

Your ref
Our ref 281228
File ref

ARUP

To Whom It May Concern

Level 5
151 Clarence Street
Sydney NSW 2000
Australia

t +61 2 9320 9320
d +61 2 9320 9033
f +61 2 9320 9321

james-d.ward@arup.com
www.arup.com

23 August 2021

Dear Sir/Madam

Trinity Grammar School Renewal Project – Response to SSDA questions (fire-eng)

Introduction

This letter concerns the fire safety design of the Trinity Grammar School Renewal Project (Sydney), for which Arup are the fire engineering consultants.

The purpose of this letter is to respond to questions relating to the fire engineering design of the Arrow Building, raised by the Department of Planning during the State Significant Development Application (SSDA) process. These questions are outlined in Appendix A of a letter titled “Trinity Grammar School Redevelopment (SSDA 10371)” by the Independent Planning Commission, dated 16 August 2021.

This letter has been coordinated with the project BCA Consultant (Design Confidence) as some aspects relate to the Deemed-to-Satisfy provisions.

The Arrow Building comprises of an elevated, external walkway connecting numerous internal spaces for circulation purposes. The walkway connects five stories.

SSDA Questions

19.1 – What performance-based fire engineering strategies are being contemplated and how will these impact on the proposed design of the Arrow Building?

The Arrow Building will be used for egress from connecting internal spaces. The external stairs will be classified as required-non-fire-isolated stairways in accordance with the Building Code of Australia (BCA) Clause D1.9. The stairs will connect five levels (rather than three, as would be permitted by clause D1.3) – this is proposed to be addressed as a Performance Solution which utilises the benefits of an external circulation space for occupant egress. Extended travel distances to the nearest exit are likely to be present from the internal spaces and are proposed to be addressed as a Performance Solution.

The walkway will not be sprinkler protected, where it is used for circulation only and no combustibles (e.g lockers) are present. Connecting internal spaces may be sprinkler protected. Fire separation of the non-sprinklered walkway and sprinklered internal space is not proposed and is intended to be addressed as a Performance Solution. Targeted

compartmentation may be implemented in specific areas to separate the walkway from internal areas, if deemed necessary to support the buildings fire safety strategy.

The Arrow Building will comprise of fire rated (and non-combustible) floors supported by fire rated structural elements in order to limit fire spread via the external walkways.

It is anticipated that further Performance Solutions may be considered and implemented as the design for the Arrow Building progresses.

19.2 – How are the new and existing portions of the campus to be fire separated from each other to avoid new works having an adverse impact on the existing retained structures?

New works will be provided with fire rated structures that meet the requirements of the BCA. Compartmentation will be provided to fire separate areas with different FRL requirements.

The compartmentation strategy aims to provide an appropriate level of fire separation such that the proposed works do not impact on the compliance status of existing buildings which are not subject to new works. Parts of the existing retained structure may be upgraded if exposed to a larger fire risk as a result of the new works.

19.3 – How will fire separation strategies impact on the design of the Arrow Building?

The Arrow Building is not proposed to be fire separated from connecting internal spaces. Rather, it will be considered part of the internal fire compartment for the purposes of BCA compliance. Targeted compartmentation may be considered in certain areas (e.g to separate different connecting spaces, new and existing areas or high-risk areas).

As described in 19.1, the walkway will not be sprinkler protected and is unlikely to be fully fire separated from internal sprinkler protected spaces. This is proposed to be addressed as a Performance Solution.

The floors (and structure) of the Arrow Building will be fire rated to limit fire spread via the walkways.

19.4 – Are any or all of the stairs proposed within the Arrow Building required to be fire escape/exit stairs?

All of the Arrow Building stairs are currently planned to be used for egress. Internal stairways will also be present and are to be used for egress.

19.5 – If any or all of the stairs proposed within the Arrow Building are required fire escape/exit stairs, how will the requirements for fire isolation/ BCA compliance impact on the visual/ physical design resolution of the Arrow Building façade and their use?

The stairs will be non-fire-isolated as per clause D1.9 of the BCA. They will connect five stories (rather than 3, as would be permitted under clause D1.3) – this is proposed to be addressed via a Performance Solution which utilises the measures outlined in 19.1. Fire isolation requirements such as bounding fire isolated construction around the Arrow Building walkway is not proposed.

Yours faithfully



James Ward
Senior Fire Engineer

cc Peter Brogan (Bloompark)
Andrew Pender, Sue Cai (PMDL)
Luke Sheehy (Design Confidence)
Berna Zaragoza Solis, Marianne Foley (Arup)