

BCA Assessment Report

78 Lockwood Road Data Centre
78 Lockwood Rd, Erskine Park

Prepared for:

Stack, c/- Linesight

Revision 5

24 March 2026

Reference: 250157



bmplusg.com.au

Executive Summary

The following comprises a summary of the key compliance issues identified under the assessment in this report that will be required to be addressed prior to the Certification Applications for the project.

A. Matters requiring redesign or additional information at CC:

+ BCA (DtS) Clause	+ Description
1. C2D10, C2D14	An External Wall Disclosure Statement is to be provided with the appropriate test reports and details of non-combustible external walls, including all ancillary elements.
2. Spec. 5, C3D8, & C3D9	Final FRL plans to demonstrate compliance with Spec. 5 (and future FER) are to be provided (detailing locations of Fire Walls and all fire rated elements in the building).
3. C3D13, C3D14	See note above - Final FRL plans of any proposed Fire Separation of Equipment & Electrical infrastructure to be provided at CC Application stage.
4. C4D15	Details of fire rated risers and services penetrations in the Data Halls are to be provided for review to determine if a protection of openings performance solution is required.
5. D2D7, D2D8, D2D18 & F4D4	The final population of the building is required to be confirmed by Stack at the CC Application stage to facilitate an assessment of the overall required egress widths and sanitary facility requirements.
6. D2D12	Details of the discharge location and path from the discharge of the fire stair on the Lower Ground Level are required to be provided to confirm compliance with D2D12
7. D2D15	Details of the grades and stairs to the discharge pathway from the building exits to Lockwood Road are required to confirm compliance with D2D15(3).
8. D2D16	Confirmation of the proposed Horizontal Exit location in all proposed Fire Walls on each level to be confirmed by Architect & Fire Engineer at the CC Application stage.
9. D3D13	Details of the proposed method of egress from the Roof as Open space Carpark are on the northern side of the Upper Ground Level down to Lower Ground Level via a compliant external exit stairway or ramp are to be provided at CC Application stage.
10. Part D4, F4D4	A separate report will be required from an Access Consultant to outline the applicable requirements for the building. Specific details regarding the possible application of D4D5 to the various Class 7b & 8 portions of the building will also be required.
11. E1D15	A Fire Control Centre is to be nominated and details demonstrating compliance with Spec. 19 are to be provided for review.
12. E1D17, E2D21	Fire Services Designer, Hydraulic Engineer, Mechanical Engineer and Fire Engineer to confirm that the proposed fire services & smoke hazard

+ BCA (DtS) Clause	+ Description
	management systems have the capability to address the additional hazard resulting from the Lithium-ion battery storage in the main Data Centre building. In addition to the above, consideration will need to be given to the additional hazards on the site resulting from both the Generator Gantry and the Electrical Substation / Switchyard infrastructure, to determine the extent of fire services required to serve these Class 10 buildings.
13. Section J	A Section J Compliance Report or JV3 Report will be required to be provided with the CC application.

B. Matters requiring fire safety engineered performance solutions:

+ BCA (DtS) Clause	+ Description
1. Spec.5	Rationalisation of FRLs applicable to the Class 7b portions of the building – TBC.
2. C3D8 & Spec.5	Rationalisation of FRLs to the fire walls separating the Data Halls and the remaining parts of the building on each level - TBC.
3. C3D4, C3D5	A performance solution is required to address the Perimeter Vehicular Access passing through the undercroft area on the northern end of the main Data Centre Building.
4. C4D15	Rationalisation of the FRLs achieved by service penetrations through 4 hour FRL building elements and fire damper activation requirements.
5. D2D5, D2D6	The current plans indicate that exit travel distances, and distances between alternative exits within the building will not comply with D2D5 & D2D6.
6. E1D2	As the volume of the main Data Centre building exceeds 108,000m ³ a performance solution is required for the hydrant system design in accordance with Appendix C of AS 2419.1-2021.
7. E1D3	Omission/rationalisation of fire hose reels throughout the main Data Centre Building.
8. E1D4	To allow the sprinkler booster assembly to be not located in line of sight of the building pedestrian entrance – TBC; to permit the sprinkler valve room locations to not have direct egress to a road or open space – TBC; and to allow the floor area protected by tail-end and pre-action fire sprinkler systems which exceed the limitations in AS 2118.1-2017 - TBC.
9. E2D10, Spec. 21	As the volume of the main Data Centre building exceeds 108,000m ³ a performance solution may be considered for a rationalised smoke exhaust design.

C. Other matters requiring performance solutions:

+ BCA (DtS) Clause	+ Description
1. F3P1	A Performance Solution report is to be provided by the Architect / Façade Engineer to demonstrate how the external walls are designed to prevent the penetration of water into the building.
2. Section J	A J1V3 Report may be required to be provided with the CC application.

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+ Author	Dean Goldsmith
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✦ Status	Final Report – SSDA stage
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✦ Revision	5	✦ Date	24.03.2026
✦ Status	Final Report – SSDA stage		

1.0 Description of Project

1.1 Proposal

This BCA Assessment Report has been prepared by BM+G on behalf of STACK Infrastructure to accompany a State Significant Development Application (SSDA) for a proposed data centre development at 78 Lockwood Road, Erskine Park (the site).

The site is located in the Penrith Local Government Area (LGA) and is approximately 40km west of the Sydney Central Business District (CBD), 20km west of the Parramatta CBD, and 10km north-east of the future Western Sydney International Airport.

The site is an irregular shaped 7.7-hectare lot bounded to the north by Lenore Drive and to the east by an E2 Environmental Conservation corridor that follows Ropes Creek. The site relies upon access from a cul-de-sac at the eastern end of Lockwood Road at the site's southern boundary. An aerial photograph is provided at Figure 1.

Figure 1 Aerial Photograph of Site



Source: Urbis GIS, 2025

The project comprises the construction of a data centre development including the following key components:

- + Site preparation and bulk earthworks.
- + Temporary construction access from Lenore Drive.

- + Construction of a three-storey data centre comprising two buildings, with a maximum height of 26.5 metres and a total gross floor area (GFA) of approximately 56,506m², including technical data halls, office and administrative areas, and ancillary circulation space.
- + At-grade under-croft car parking (34 spaces) within the building footprint, plus an additional 44 on-site spaces, providing a total of 78 parking spaces.
- + Separate generator gantry accommodating 188 backup generators.
- + Landscaping and associated public domain works.
- + Extension and augmentation of physical infrastructure and utilities as required, including an on-site substation and water storage tanks integrated within the building footprints.
- + Off-site works comprising the delivery of two 330kV transmission lines from the TransGrid Sydney West Substation site to the subject site, utilising existing road reserve along Lenore Drive.

Detailed project description:

Project Element	Summary
Project Summary	Site preparation and bulk earthworks. Temporary construction access from Lenore Drive. Construction of a three-storey data centre comprising two buildings, with a maximum height of 26.5 metres and a total GFA of approximately 56,506m², including technical data halls, office and administrative areas, and ancillary circulation space. At-grade under-croft car parking (34 spaces) within the building footprint, plus an additional 44 on-site spaces, providing a total of 78 parking spaces. Separate generator gantry accommodating 188 backup generators. Landscaping and associated public domain works. Extension and augmentation of physical infrastructure and utilities as required, including an on-site substation and water storage tanks integrated within the building footprints. Off-site works comprising the delivery of two 330kV transmission lines from the TransGrid Sydney West Substation site to the subject site, utilising existing road reserve along Lenore Drive.
Site/Project Area	The data centre development relates to Lot 101 in DP 1268632 which comprises an area of approximately 77,241.97m ² , together with land within Lenore Drive (public road, part C2 Environmental Conservation and Part IN1 General Industrial zone) associated with the proposed HV route.
Proposed uses	Data centre with ancillary office space
Data halls	32 data halls
GFA	56,506m ²
FSR	0.73:1

Project Element	Summary
Site Coverage	43,313.09m ² (56.07% of site)
Utilities	Provision of required utilities including: 188 x diesel generators accommodated with generator gantry structure. Two x above-ground water tanks for fire water. 330/132/11kV switching station.
Power consumption	450 MW
Maximum height	26.5m over three storeys
Vehicular Access	Vehicle access via Lockwood Road
Parking	78 car spaces including two accessible spaces
Bicycle Parking	30 spaces
Motorbike Parking	Three spaces
Deep Soil Area	15,806.37m ² (20.5% of site)
Tree Canopy Coverage	8,181m ² (10.59% of site)
Earthworks/Cut and Fill	Net fill of approximately 38,460m ³
Hours of Operation	The facility will be operated on a 24-hour, 7 day a week basis.
Jobs	Construction: 1,482 Operation: 200
Staging and Construction	The project is to be constructed over two stages: Stage 1 – Eastern data centre building, on-site substation, generator gantry, external plant and equipment, new Lockwood Road access, internal roads, car parking, and landscaping, External HV Cabling Route Stage 2 – Western data centre building, gantry expansion, external plant and equipment, additional car parking and landscaping.
Estimated Development Cost	\$3,699,726,631.89

