Fire Safety Engineering Design Review for SSDA Submission

Apollo Place Data Centre

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1. General

Scientific Fire Services (SFS) has undertaken a preliminary review and high-level assessment of the architectural drawings, concepts and BCA report outlining the DtS departures from the BCA for the proposed Apollo Place Data Centre.

It is noted that Scientific Fire Services provided informal and preliminary Fire Engineering input to the applicant prior to SSDA Submission to ensure that the overall strategy and the SSDA plans were prepared to anticipate requirements at the Construction Certificate stage and avoid modification applications. It is generally premature to prepare an PBDB document at the SSDA stage and common practice if request by Council for fire engineering input is to prepare a Fire Safety Engineering Design Review.

As concluded in this Design Review, based on the review of the proposed design issues identified herein, Scientific Fire Services can confirm that the documentation in relation to the subject development will achieve fire safety design compliance to the relevant Performance Requirements of the National Construction Code Series – Volume 1 – BCA 2022, Building Code of Australia (BCA).

The following provides a summary of the fire safety risk engineering aspects and 'in-principle' support for the proposed design.

2. The Site

The site is identified as 1 Apollo Place and 1 Sirius Road, Lane Cove West. The total area of the Site is 5,301 sqm. It is noted that the Site comprises 2,590 sqm of the south-eastern portion of 1 Sirius Road which spans across 42,053sqm. The site is identified in Figure 1 and Figure 2 below.

The site currently comprises a four (4) storey building (1 Sirius Road), which we understand is currently used as offices ancillary to the approved data centre being constructed on site and a one storey building (1 Apollo Place) which we understand is used as a light industry. The site has four existing vehicle driveway crossovers to Apollo Place. The neighbouring lot to the south is currently an office building. The neighbouring lots to the east are a plastic tool manufacturer and orthopaedics manufacturer.

The site is located approximately 9.1km northwest of the Sydney CBD and 12.4 km east of Parramatta. The site is approximately 500m north of the Lane Cove Business Park and approximately 2.5km from the Lane Cove town centre. The Lane Cove River and Stringybark Creek are located approximately 200 – 250m north and west of the Site.

The Lane Cove Tunnel which forms part of the Hills Motorway (M2) is located 500m north of the Site. A motorway stack known as the Western Stack is located within the north-western lot adjacent to the Site (3 Sirius Road). The site is strategically positioned within the Lane Cove West Business Park, which is designated for such industrial-related uses, the proposed development represents a logical outcome that would provide employment-generating opportunities close to where people live and nearby to available transport infrastructure routes.

The existing site context is shown in Figure 2.1 and Figure 2.2 Figure 2.5.

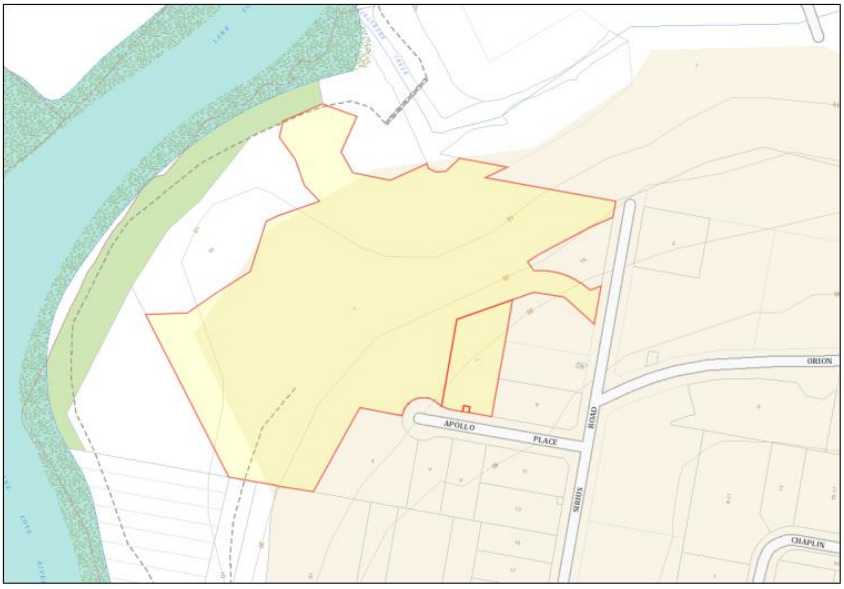

Figure 2.1: Cadastral Map (Source SIX MAPS, 2022)

