engineering Report (FER), based on the agreed approach and methodology from the FEBQ stage. The final FER is submitted by the Principal Certifying Authority (PCA) to FRNSW in an Initial Fire Safety Report in accordance with Clause 144 of the EP&A Regulations. This report enables a Construction Certificate to be issued for the building.

The PCA may elect to support Performance Solutions that have not been endorsed by FRNSW, but in doing so take on additional risk themselves, being liable should the Performance Solution fail to provide adequate safety to building occupants, the attending fire brigade, and building assets.

It is noted that other lines of communication can be sought from FRNSW in the form of a meeting or informal verbal conversation. Regarding these discussions, FRNSW states:

"FRNSW will only provide advice during the meeting and no formal (i.e. written) assessment will be provided on the matter. A meeting does not substitute for any formal assessment or consultancy service on statutory fire safety. Any advice given by FRNSW during a meeting is also subject to change depending on any determination by a relevant authority."

Furthermore, Fire Engineering Upgrade Strategy can be pursued to upgrade the existing fire safety systems of a building to meet the intent of the Performance Requirements of the current NCC revision. It should be noted that the BCA Consultant, Philip Chun, has confirmed that, due to legislative requirements, a Fire Safety Upgrade would not be suitable to enable the issue of the relevant Construction or Occupation Certificates.

To determine compliance with the FEBQ FRL Rationalisation requirements, Warrington Fire undertook specialist laboratory testing of materials constructed specifically representative to the existing works at The Lands Building. The Warrington Fire analysis evaluated the ability of the heritage ceiling fabric, when protected with a CAP508 intumescent coating, to meet the performance criteria defined in the FEBQ. With the failure of the majority of the laboratory tests, alternative means of achieving the FEBQ defined performance criteria was required, resulting in MOD 18 changes.

In relation to MOD 18 for the Lands buildings which contemplates the replacement of lathe and plaster ceilings with fire rated plaster board, the in-principle conditions set down in the FEBQ need to be assessed against the proposed changes. This is known as a "Consistency Letter" which allows a revised FER to be issued without re-issuing an updated FEBQ. Stantec completed an assessment of the proposed changes to MOD 18 and its impact on the conditions within the FEBQ were addressed in a consistency letter dated 12.12.22 "Lands Buildings – MOD 18 Fire Engineering Statement". The conclusion of this letter stated, *"Subject to further assessment that demonstrates that all departures from the tested system, including the cornices (both salvaged and replica), will not impact the fire resistance of the ceiling, it is considered that the proposed MOD18 design achieves the required performance as per the fire safety strategy outlined within Fire Engineering Report: FE-RE-FER-292 12-Lands Rev 006 issued on the 25th of November 2022."*

The FER was subsequently updated and will be re-issued to the PCA and FRNSW together with the consistency letter.

The above commentary describes the process used to achieve Fire Engineering outcomes for the redevelopment of the Department of Lands Building. Stantec's approach to Fire Engineering is in accordance with the International Fire Engineering Guidelines (IFEG), the Australian Fire Engineering Guidelines (AFEG), and relevant State authorities.

Should you have any further queries please do not hesitate to contact us.

Yours sincerely

Stantec Australia Pty Ltd



Sebastian Roache
Fire Engineer