1.2 Aim & Response to SEARs

The aim of this report is to:

- + Undertake an assessment of the proposed development against the deemed-to-satisfy provisions of the BCA 2022.
- + Identify matters that require plan amendments in order to achieve compliance with the BCA 2022.
- + Identify matters that are to be required to be addressed by Performance Solutions.
- + Enable the certifying authority to satisfy its statutory obligations under Clause 19(1) of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.
- + Following exhibition of the SSDA, the project has been refined in response to submissions from authorities and ongoing design development. This has necessitated an update to the BCA report as outlined below in section 3.0.
- + This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 11 April 2025 issued for the SSDA (SSD-82211208). Specifically, this report has been prepared to respond to the SEARS requirement issued below:

Issue and Assessment Requirements	Documentation
4. Built Form and Urban Design - Explain and illustrate the proposed built form, including a detailed site and context analysis to justify the proposed site planning and design approach. - Demonstrate how the proposed built form (layout, height, bulk, scale, separation, setbacks, interface and articulation) addresses and responds to the context, site characteristics, streetscape and existing and future character of the locality. - Demonstrate how the building design will deliver a high-quality development, including consideration of façade design, articulation, materials, finishes, colours, any signage and integration of services. - Assess how the development complies with the relevant accessibility requirements.	- Architectural drawings - Design Report - Survey Plan - Building Code of Australia Compliance Report - Accessibility Report

1.3 Project Team

The following **bm+g** team members have contributed to this Report:

- + **Dean Goldsmith** – Report Preparation (Director) | Building Surveyor-Unrestricted
- + **Jack Nicolaou** – Peer Review (Assistant Building Surveyor)

1.4 Referenced Documentation

The following documentation has been reviewed, referenced and/or relied upon in the preparation of this report:

- + Building Code of Australia 2022 (BCA)
- + The Guide to the Building Code of Australia 2022
- + Architectural Plans prepared by Genton numbered:

+ Drawing No.	+ Rev.	+ Date		+ Drawing No.	+ Rev.	+ Date
SSDA-DR-A000	B	16.03.2026		SSDA-DR-A205	B	16.03.2026
SSDA-DR-A001	B	16.03.2026		SSDA-DR-A206	B	16.03.2026
SSDA-DR-A002	B	16.03.2026		SSDA-DR-A300	B	16.03.2026
SSDA-DR-A003	B	16.03.2026		SSDA-DR-A301	B	16.03.2026
SSDA-DR-A005	B	16.03.2026		SSDA-DR-A302	B	16.03.2026
SSDA-DR-A006	B	16.03.2026		SSDA-DR-A303	B	16.03.2026
SSDA-DR-A007	B	16.03.2026		SSDA-DR-A304	B	16.03.2026
SSDA-DR-A100	B	16.03.2026		SSDA-DR-A400	B	16.03.2026
SSDA-DR-A101	B	16.03.2026		SSDA-DR-A401	B	16.03.2026
SSDA-DR-A105	B	16.03.2026		SSDA-DR-A402	B	16.03.2026
SSDA-DR-A200	B	16.03.2026		SSDA-DR-A403	B	16.03.2026
SSDA-DR-A201	B	16.03.2026		SSDA-DR-A404	B	16.03.2026
SSDA-DR-A202	B	16.03.2026		SSDA-DR-A500	B	16.03.2026
SSDA-DR-A203	B	16.03.2026		SSDA-DR-A501	B	16.03.2026

1.5 Regulatory Framework

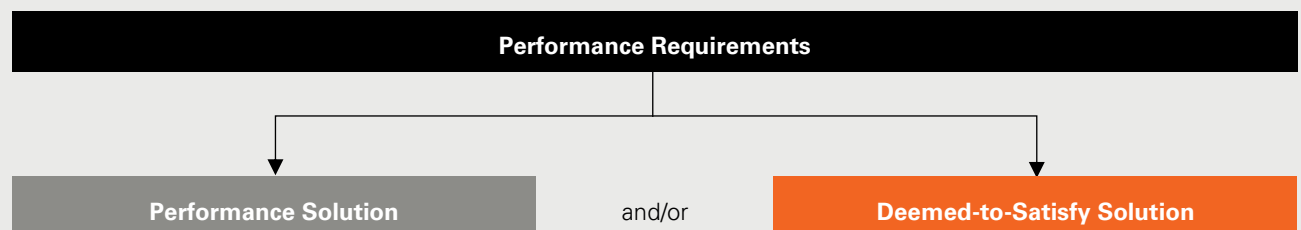
- + Pursuant to Section 19(1) of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 all new building work must comply with the current BCA however the existing features of an existing building need not comply with the BCA unless upgrade is required by other clauses of the legislation.
- + The assessment has been undertaken in accordance with Clause 24 and 25 of the Building and Development Certifiers Regulation 2020. **bm+g** are the proposed Registered Certifier and the advice provided in this Report is limited to whether submitted documentation complies with the Building Code of Australia or a legislative requirement.

1.6 Relevant Version of the NCC Building Code of Australia

Pursuant to Section 19 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021 the proposed building is subject to compliance with the relevant requirements of the BCA as in force at the day on which the application for the Construction Certificate is made. The current

version of the BCA is BCA 2022 Amendment 2, with the next revision of the BCA (2025) has been deferred from coming into effect from 1 May 2025 to a yet to be confirmed date. As the final draft of the new revision BCA 2025 has not as yet been released the below assessment relates to BCA 2022 Amendment 2 provisions only.

1.7 Compliance with the National Construction Code



Compliance with the NCC is achieved by complying with:

- + the Governing Requirements of the NCC; and
- + the Performance Requirements.

Performance Requirements are satisfied by one of the following, as shown in the Figure below:

- + A Performance Solution.
- + A Deemed-to-Satisfy Solution.
- + A combination of the above two options.

1.8 Limitations and Exclusions

The limitations and exclusions of this report are as follows:

- + This report is prepared in accordance with the Conflicts of Interest provisions of Part 4 of the Building and Development Certifiers Regulation 2020. **bm+g** confirm that this report is prepared specifically to address the requirements of Clause 25(5) and (9) of the Regulation with respect to the role of the Registered Certifier. This assessment report is not to be construed as extending any further into providing design advice, which would be contrary to the aims of this legislation.
- + No assessment has been undertaken with respect to the Disability Discrimination Act 1992 (DDA). The building owner needs be satisfied that their obligations under the DDA have been addressed.
- + Please note that whilst the BCA specifies a minimum standard of compliance with AS1428 (Parts 1-3) and Part D4 of the BCA for access and facilities for people with disabilities, compliance with such requirements may not necessarily preclude the possibility of a future complaint made under the DDA 1992. The DDA is a complaint based legislation and is presently not identified by the State Building Codes and Regulations. In this regard the building owner should be satisfied that their obligations under the DDA have been addressed.
- + No assessment has been undertaken with respect to SEPP (Housing) 2021. It is understood that suitably qualified consultants will be engaged to determine the relevance of any Council planning requirements or SEPP requirements and provided detailed assessment reports where applicable.

Where relevant to this development, it is assumed that these assessments will be undertaken by others.

- + This report does not consider BCA Part G5 (Volume 1) which makes provision for construction of buildings in bushfire-prone areas, therefore no assessment has been undertaken in consideration of RFS, Planning for Bushfire Protection and AS 3959. Where Part G is applicable to the site, then it is required that assessment / due diligence is undertaken by a specialist consultant to verify compliance.
- + This report does not constitute a detailed assessment of the architectural documentation against the requirements of Section J. It is understood that a suitably qualified consultant will be engaged to determine compliance in this regard.
- + **bm+g** has not undertaken an assessment of any Performance Solution Reports at the time of the preparation of this report.
- + The Report does not address matters in relation to the following Local Government Act and Regulations:
 - Work Health and Safety Act and Regulations.
 - Work Cover Authority requirements.
 - Water, drainage, gas, telecommunications and electricity supply authority requirements.
 - Disability Discrimination Act 1992.
- + **bm+g** cannot guarantee acceptance of this report by Local Council, Fire & Rescue NSW or other approval authorities.
- + No part of this document may be reproduced in any form or by any means without written permission from **bm+g**. This report is based solely on client instructions, and therefore should not be used by any third party without prior knowledge of such instructions.

1.9 Report Terminology

Building Code of Australia – Document published on behalf of the Australian Building Codes Board. The BCA is a uniform set of technical provisions for the design and construction of buildings and other structures throughout Australia and is adopted in NSW under the provisions of the Environmental Planning & Assessment Act & Regulation.

Climatic Zone – Means an area defined in Figure 2 and in Table 2 (of BCA Schedule 3) for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

Construction Certificate – Building Approval issued by the Certifying Authority pursuant to Part 6 of the EP&A Act 1979.