Figure 2.2: Aerial Map (Source: Sixmaps, 2022)

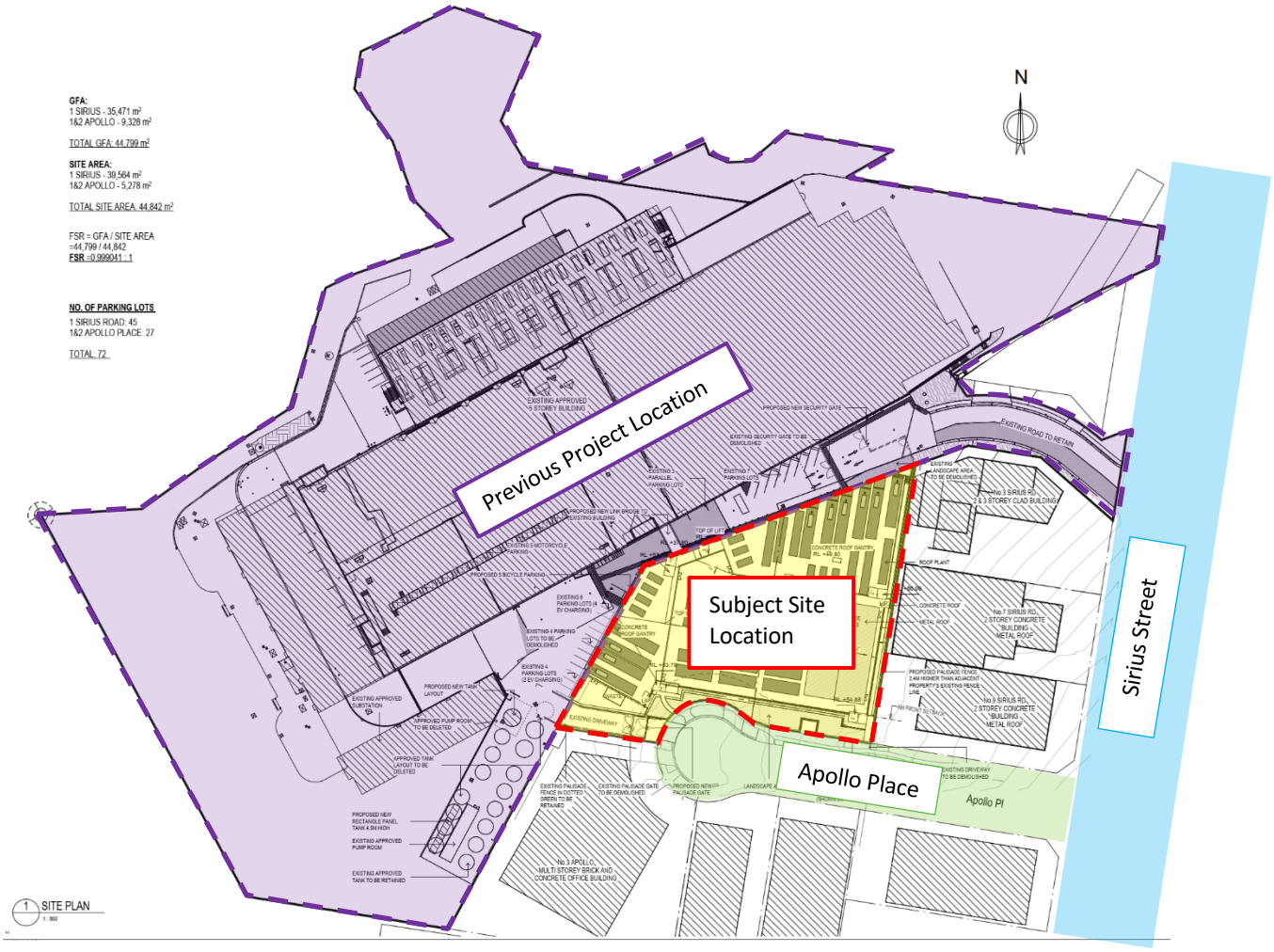

Figure 2.3: Proposed Site Plan

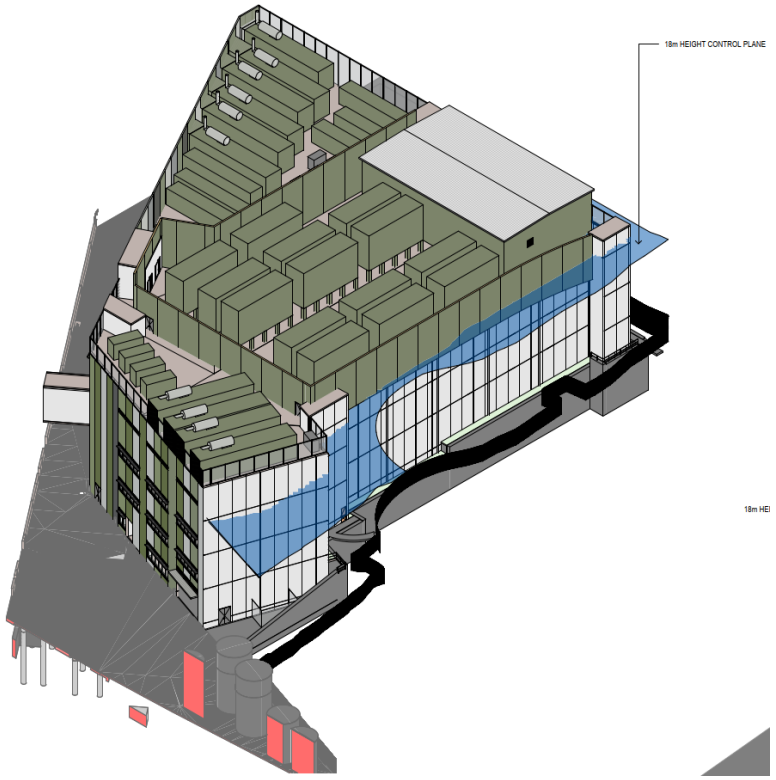

Figure 2.4: 3D artistic view

Figure 2.5: South West Elevation

3. Proposed Development

The proposal involves the construction and operation of a data centre and associated infrastructure and amenities, identified as the Apollo Place Data Centre, comprising the following scope of works

- Minor earthworks involving cut and fill works
- Infrastructure comprising civil works and utilities servicing
- Construction of a four (4) storey data centre building comprising:
    - A power consumption of 45 megawatts (MW)
    - 9,328 sqm of gross floor area (GFA)
    - 4 data halls
    - 28 back-up generators
- Diesel storage capacity of 345.5 kilo litres (kL)
- 27 car parking spaces
- 392 sqm of associated landscaping
- Ancillary offices and amenities
- Hours of operation being on a 24 hours per day, 7 days per week basis

The general overview of the subject development layout has been illustrated in Figure 3.1 to Figure 3.4.