Construction Type – The construction type is a measure of a buildings ability to resist a fire. The minimum type of fire-resisting construction of a building must be that specified in Table C2D2 and Specification 5, except as allowed for:

- + certain Class 2, 3 or 9c buildings in C2D6; and
- + a Class 4 part of a building located on the top storey in C2D4(2); and
- + open spectator stands and indoor sports stadiums in C2D8.

***Note:** Type A construction is the most fire-resistant and Type C the least fire-resistant of the types of construction.*

Deemed-to-Satisfy (DtS) Provisions of the BCA – Means the prescriptive provisions of the BCA which are deemed to satisfy the performance requirements.

Effective Height – The vertical distance between the floor of the lowest storey included in the calculation of rise in storeys and the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift, or other equipment, water tanks or similar service units).

Exit – Any, or any combination of the following if they provide egress to a road or open space:

- + An internal or external stairway.
- + A ramp.
- + A fire-isolated passageway.
- + A doorway opening to a road or open space.

Fire Compartment – The total space of the building; or when referred to in

- + The Performance Requirements – any part of a building separated from the remainder by barriers to fire such as walls and/or floors having an appropriate resistance to the spread of fire with any openings adequately protected; or
- + The Deemed-to-Satisfy Provisions – any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that required for a fire wall for that type of construction and where all openings in the separating construction are protected in accordance with the Deemed-to-Satisfy Provisions of the relevant part.

Fire Resistance Level (FRL) – The grading periods in minutes for the following criteria:

- + structural adequacy; and
- + integrity; and
- + insulation.

and expressed in that order.

Fire Source Feature (FSF) – The far boundary of a road adjoining the allotment; or a side or rear boundary of the allotment; or an external wall of another building on the allotment which is not a Class 10 building.

National Construction Code Series (NCC) – The NCC was introduced 1 May 2011 by the Council of Australian Governments (COAG). The BCA Volume One (Class 2 to 9 Buildings) is now referenced as the National Construction Code Series Volume One — BCA.

Occupiable outdoor area means a space on a roof, balcony or similar part of a building:

- + that is open to the sky; and
- + to which access is provided, other than access only for maintenance; and
- + that is not open space or directly connected with open space.

Occupation Certificate (OC) – Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 6 of the EPA Act 1979.

Open Space – Means a space on the allotment, or a roof or other part of the building suitably protected from fire, open to the sky and connected directly with a public road.

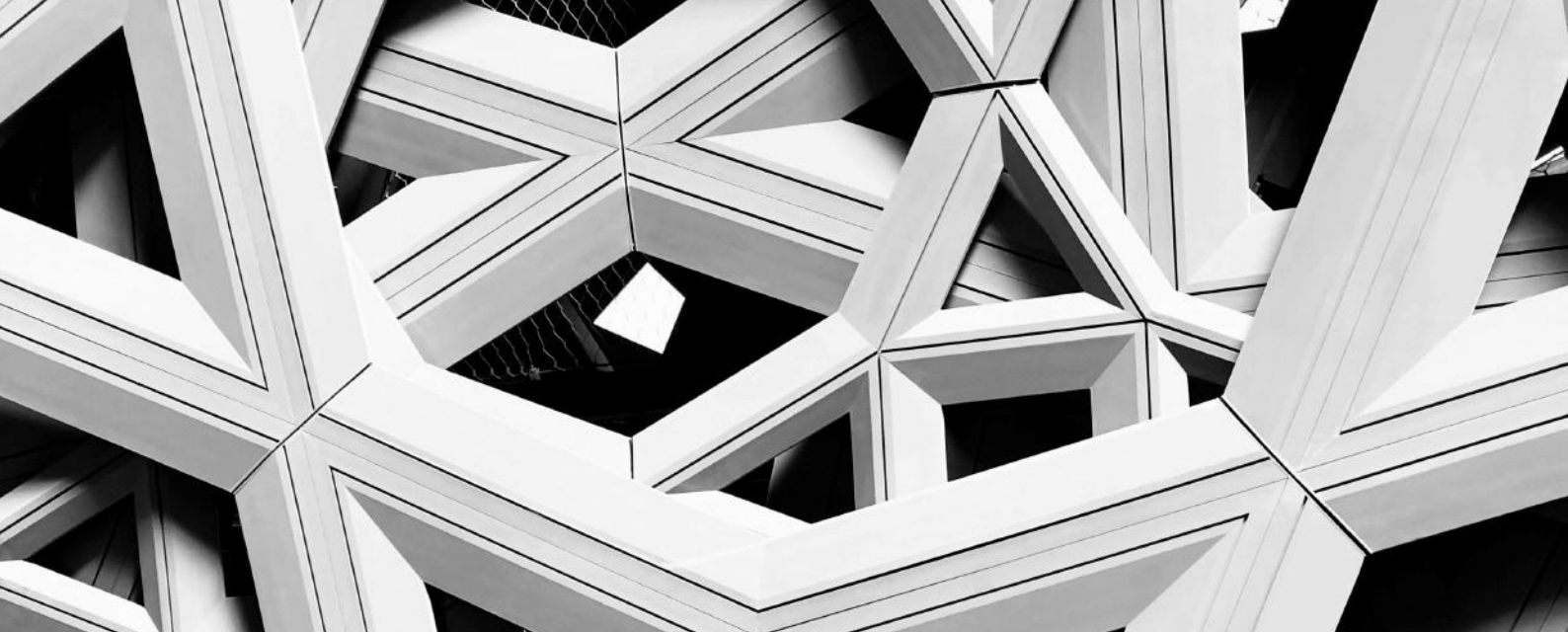
Performance-Based Design Brief – Means the process and the associated report that defines the scope of work for the performance-based analysis, the technical basis for analysis, and the criteria for acceptance of any relevant Performance Solution as agreed by stakeholders.

Performance Requirements of the BCA – A Building Solution will comply with the BCA if it satisfies the Performance Requirements. A Performance requirement states the level of performance that a Building Solution must meet.

Compliance with the Performance Requirements can only be achieved by-

- + complying with the Deemed-to-Satisfy Provisions; or
- + formulating an Performance Solution which-
 - complies with the Performance Requirements; or
 - is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or
- + a combination of (a) and (b).

Performance Solution – Means a method of complying with the performance requirements other than by a Deemed-To-Satisfy Solution.



2.0 Building Characteristics

2.1 Proposed Development

The proposed development consists of Construction a data centre, with the following: Construction of a three-level data centre development, including technical data halls, office and administrative areas, and ancillary circulation space. and is classified as follows:

+ BCA Classifications:	Data Centre Building: Class 5 (Office), and Class 7b (Data Halls/Plantrooms), Class 7a (Undercroft Carparking) Generator Stack, Water Tanks & Substation Switchrooms: Class 10a (Non-habitable Buildings)** Transforms: Class 10b (Non-habitable Structures)**
+ Rise in storeys:	Data Centre Building: Five (5)
+ Type of Construction:	Data Centre Building: Type A Construction
+ Importance Level (Structural)	2 (Structural Engineer to Confirm)
+ Sprinkler Protected Throughout	Data Centre Building: Yes
+ Effective Height	Data Centre Building: 20.4m <i>(Note: This is determined in accordance with the BCA definition and does not relate to the overall height of the building)</i>
+ Total Floor Area	Data Centre Building: 55,651 m ²
+ Largest Fire Compartment Size	Floor Area: (>18,000m ²) – TBC at CC stage (Ground Level- North) Volume: (>108,000m ³) TBC by Architect at CC stage
+ Climate Zone	Zone 6

*** Note: The requirements of NCC Volume 2 that are applicable to the Class 10 buildings will be referenced in the relevant sections below to align with the NCC Volume 1 requirements that are applicable to the main Data Centre Building.*

2.2 Fire Compartment Floor Area Limitations

Maximum size of fire compartment/atria permissible in Table C3D3 is:

+ Classification		+ Type A	+ Type B	+ Type C
6, 7, 8 or 9a	Max. floor area	5,000m ²	3,500m ²	2,000m ²
	Max. volume	30,000m ³	21,000m ³	12,000m ³
5, 9b or 9c	Max. floor area	8,000m ²	5,000m ²	3,000m ²
	Max. volume	48,000m ³	48,000m ³	18,000m ³

Note: Table C3D3 is not applicable to a Large Isolated Buildings.

2.3 Distance to Fire Source Features

Based upon a review of the plans, it is noted that each elevation of the building is located within the following distances from fire source features on the site.

+ Elevation	+ Fire Source Feature	+ Distance
North	Far side of the road (Lenore Drive)	>3m
East	Side allotment boundary	>3m
West	Side allotment boundary	>3m
South	Far side of the road (Lockwood Road)	>3m

Note 1: Fire Source Feature (FSF) – The far boundary of a road adjoining the allotment; or a side or rear boundary of the allotment; or an external wall of another building on the allotment which is not a Class 10 building.