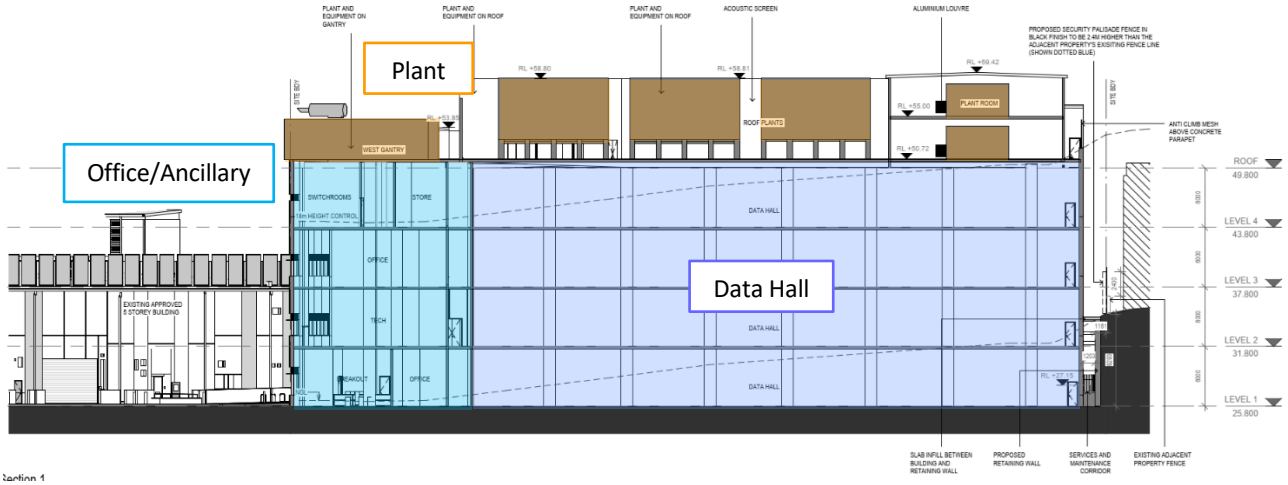

Figure 3.1: Section 1

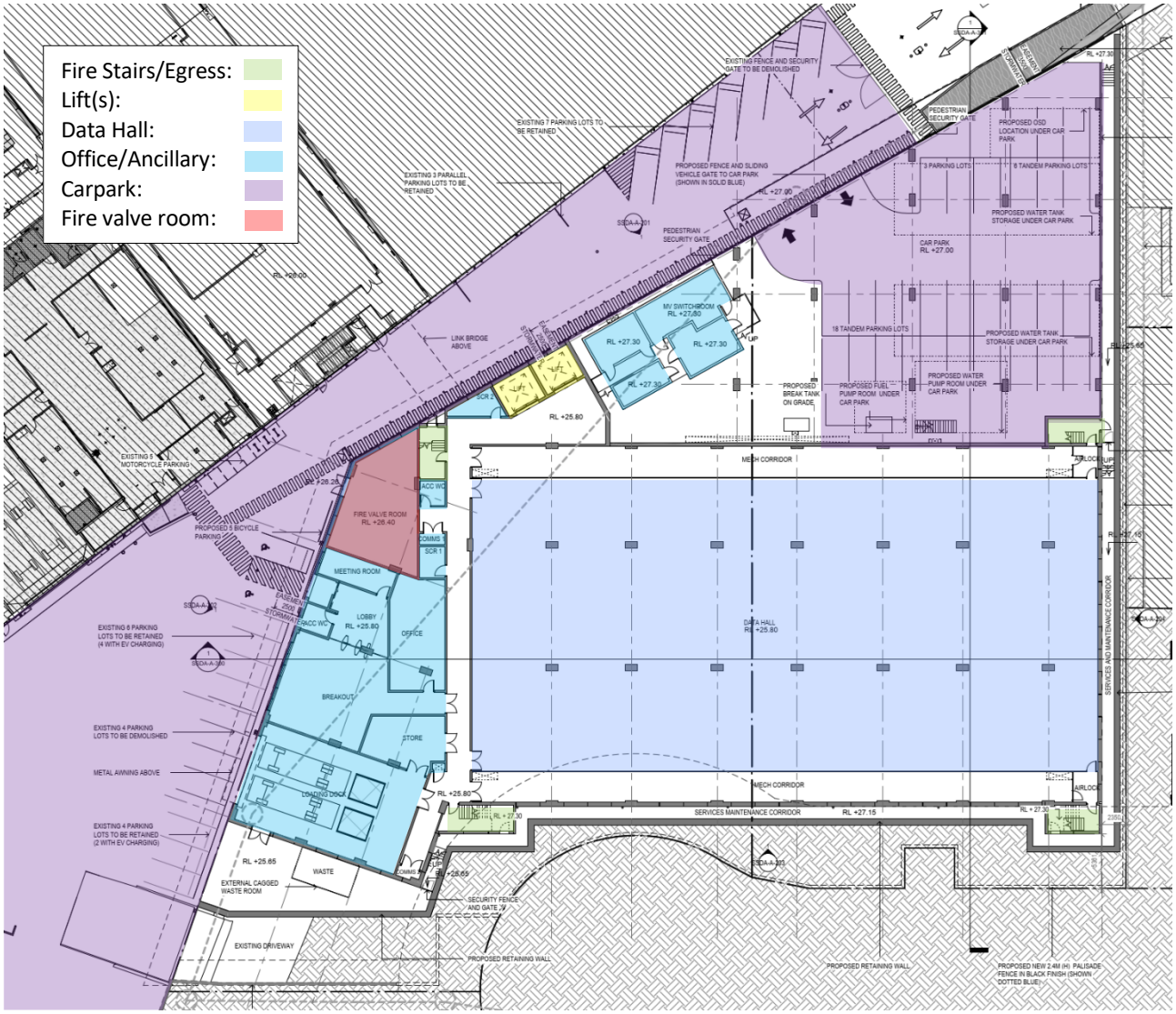

Figure 3.2: Level 1 Floor Plan

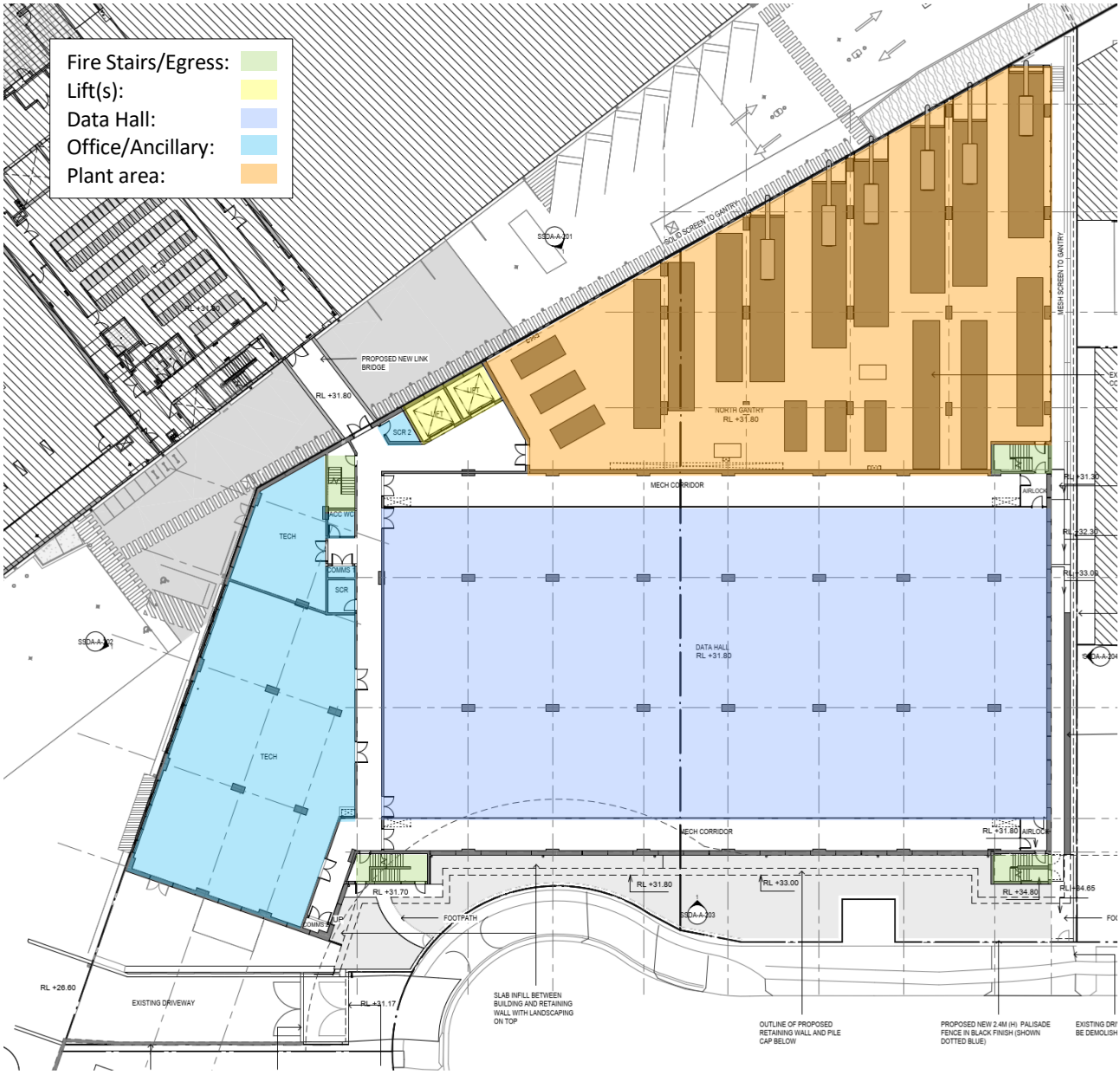

Figure 3.3: Level 2 Floor Plan Layout (L3-L4 similar)

Figure 3.4: Level 5/Roof Floor Plan

Outlined below is a BCA summary of the overall building detail.

Table 3.1: BCA description of building

Building Summary	Classification and Use
Building Classification	Class 5 (Office), Class 7a (Carpark) & Class 7b (Data Halls)
Number of Storeys Contained	Seven (7)
Rise in Storeys	Four (4)
Type of Construction Required	Type A construction
Effective Height	< 25m

4. Purpose

The preliminary fire safety engineering review was undertaken to determine 'in-principle' whether the design will achieve compliance with the Performance Requirements of the Building Code of Australia (BCA) (ABCB, 2022). The design review relates to the fire-resisting construction, egress provisions and fire protection services proposed for the entire development.

The design issues specific to the subject building (refer to Table 5.1) will be formally assessed through the application of the fire safety risk engineering process in accordance with the Australian Fire Engineering Guidelines (AFEG) (ABCB, 2021). It is the expectation that a suitable performance solution will be developed and supported through robust fire engineering methodologies of the current design proposal.

5. Compliance Expectation

The relevant Performance Requirements against which the Performance Solution is assessed must be established in accordance with the BCA. From Clause A2G2, a number of 'Performance Solutions' may be used to show that a Building Solution complies with the Performance Requirements. The following table provides a summary of the fire safety risk engineering aspects of the design that will be the subject of the project Performance Solution. Based on the regulatory compliance report prepared by Jensen Hughes, the BCA departures that are proposed to be addressed through fire engineering performance solutions are detailed in Table 5.1.