Note 2: Large Isolated Building – The eastern and western portions of the main Data Centre building are connected at the Lower Ground Level by the external carpark slab over (see Fig 2 below). As a result they have been assessed as a single Large Isolated Building pursuant to

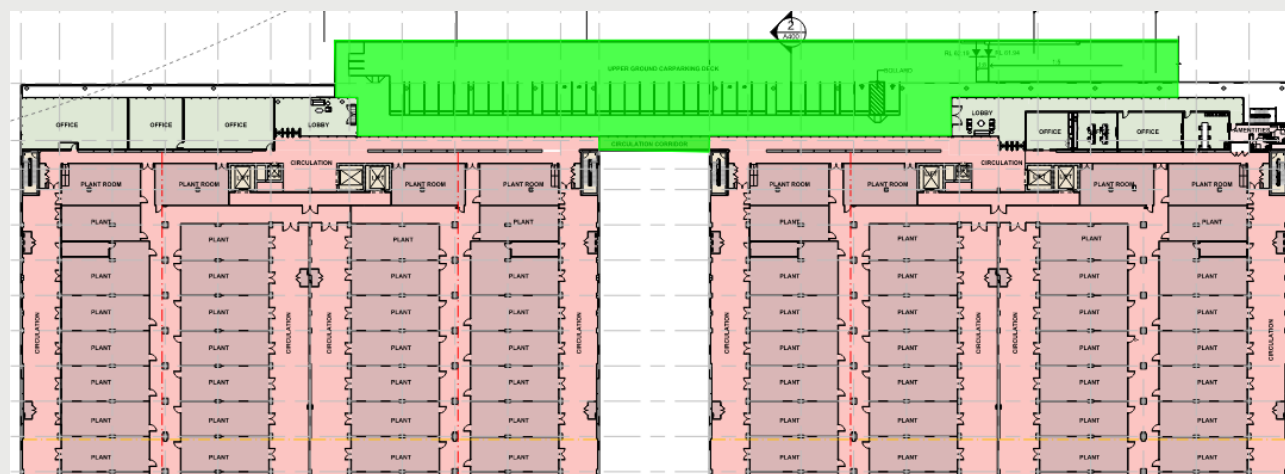


Figure 2 – Undercroft link between eastern & western portions of Large Isolated Building

3.0 BCA Assessment

We note the following BCA compliance matters with relation to proposed building works are capable of complying with the BCA. Please note that this is not a full list of BCA clauses, they are the key requirements that relate to the proposed work and the below should be read in conjunction with the BCA.

3.1 Section B – Structure

Part B1

- + New building works are to comply with the structural provisions of the BCA 2022 and the following referenced standards including:
 - o AS 1170.0 – 2002 General Principles
 - o AS 1170.1 – 2002, including certification for balustrades (dead and live loads)
 - o AS 1170.2 – 2021, Wind loads
 - o AS 1170.4 – 2007, Earthquake loads
 - o AS 3700 – 2018, Masonry Structures
 - o AS 3600 – 2018, Concrete Structures
 - o AS 4100 – 1998, Steel Structures and/or
 - o AS 4600 – 2018, Cold formed steel Structures
 - o AS 2159 – 2009, Piling Design & Installation
 - o AS 1720 – 2010, Design of Timber Structure
 - o AS/NZS 1664.1 & 2 – 1997, Aluminium Structures
 - o AS 2047 – 2014, Windows and External Glazed Doors in buildings
 - o AS 1288 – 2006, Glass in buildings
 - o AS 3660.1 – 2014, Termite control (or confirmation no primary building elements are timber).
- + Design certification will also be required from the Architect and Services Consultants to confirm compliance with Section 8 of AS1170.4-2007 with regard to the design of non-structural parts and components and their fastenings for horizontal and vertical earthquake forces and inter-storey drift.
- + In accordance with B1D3(a)(iv) a notional additional load of not less than 0.15kPa to support the addition of solar photovoltaic panels is to be applied to the roof structure.
- + The Importance Level provisions of BCA (Section B) are to be acknowledged by the Structural Engineer and addressed to the degree necessary.
- + New building works to the existing building must be compliant with earthquake provisions of AS1170.4 – Earthquake Actions in Australia.

Comment: Structural design details and certification will be required at CC application stage. Note: The relevant structural provisions of Part H1 of NCC Vol.2 are applicable to the Class 10 buildings on the site.

3.2 Section C – Fire Resistance

C2D2 & Spec 5

Type of Construction Required: The building is required to comply with the requirements of Type A Construction as stated within Specification 5. The table below provides an overview of

the requirements of each. Refer to Table 4 of Appendix 1 for the FRL requirements of Type A Construction.

Type A Construction:

- + Load-bearing external walls and columns must achieve an FRL regardless of distance from boundary / separate building per Table S5C11a.
- + Non-load-bearing external walls (and columns incorporated within) need not achieve an FRL if >3m from a boundary or separate building per Table S5C11b.
- + All external load-bearing columns must achieve an FRL per Table S5C11c.
- + Fire Walls must achieve an FRL per Table S5C11d.
- + All Services risers, lift and stair shafts, must achieve an FRL per Table S5C11e & f.
- + Floors and all internal load-bearing elements (columns, beams, walls, etc.) must achieve an FRL per Table S5C11g.
- + Roof must be of non-combustible construction per S5C15 and combustible Roof Lights must not exceed 20% of the roof area).
- + Internal columns on the floor immediately below the roof need only achieve a 1hr FRL per S5C17.

Comment: Type A Construction applies to the main Data Centre Building – see notes under Spec 5. below.

Note: There are no Type of Construction or fire rating requirements applicable to the Class 10 buildings on the site pursuant to Part H3 of NCC Vol.2 & Part 9.2 of the ABCB Housing Provisions (Clause 9.2.4).

C2D3

Calculation of Rise in Storeys: The rise in storeys of a building is the sum of the greatest number of storeys at any part of the external walls of the building and any storeys within the roof space calculated in accordance with the requirements set out in this clause.

Comment: This main Data Centre building has a rise in storeys of five (5). We note that the height from the floor level to the ceiling level in the Data Halls on the Lower Ground Level & Level 1 are less than 6m.

C2D10

Non-Combustible Building Elements: All materials and or components incorporated in an external wall or fire-rated wall must be non-combustible. This includes but not limited to:

- + Any external wall claddings.
- + Any framing or integral formwork systems. I.e. timber framing, sacrificial formwork, etc.
- + Any external linings or trims. I.e. external UPVC window linings, timber window blades, etc.
- + Any sarking or insulation contained within the wall assembly.
- + Internal non-load bearing fire rated walls.

This is not an exhaustive list, and any element incorporated within any required non-combustible wall assembly must be identified and approved prior to the issue of a Construction Certificate.

Refer to Table 1 in Appendix 1 for the elements required to be non-combustible.

Comment: The external walls (including all elements incorporated in the walls), the lift pits, and all services risers are required to be of non-combustible construction in accordance with C2D10 (1) & (2). See additional comments under C2D14 below regarding attachments to the external walls. Details are to be submitted with the CC application for assessment in an External Wall Disclosure Design Statement format.

C2D11 & Spec. 7

Fire Hazard Properties: A schedule of all wall, floor, and ceiling linings along with associated test reports are to be provided for review to ensure compliance with the fire hazard property requirements of the BCA. Noting:

- + Minimum Group Numbers apply to wall and ceiling linings. AS 5637 test reports must be provided to determine compliance.
- + Minimum Critical Radiant Flux values apply to floor linings. AS ISO 9239.1 test reports must be provided to determine compliance

Refer to Table 2 and 3 in Appendix 1 below for the required fire hazard properties.

	Comment: Design certification will be required at CC application stage and installation certification (including relevant test reports confirming the critical radiant flux of floor linings and group number of wall and ceiling linings) required at OC stage.
C2D14	Ancillary Elements: An ancillary combustible element must not be fixed, installed or attached to the internal or external parts of a non-combustible wall unless it is one of the concession items listed in items (a) to (p). Comment: The architectural elements in the facades will require review to confirm that the proposed external attachments to the external walls achieve compliance with the non-combustibility requirements of this clause – see comments under C2D10 also.
C3D3	General Floor Area and Volume Limitations: The building is to achieve fire compartment sizes not in excess of the DtS requirements of this clause as noted above and in Table C3D3. Comment: The proposed main Data Centre building is a Class 7b Large Isolated Building and as such the provisions for maximum fire compartment size under Table C3D3 do not apply. Refer to comments under C3D4 & C3D5 below in relation to the Large Isolated Building provisions applicable to the proposed development.
C3D4	Large Isolated Buildings: A Large Isolated Building that contains Class 5, 6, 7, 8 or 9 parts, is required to be— + Protected throughout with a sprinkler system complying with Specification 17; and + Provided with a perimeter vehicular access complying with C3D5(2). Comment: The proposed main Data Centre building is required to be sprinkler protected and provided with a 6m wide perimeter vehicular accessway in accordance with Clause C3D5(2) throughout (see notes below).
C3D5	Requirements for Open Spaces and Vehicular Access: Open space and vehicular access required by C3D4 must comply with the requirements of sub-clauses (a) & (b) of this Part whereby they must be 6m wide within 18m of the external walls of the building and of a suitable bearing capacity and unobstructed height to permit the operation and passage of FRNSW vehicles. Comment: The proposed main Data Centre building does not comply with the provisions of C3D5 and thus the non-compliance issues noted below are required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirement C1P9: <i>Figure 3 – Perimeter Vehicle Access</i>

- + The Perimeter Vehicular Access along the northern side of the building is located under the Office and external carpark structure.

Note 1: Any proposed gates are to achieve no less than 6m unobstructed width or the reduced width will need to be included in the above Performance Solution.

Note 2: The driveways providing vehicular perimeter access must be designed with adequate loading capacities, gradients and swept paths to accommodate a fire truck, having regard to the FRNSW Fire Safety Guideline – Access for Fire Brigade Vehicles and Firefighters.

Note 3: The Trial Design for the Fire Engineered Performance Solution must take into consideration and detail the proposed security access to the site and how this may impact on FRNSW vehicular access.

Note 4: As noted above the eastern western portions of the main Data Centre Building are linked at the Lower Ground Floor Level undercroft by the slab over and as a result have been assessed as a single Large Isolated Building.

Note 5: The Large Isolated Building provisions above do not apply to the Class 10 buildings on the site.

C3D7

Vertical Separation of Openings in External Walls: In a building of Type A construction, any part of a window or other opening in an external wall is above another opening in the storey next below and its vertical projection falls no further than 450 mm outside the lower opening (measured horizontally), the openings must be separated by a fire-rated spandrel, or a horizontal fire-rated extension.

Comment: The building is proposed to be sprinkler protected throughout and thus does not require fire rated spandrels to protect openings in the external walls between each level. Note: These provisions above do not apply to the Class 10 buildings on the site.

C3D8

Separation by Fire Walls: Separation of Fire Compartments must be constructed in accordance with the following:

- + FRL in accordance with Tables S5C11a – S5C11g of Spec. 5 and extend to the underside of a floor with the same FRL, or to the underside of a non-combustible roof covering.
- + Any openings in a fire wall must not reduce the FRL, except where permitted by the Deemed-to-Satisfy Provisions of Part C3 (i.e. fire doors; protection of services).
- + Building elements, other than roof battens with dimensions of 75 mm x 50 mm or less or sarking-type material, must not pass through or cross the fire wall unless the required fire resisting performance of the fire wall is maintained.

Comment: As noted in C3D4 above the main Data Centre building has been assessed as a Large Isolated Building, however, Fire Walls are required. To provide Horizontal Exits to address non-compliant egress distances. The proposed Fire Walls are identified in Figure 4 below and are required to comply with C3D8(1) & (3) - details to be included on the CC Application Plans. Note: See comments under D2D5 and D2D16 below in relation to egress distances and Horizontal Exits.



Figure 4 – Fire Wall Locations

C3D9 & C3D10

Separation of Classifications: Separate classifications must either be divided by a fire wall with the higher FRL of the two, or both areas must meet the higher FRL—including the floor slab—per Specification 5..

Comment: The compartments containing both Class 5 office and Class 7b Data Halls/Plant will have the FRLs required by Class 7b being the higher FRLs or C3D8 compliant Fire Walls will

	extend to separate these areas – Fire Engineer to clarify as part of any Performance Solution to rationalise FRL's in the building – see Spec. 5 notes below.
C3D11	Separation of Lift Shafts: In a sprinkler-protected building, NCC Volume 1 Clause C3D11 requires lift shafts connecting more than three storeys to be enclosed within a fire-rated shaft and fitted with sprinklers at both the top and bottom, including any sheave rooms, to prevent vertical fire spread and protect occupants. Comment: Fire rating plans to confirm compliance with this clause are to be provided for review – final FRL plans to be submitted with the CC Application.
C3D12	Stairways and lifts in one shaft: A stairway and a lift must not be in the same shaft if either the stairway or the lift is required to be in a fire resisting shaft. Comment: Compliance readily achievable.
C3D13	Separation of Equipment: Equipment as listed below must be separated from the remainder of the building with construction that achieves an FRL of 120/120/120 (or that required by Spec. 5, whichever is greater) and doorways being self-closing -/120/30 fire doors: + Lift motors and lift control panels; or + Emergency generators used to sustain emergency equipment operating in emergency mode; or + Central smoke control plant; or + Boilers; or + A battery or battery system installed in the building that has a voltage of 12 volts or more and a storage capacity of 200kWh or more. Confirmation is required as to whether any of the above will be applicable to this development. Comment: The following rooms are required to fire separated by a 120/120/120 FRL on every level as applicable: - Battery rooms (new & used) - Smoke exhaust plant - Lift motor room Details demonstrating compliance are to be include on the FRL plans submitted with the CC Application – compliance is readily achievable. Note: The above requirements are not applicable to the Class 10a Generator Gantry structure.
C3D14	Electricity Supply System: An electricity substation & main switchboards which sustain 'emergency equipment' operating in the emergency mode, located within a building must– + Be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and + Having any doorway in that construction protected with a self-closing fire door having an FRL of not less then -/120/30 Electrical conductors which supply a substation or main switchboard sustaining emergency equipment operating in the emergency mode – + Have a classification in accordance with AS/NZS 3013 of not less than— - o If located in a position that could be subject to damage by motor vehicles — WS53W; or - o Otherwise — WS52W; or + Be enclosed or otherwise protected by construction having an FRL of not less than 120/120/120. Where emergency equipment is required in a building, all switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment switchgear must be separated from the non-emergency equipment switchgear by metal partitions designed to minimise the spread of fault from the non-emergency equipment switchgear. Note: For the purpose of this clause, 'emergency equipment' includes (but is not limited to) fire pumps, air handling systems for smoke control, emergency lifts, control & indicating equipment, EWIS. Comment: Details demonstrating compliance are to be include on the FRL plans submitted with the CC Application – compliance is readily achievable.

C4D3 & C4D5	Protection of Openings in External Walls: Openings that are less than 3m from the allotment boundary are required to be protected in accordance with BCA Clause C4D5. Comment: There are currently no openings within the exposure range to any fire source features that would trigger the requirements for protection in C4D3.
C4D6	Doorways in Fire Walls: A doorway in fire walls that does not form a horizontal exit must not consist of more than 50% of the fire wall in which they are located. All doorways in fire walls must be protected by either a single or 2 fire doors that achieve an equivalent fire rating to the fire wall in which they are located. All fire doors must be self-closing, and if they are proposed to be held-open, the self-closing operation must be activated by AS 1670.1 compliant smoke detectors within 1.5m on either side of the door and on general fire trip in the building. Comment: See notes under C3D8 above regarding Fire Wall requirements and the provision of Horizontal Exits – TBC. Note: Doorways in any proposed fire walls in accordance with the comments under C3D7 above must be protected with fire doors achieving an FRL of -/240/30 in accordance with this clause.
C4D8	Protection of Doorways in Horizontal Exits: A doorway that is part of a horizontal exit must be protected by: + A fire door with an FRL as required for the wall under Spec 5, except that the door must have an insulation level of at least 30; or; + Class 7 / 8 – Two fire doors, one on each side of the doorway, achieving ½ the FRL required for the wall under Spec 5, except that the door must have an insulation level of at least 30. + Be self-closing, or automatic-closing activated by heat or smoke detector activation and the activation of an applicable sprinkler system. Comment: See C3D8 above and D2D16 comments below. Doorways nominated as Horizontal Exits must be protected with fire doors achieving an FRL of -/240/30 in accordance with this clause.
C4D9	Openings in Fire-Isolated Exits: Specifies that the doorways that open into fire-isolated exits must be protected by -/60/30 fire doors that are self-closing or automatic. This clause also details the deemed-to-satisfy methods of activation. This does not apply to doors opening to a road or open space. A window in the external walls of fire-isolated exits must be protected in accordance with C4D5 if it is within 6m of and exposed to a window or other opening in a wall of the same building other than in the same fire-isolated enclosure. Comment: Fire doors are required to be provided to each of the door openings into the fire isolated exit stairs and passageways. Details of the proposed -/60/30 FRL fire door locations are to be provided with the CC application plans in accordance with this requirement.
C4D10	Service Penetrations in Fire-isolated Exits: Fire isolated exits must not be penetrated by any services other than electrical wiring as permitted by D3D8(6), ducting associated with a pressurisation system or water supply pipes for fire services. Comment: Architect/Services Consultants to note and ensure compliance with regards to restriction of services being reticulated within the fire isolated stairs.
C4D11	Openings in Fire-isolated Shafts: If lift shafts are required to be fire-isolated an entrance doorway must be protected by -/60/- fire doors and the lift indicator panels must be backed by construction having an FRL of not less than -/60/60 if it exceeds 35,000mm². Comment: Certification from the Lift Consultant to confirm compliance is to be provided with the CC application.
C4D13	Openings in Floors and Ceilings for Services: This clause applies to the floors and ceilings in buildings of Types A, B & C Construction and sets out the methods required to limit the spread of fire through openings in these building elements, required to resist the spread of fire.