Table 5.1: BCA departures – Fire safety engineering scope of works

No.	Performance Solution Design Issues Addressed	BCA DtS Provision	Performance Requirement(s)
1.	It is proposed to review the link bridge connecting the existing building and the proposed new development.	A7G2, C3D8, C4D4 and C4D5	C1P1 and C1P2
2.	It is proposed to review openings within 3m of the eastern boundary formed by the under-covered area between floor slabs at L2-L5. The plant equipment in this area of the building shall be located at more than 3m away from the eastern site boundary and the areas within 3m of the boundary shall be maintained as a fuel sterile area.	C3D7	C1P2
3.	Extended travel distances have been identified throughout various areas of the building as per the following • Extended travel distances of up to 30m to a point of choice in lieu of the BCA DtS prescribed distance of 20m; and • Extended travel distances of up to 40m to the nearest exit in lieu of the BCA DtS prescribed distance of 40m.	D2D5	D1P4, E2P2
4.	Extended travel distances between alternative exits have been identified throughout various areas of the building as per the following: • **External/semi external plant area:** Extended travel distance between alternative exits of up to 110m in lieu of the BCA DtS prescribed distance of 60m. • **Data Halls:** Extended travel distance between alternative exits of up to 110m in lieu of the BCA DtS prescribed distance of 60m.	D2D6	D1P4, D1P6, E2P2
5.	It is proposed to permit the reduced unobstructed egress width in the hot aisle corridor within the data hall and in the plant areas to be no less than 750mm in lieu of the BCA DtS required 1000mm.	D2D8	D1P6, E2P2
6.	It is proposed to review the egress configuration of the L5 plant room, where the egress configuration is achieved through a non-fire isolated stair that leads to the roof level. The stair has been identified to not continuously lead to the road in accordance with the prescriptive DtS provisions of BCA Clause D2D14, instead it required use of a separate fire stair to reach open space connected to the road at ground level.	D2D14	D1P4, D1P5, E2P2
7.	It is proposed to review the booster assembly location that is not within the sight of the principal pedestrian entrance	E1D2	E1P3
8.	To permit fire hose reel coverage to the fire separated main switch room and other service rooms to be achieved through the fire hose reel passing through the fire/smoke door serving the identified rooms.	E1D3	E1P1

6. Statement of Endorsement

The fire and life safety related design issues will be addressed through the performance-based path of compliance. Scientific Fire Services can confirm that the proposed design will achieve fire safety design compliance to the Performance Requirements of the Building Code of Australia (BCA), (ABCB, 2022) Volume 1.

The formulation of the Performance Based Design Brief (PBDB) represents the next step in the approvals process. Scientific Fire Services shall commence the process of developing this document and will provide a formal comprehensive PBDB submission. As part of the process, a Fire Engineering Brief Questionnaire (FEBQ) document shall be prepared in accordance with the Fire and Rescue NSW pro forma and formally submitted as part of the referrals process.

Finally, and in order to ensure that the client can obtain a Construction Certificate for the proposed building works, Scientific Fire Services will prepare a Fire Safety Engineering Report (FSER) incorporating stakeholder conditions, comments and advice to the satisfaction of the Principle Certifying Authority (PCA).

On the basis of the review of the proposed design issues identified herein, Scientific Fire Services can confirm that the documentation in relation to the subject development will achieve fire safety design compliance to the relevant Performance Requirements of the National Construction Code Series – Volume 1, Building Code of Australia (BCA), 2022 Volume 1.

I trust the above is satisfactory for your current purposes. Should you have any queries, please do not hesitate to contact me on (02) 9221-3658 or email to parkan.behayeddin@scifire.com.au

SCIENTIFIC FIRE SERVICES

Parkan Behayeddin

Certifier – Fire Safety

BDC: 0756

Appendix A. Architectural Drawings

Table A.1: Architectural drawings relied upon

SHEET LIST		
Sheet Number	**Sheet Name**	**Current Revision**
SSDA-A-000	COVER SHEET	F
SSDA-A-050	LOCALITY/CONTEXT PLAN	B
SSDA-A-052	SITE PLAN	E
SSDA-A-100	LEVEL 1 PLAN	D
SSDA-A-101	LEVEL 2 PLAN	C
SSDA-A-102	LEVEL 3 PLAN	C
SSDA-A-103	LEVEL 4 PLAN	C
SSDA-A-104	LEVEL 5 / ROOF PLAN	D
SSDA-A-201	NORTH EAST ELEVATION	C
SSDA-A-202	NORTH WEST ELEVATION	C
SSDA-A-203	SOUTH WEST ELEVATION	D
SSDA-A-204	SOUTH EAST ELEVATION	D
SSDA-A-300	SECTION	D
SSDA-A-301	SECTION	D
SSDA-A-500	HEIGHT CONTROL PLANE DIAGRAM	C
SSDA-A-600	SHADOW DIAGRAMS - SUMMER SOLSTICE	C
SSDA-A-601	SHADOW DIAGRAMS - WINTER SOLSTICE	C
SSDA-A-800	GFA CALCULATION DIAGRAMS	B