	Comment: Certification will be required at OC application stage – see note below under C4D15 regarding the requirement for a Performance Solution for fire stopping in 240/240/240 FRL building elements.
C4D15	Openings for Services Installations: All opening for services installations in building elements required to be fire-resisting with respect to integrity and insulation must be protected in accordance with the provisions of Spec. 13. Comment: Any services penetrations through elements with a 240/240/240 FRL may require a Performance Solution, given the lack of tested systems for fire stopping that will achieve a 4hr insulation rating in accordance with this requirement. It is recommended that this be incorporated generically in any Fire Engineering Performance Solution to avoid non-compliance issues at OC stage.
Spec. 5	Fire Resisting Construction: The new building works are required to comply with the requirements detailed under Specification 5. The below details the FRL requirements for building elements for each proposed warehouse. Comment: The proposed main Data Centre building will be subject to compliance with the Type A Construction provisions of tables S5C11a to S5C11g as summarised below: + All loadbearing external walls & loadbearing elements incorporated in or attached to an external wall are to achieve the required FRL per Table S5C11a. + All non-loadbearing parts of external walls are to achieve the required FRL per Table S4C11b. + All loadbearing external columns are to achieve the required FRL per Table S5C11c. + Any Fire Walls that are proposed to separate different classifications per C3D9 above are to achieve the required FRL per Table S5C11d for Class 7b. + Lift shafts are to achieve the required FRL per Table S5C11e (for loadbearing lift shafts) and S5C11f (for non-loadbearing lift shafts). + Fire stair shafts are to achieve the required FRL per Table S5C11e (for loadbearing fire stairs) and S5C11f (for non-loadbearing fire stairs). + Services shafts are to achieve the required FRL per Table S5C11e (for loadbearing service shafts) and S5C11f (for non-loadbearing service shafts). + All loadbearing internal columns, walls, beams and trusses throughout are to achieve the required FRL per Table S5C11/ S5C11f. + Floors are to achieve the required FRL per Table S5C11f and not less than the FRL of the classification with the highest FRLs in the storey below. + The roof is required to achieve the required FRL per Table S5C11g or the coverings are required to be non-combustible in accordance with Clause S5C15. + Where a part of the building required to have an FRL depends on direct vertical or lateral support from another part to maintain its FRL, that supporting part must achieve an FRL in accordance with Clause S5C3 of Spec. 5 and be non-combustible, unless one of the concessions in S5C3 (2) can be applied. Note: It is understood that a Performance Solution from the Fire Engineer may be proposed to rationalise the FRLs of building elements that are required by Spec. 5 to be fire rated.
Spec. 7	Fire Hazard Properties: As noted above, this Specification sets out the requirements in relation to the fire hazard properties of linings, materials and assemblies in Class 2 to 9 buildings. Table S7C2 outlines the applicable requirements of Spec. 7 to the different types of Linings, Materials and Assemblies. Comment: Certification will be required to be provided at both CC and OC application stages.
Spec. 12	Fire Doors, Smoke Doors, Fire Windows and Shutters: Fire doors and smoke doors must comply with the requirements of this specification. Comment: Fire doors are to be indicated on the compartmentation plans as per the compartmentation strategy. Details to be provided prior to CC application stage.

3.3 Section D – Access and Egress

D2D3	Number of Exits Required: The building is required to be provided with 2 exits to each storey. Comment: The current design for the main Data Centre Building achieves compliance with the requirements of this clause.
D2D4	When Fire-Isolated Stairways and Ramps are Required: This clause specifies the requirements for when fire isolated stairs or ramps are required in buildings based upon the number of storeys that they interconnect and the classification of the building. Comment: The exit stairs serving each level connect more than 3 storeys in a sprinkler protected building and as such are required to be fire isolated. Details demonstrating compliance with the FRL requirements of this clause are to be provided at CC application stage.
D2D5	Exit Travel Distances: This clause specifies the permitted travel distances allowable from Class 2 to Class 9 buildings. Sub-clauses (1) to (6) specify the maximum distances to be taken into account for the various uses in each Class of building. In a Class 5, 6, 7, 8 & 9 Buildings no point on a floor must be more than 20m for a single exit or to a point of choice to alternative exits; and no point on a floor must be more than 40m to an exit where 2 or more alternative exits are available for egress. Comment: A further updated assessment of egress distances will be required as the design develops, however, our assessment is noted below and there is non-compliance in most parts of the building with the above provisions. A Fire Engineered performance solution is necessary to allow extended exit travel distances as noted below: - Lower Ground Level & Level 1: Up to 60m to the nearest exit for the Data Halls and 65m to the nearest exit from the Fan Wall Corridors. - Upper Ground Level: Up to 85m to the nearest exit from the Plant Rooms and Central Corridors. - Office Levels: Up to 55m to the nearest exit from all the Office Levels (not including fitout). - Roof Level Mech Switchroom: Up to 60m to the nearest exit. Note: Details of the final locations of Horizontal Exits in the proposed Fire Walls are to be included on the CC Application Plans.
D2D6	Distance Between Alternative Exits: Exits required as alternative exits must be – + Distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 exits is readily available from all points on the floor including lift lobby areas; and + not less than 9m apart; and + not more than – 60m apart. + Located so that the alternative paths of travel do not converge such that they become less than 6m apart. Comment: A Fire Engineered performance solution is necessary to allow excessive travel distances listed below: - Lower Ground Floor & Level 1: Up to 125m between alternative exits in the Fan Wall corridors and 120m between alternative exits in the Data Halls. - Upper Ground Level: Up to 120m between alternative exits from the Plant Rooms and Central Corridors. - Office Levels: Up to 100m between alternative exits. - Roof Level Mech Switchroom: Up to 100m between alternative exits

D2D7 – D2D11	Dimensions of Paths of Travel to an Exit: The minimum clear height through all egress paths is required to be no less than 2m, and a minimum of 1m wide (this width dimension is measured clear of any obstructions such as handrails and joinery). Aggregate exit widths must be achieved which are driven by occupancy numbers of each floor. Comment: Population numbers for the proposed building have been calculated based on the square metre rates listed in Table D2D18 to facilitate an assessment of the provisions of D2D7 to D2D11 – see D2D18 below.
D2D12	Travel via Fire Isolated Exits: A fire isolated stairway is required to provide independent egress from each storey that it serves and discharge directly – + To a road open space; or + To a point – - In a storey or space, within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter; and - From which an unimpeded path of travel, not further than 20m, is available to a road or open space External walls and openings exposed to the discharge path of a fire-isolated stairway (within than 6m), measured perpendicular to the path of travel) must be protected with a 1-hour fire-rating for external walls, and C4D5 for openings. Comment: Compliance with the above provisions is readily achievable. Details of compliance with the protection of discharge path requirements of D2D12(3) for each fire stair are to be provided on the FRL plans to be submitted with the CC Application.
D2D14	Travel Via Non Fire Isolated Required Stairways: A non-fire-isolated stairway or non-fire-isolated ramp serving as a required exit must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided. The distance from any point on the floor to a point of road or open space must not exceed 80m. The stair must discharge at a point not more than 20m to a point of road or open space, or from a fire-isolated passage, or 40m from one of two such points. Comment: There are no proposed internal non-fire isolated stairs included in the design.
D2D15	Discharge from Exits: Requires that an exit must not be blocked at the point of discharge. Barriers such as bollards must be installed to prevent vehicles from blocking the discharge from exits. This clause also provides the methods of construction, location and separation, at exit discharge points for all building Classes. Comments: All exit discharge points from the buildings are required to be protected in accordance with the requirements of this clause. In addition, details of the grades and any stairs to the discharge pathway from the exits of the building to Lockwood Rd are to be provided for review to confirm compliance with D2D15(3).
D2D16	Horizontal exits: Horizontal exits must not comprise more than half of the required exits from any part of a storey divided by a fire wall. The clear area required by this clause must be connected to the horizontal exit by an unobstructed path that has at least the dimensions required for the horizontal exit and may include the area of the unobstructed path. Comment: As noted above, details of the proposed locations of the Horizontal Exits are to be provided by the Architect on the CC Application plans – see proposed Fire Wall locations in Figure 4 above.
D2D18	Number of Persons Accommodated: Clause D2D18 and Table D2D18 are used to calculate the anticipated number of people in particular types of buildings so that minimum exit widths and the required number of sanitary and other facilities can be calculated. This clause and table are not to be used for non-BCA purposes.

	Comment: The below population has been calculated at the BCA population rates with the exclusion of fitout. - Data Halls Lower Ground and Level 1: Up to 10 persons per Data Hall (based on 25% of the floor area @30m² / person. - Upper Ground Floor Lobby Security: 4 persons (per Lobby). Note: No population has been allocated to the plantrooms on this level - Office Levels 1, 1.1, & 1.2: 68 persons per Office (per level – 136 persons total) based on 1person/10m² for the offices. It is understood these occupant calculations may be considered excessive and thus we require Stack to confirm the proposed population on each of the levels.
D3D3	Fire-isolated Stairways & Ramps: A stairway or ramp, including landings that are required to be within a fire-resisting shaft must be constructed of non-combustible materials to protect the structural integrity of the shaft. Comment: Architect & Structural Engineer to note. Details are to be provided with the Construction Certificate documentation.
D3D4	Non-Fire Isolated Stairways and Ramps: In a building with a rise in storeys of more than 2, required non-fire-isolated stairways and ramps must be either constructed of + Reinforced or prestressed concrete; or + Steel at least 6mm thick at all points; or + Timber that has a finished thickness of at least 44mm, has an average density of at least 800 kg/m³ at a moisture content of 12% and has not been joined by means of glue unless it has been laminated and glued with resorcinol/phenol formaldehyde; or + Non-combustible materials, and such that if there is a structural failure it will not cause damage to or impair the fire-resistance of the shaft in which the stair is located. Comment: Architect to note in relation to any proposed external stairs or ramps. Details demonstrating compliance are to be shown on the CC Application plans where applicable.
D3D5	Separation of rising and descending stair flights: In a required fire-isolated stairway there must be no direction connection between – + A flight rising from a storey below the level of access to open space; and + A flight descending from a storey above that level. Any construction that separates or is common to the rising and descending flights must be non-combustible and smoke proof. Comment: Compliance is readily achievable.
D3D8	Installations in Exits and Paths of Travel: This clause restricts the installation of certain services in fire-isolated exits, non-fire-isolated exits and certain paths of travel to exits. Sub-clauses (1) to (6) prescribe which services shall not be installed as well as the circumstances in which certain services may be installed in fire-isolated and non-fire-isolated exits. Comment: This requirement applies to all cupboards containing electrical distribution boards or comms. equipment that are located in a path of travel to an exit. In this regard, such cupboards are to be enclosed in non-combustible materials and are to be suitably sealed against the spread of smoke. Details demonstrating compliance are to be shown on the CC Application plans where applicable.
D3D9	Enclosure of Space under Stairs and Ramps: The space below a required, non-fire isolated stairway/ramp must not be enclosed to form a cupboard or other enclosed space, unless the cupboard is bound by construction achieving an FRL of at least 60/60/60, with a self-closing -/60/30 door. Comment: If the space under any of the required exit stairs are proposed to be enclosed to form a cupboard or the like, the enclosing walls and ceilings will need to achieve an FRL of 60 minutes and the doorway will need to be fitted with a self-closing -/60/30 fire door. Details demonstrating compliance are to be shown on the CC Application plans where applicable.

D3D14 – D3D16	Stairways, Landings, and Thresholds: + Stairway dimensions must comply with Table D3D14. + A stairway must have no more than 18, nor less than 2, risers in each flight. + Landings must be not less than 750mm in length. + Slip Resistance of stair nosings and landings must comply with Table D3D15. + A step is not permitted on either side of a doorway, closer than the width of the door swing. Doorways leading to external areas are exempted if the step down is $\leq 190\text{mm}$, though an accessible threshold ramp is required in accessible areas (refer to Part D4). Comment: Details demonstrating compliance are to be submitted with the CC Application drawings for assessment against the above criteria.
D3D17 – D3D21	Balustrades or Other Barriers: These clauses detail where balustrades are required to be provided and sets out in specific detail the construction requirements. Typically, the following will apply to this class of building: + Balustrades are required where the fall to the level below is more than 1m in height. The minimum height of a balustrade is 1m above the floor of the landing, walkway or the like; and 865mm above the floor of a stairway or a ramp. + For a fall of more than 4m to the surface level below, a window sill must be a minimum of 865mm in height above the height of the floor surface. + Where the floor is more than 4m above the surface beneath the balustrade any horizontal or near horizontal members between 150mm and 760mm above the floor must not facilitate climbing. + Balustrades must be constructed so as to not permit a sphere of 125mm diameter to pass through. The exception to this is within fire isolated exits within the building, or internal stairs within a Class 7b or 8 building, where the rails can be positioned a maximum of 460mm apart, so long as a bottom rail is located so a sphere of 150mm cannot pass through the opening between the nosing of the stair treads and the rail or between the floor of the landing, balcony or the like. + Note: any wire barriers must be complaint with D3D21 and tables D3D21(a) to D3D21(c). Comment: Details demonstrating compliance are to be submitted with the CC Application drawings for assessment against the above criteria.
D3D22	Handrails: This Clause sets out the requirements regarding the location, spacing and extent of handrails required to be installed in buildings. Comment: Architect to note, details demonstrating compliance will be required to be included in the CC plans. Handrails serving all stairs and ramps both internally and externally to the buildings are required to comply with the accessibility requirements of Clause D4D4 and AS 1428.1-2009.
D3D23	Fixed Platforms, Walkways, Stairways and Ladders: A fixed platform, walkway, stairway, ladder, any going and riser, landing, handrail or barrier attached thereto may comply with AS 1657 if it only serves a machinery room, boiler house, lift-machine rooms, plant rooms or the like. Comments: Details of where any AS 1657 compliant stairs or ladders are to be used for access/egress in the building are to be included on the CC Application plans. It is understood these provisions may be applied to any maintenance ladders or walkways used to access mechanical equipment in the Data Hall/Electrical/Generator Gantry areas.
D3D24	Doorways and Doors: This clause applies to all doorways that form an exit and refers to the types of doors that cannot be used in buildings of prescribed uses, the use of power operated doors and the force required to operate sliding doors. If an exit door is power operated, it must be opened manually under a force of not more than 110N if there is a malfunction or failure to the power source; and it must open automatically if there is a power failure to the door and upon the activation of a fire or smoke alarm anywhere in the fire compartment served by the door. Comment: Architect to note – compliance readily achievable.

D3D25, D3D26	Doors and Latching: All egress doorways must swing in the direction of egress and must be readily openable without a key from the side that faces a person seeking egress, by a single handed downward or pushing action on a single device which is located between 900mm and 1100mm from the floor. Comment: Architect to note that doors must swing in the direction of egress for horizontal exits in fire walls. Compliance to be confirmed as the compartmentation/horizontal exit strategy becomes finalised by the Architect & Fire Engineer.
D4D2, D4D3	General Building Access Requirements: The extent of access required depends on the classification of the building. Buildings and parts of building must be accessible as set out in sub-clauses (1)-(10) unless exempted by Clause D4D5. Access is required to and within all areas normally used by the occupants, for Class 5, 6, 7b & 9b buildings and any levels in a Class 7a building containing accessible carparking spaces. Comment: Compliance readily achievable – refer to Access Consultant’s Report.
D4D4	Parts of the Building to be Accessible: This clause specifies the requirements for accessways within buildings which must be accessible. In accordance with Clause D4D4; ramps & stairways must comply with Clause 10 & 11 of AS 1428.1-2009 (respectively), whilst fire isolated stairs must comply with Clauses 11.1(f) & (g) of AS 1428.1-2009 only. In addition, any storey with a floor area more than 200m² must be served by a passenger lift that is designed to comply with Part E3, and all accessways must include passing & turning spaces per AS 1428.1-2009. Clause D4D4(g) and (h) requires that the pile height or pile thickness shall not exceed 11mm and the carpet backing thickness shall not exceed 4mm. Moreover, the carpet pile height or pile thickness dimension shall not exceed 11mm, the carpet backing thickness dimension shall not exceed 4mm and their combined dimension shall not exceed 15mm. Comment: Compliance readily achievable – refer to Access Consultant’s Report.
D4D5	Exemptions: This clause provides details on buildings or parts of buildings not required to be accessible under the BCA where providing access would be inappropriate because of the nature of the area/use or the tasks undertaken. Comment: Reference is to be made to an Access Consultant Report. Note: Consideration to an exemption to the Data Hall, Generator Gantry, storage, fuel/water tank areas may be appropriate on this project. Confirmation from Stack/the tenants will be required at the CC Application stage that includes a request for concession, where this would be applied and the reasons why it would be inappropriate for access for people with disabilities within the facility.
D4D6	Accessible Parking: This clause provides details of the number of accessible carparking spaces required in a carpark depending on the classification of the building. Comment: In the case of the Class 5, 7b, 8 buildings 1 compliant accessible space is required for every 100 parking spaces or part thereof. In this regard, it is noted that there is currently adequate accessible parking spaces detailed on the most current plans, hence achieving compliance.
D4D7	Signage: Braille and tactile signage must be provided to required accessible sanitary facilities, spaces with hearing augmentation, ambulant sanitary facilities, pedestrian entrances that are not accessible, and to each door required by Clause E4D5 to be provided with an exit sign. The latter is to state EXIT and state the level e.g. LEVEL 1. Comment: Signage will be required to identify exits, accessible facilities, an ambulant accessible facility, and the paths to accessible pedestrian entries (where required) – Refer to Access Consultant Report.
D4D9	Tactile Indicators: This clause provides for the installation of tactile indicators in buildings required to be accessible and must be provided to warn people who are blind or have a vision impairment that they are approaching a stairway, escalator, passenger conveyor, ramp, overhead obstruction or an accessway meeting a vehicular way, except for areas exempted by D4D5. Comment: Subject to D4D5 above, stairways and ramps serving the proposed building, any overhead projections less than 2m in height and any paths leading directly to a driveway or roadway without a kerb will need to be provided with Tactile Ground Surface Indicators in accordance with AS1428.4. Compliance readily achievable – refer to Access Consultant’s Reports.

D4D12	Ramps: Ramps may be used as part of an accessway where there is a change of level and must comply with the requirements set out in AS1428.1. Comment: Architect to note, details and design certification demonstrating compliance will be required to be included in the CC plans.
D4D13	Glazing on an Accessway: This part requires the provision of a contrasting strip, chair rail, handrail or transom across all frameless or fully glazed doorways and surrounding glazing capable of being mistaken for an opening. Comment: Glazing capable of being mistaken for an opening as listed above must be clearly marked for their full width with a solid, non-transparent contrasting line being not less than 75mm wide and the lower edge must be located between 900mm and 1000mm above the plane of the finished floor level. Compliance readily achievable – refer to Access Consultant’s Reports.

3.4 Section E – Services and Equipment

E1D2	Fire Hydrants: + E1D2(1) – A fire hydrant system must be provided to serve a building having a total floor area greater than 500m² and where a fire brigade is available to attend a building fire. + E1D2(2) – Requires that the fire hydrant system must be installed in accordance with the provisions of AS2419.1-2021 and details where internal hydrants must be located. + E1D2(3) – details concessions to AS 2419.1-2021 compliance associated with Class 8 Electricity Network Substations, and Hydrant Booster assembly locations where buildings are sprinkler protected. + E1D2(4) – states that internal fire hydrants must serve the level in which they are installed. Comment: The proposed main Data Centre Building is required to be served by a fire hydrant system, designed in accordance with AS 2419.1-2021. We understand this system will be the subject of a performance solution to address the provision of Appendix C of the standard. The following details are required to be provided as part of the Hydrant Performance Solution Design - Location of the Booster Assemblies & Pump. - Volume & Number of Hydrants required to flow serve the building - Coverage from internal and external fire hydrants. - Fire Hydrant locations & system pipework - Provision of Special Hazards including battery storage and the proximity of the Generator Gantry (and associated fuel tanks) and electrical substation / switchyard infrastructure on the site Detailed plans showing the hydrant system layout (incl. the booster assembly and pumps) are to be provided with the relevant CC application(s). The plans must also demonstrate how coverage is achieved to all areas of the building. Note: Whilst E1D2 does not apply to the Class 10 buildings on the site, their fire risk and the potential need for hydrant coverage must still be considered as part of the fire safety strategy for the main Data Centre building.
E1D3	Fire Hose Reels: A fire hose reel system must be provided to serve a building where one or more internal fire hydrants are installed or in a building with a floor area greater than 500m². This clause requires that the fire hose reel system must be installed in accordance with AS 2441 and sets out the detail for location and uses of fire hose reels. Comment: The main Data Centre building is required to be served by a compliant fire hose reel system within the Class 7a, & 7b areas only (excluding the Class 5 Office areas). We understand that a Performance Solution may be proposed to omit fire hose reels from the building. Details demonstrating compliance are to be provided at the CC application Stage.

NSW E1D4, E1D12 & E1D13	Sprinklers: A sprinkler system must be installed in a building or part of a building when required by Clauses E1D5 to E1D13 and comply with Specification 17. Specification 17 sets out requirements for the design and installation of sprinkler systems in Class 2-9 Buildings, and details the required design standards, including AS 2118.1-2017 and AS 2118.6-2012. Comment: The proposed main Data Centre building is required to be sprinkler protected throughout in accordance with Spec.17. Details demonstrating compliance are required to be submitted with the CC application. In accordance with Clause 4.14.1 of AS2118.1-2017, sprinkler boosters are required to comply with the requirements of AS2419.1-2021 for a hydrant booster. We understand that a Fire Engineered Performance Solution may be required to address the following departures from the standard: - The sprinkler booster assembly to be not located in line of sight of the building pedestrian entrance. - To permit the Sprinkler Valve room on each floor to not have direct egress to a road or open space. - To allow the floor area protected by tail-end and pre-action fire sprinkler systems which exceed the limitations in AS 2118.1 – 2017.
E1D14	Portable Fire Extinguishers: To be provided and designed in accordance with Sections 1, 2 and 3 of AS 2444-2001. Comment: Fire extinguishers will be required to be installed in the proposed building in accordance with sub-clauses (1), (3) & (5) and AS 2444-2001. Particular attention to the additional requirements applicable to the Class 5 portions of the main Data Centre Building and the Class 10 buildings on the site.
E1D15	Fire Control Centre: A fire control centre is to be provided based on the total building floor area comprising more than 18,000m². A fire control centre must: + Be located in a building so that egress from any part of its floor to a public road or open space does not involve changes in level which in aggregate exceed 300mm. + Provide an area from which fire-fighting operations or other emergency procedures can be controlled. Must not be used for any other purpose. Comment: As the total floor area of the main Data Centre Building exceeds 18,000m² it is required to be provided with a Fire Control Centre that complies with Clauses S19C3 to S19C6 of Spec 19. Further details nominating a Fire Control Centre on the plans which demonstrates compliance with the requirements of Spec 19 is to be provided at Construction Certificate Stage.
E1D17	Provisions for Special Hazards: Suitable additional provisions must be made for fire-fighting if unique problems could arise due to; + The nature or quantity of materials stored, displayed or used in a building on the allotment; or + The location of the building in relation to a water supply for firefighting purposed. Comment: It is noted that Lithium-Ion batteries (or equivalent) are proposed to be stored/utilised within Battery Rooms with the Data Halls in significant quantities on all levels. Details will be required from both the sprinkler system designer and the fire engineer confirming that the proposed firefighting systems have the required capability to address the additional hazard resulting from the Lithium-ion battery storage. In addition to the above, consideration will need to be given to the additional hazards on the site resulting from both the Generator Gantry and the Electrical Substation / Switchyard infrastructure, to determine the extent of fire services required to serve these Class 10 buildings. Fire Engineer to note. Details of the proposed additional firefighting systems are required to address the additional hazard resulting from the proposed storage or use of the building.
E2D3	General Requirements: Class 2 to 9 buildings must comply with the provisions of this Clause to remove smoke during a fire, to control the operation of air handling systems and to prevent the spread of smoke between compartments.

	Buildings must comply with the provisions of E2D4, as applicable to Class 2 to 9 buildings. It deals with the design and construction of air handling systems that are part of a smoke hazard management system and air handling system that are not part of a smoke hazard management system. The details relating to the installation and operation of the systems are set out in Specifications 20, 21, & 22.
E2D10	Buildings <25m Effective Height – Large Isolated Buildings: This clause sets out the requirements for smoke hazard management systems for large isolated buildings with an effective height of less than 25m. Comment: As the volume of the main Data Centre Building exceeds 108,000m³ an automatic smoke exhaust system (incorporating a smoke detection system) is required to be provided, complying with Spec. 21. Consideration to a Performance Solution addressing the required smoke hazard management systems may be given. Such a Performance Solution would need to be prepared by the Fire Engineer, to demonstrate compliance with Performance Requirement E2P2. In addition, any air handling system which does not form part of a smoke hazard management system and which recycles air from one fire compartment to another fire compartment or operates in a way that may spread smoke between compartments must be designed to operate as a smoke control system in accordance with AS 1668.1-2015. Alternately this system may incorporate smoke dampers where the ducts penetrate separating elements in the fire compartments and the mechanical system shutdown and the smoke dampers activate to close automatically by smoke detectors complying with Clause 7.5 of AS 1670.1-2018. Details and design certification shall be provided with the CC application.
E2D21	Provisions for Special Hazards: Additional smoke hazard management measures may be necessary due to the— + Special characteristics of the building; or + Special function or use of the building; or + Special type or quantity of material stored, displayed or used in a building; or + Special mix of classifications within a building or fire compartment, which are not addressed in E2D4 to E2D20. Comment: It is noted that Lithium-Ion batteries (or equivalent) are proposed to be stored/utilised within Battery Rooms adjacent to the Data Halls in significant quantities on all levels. Details will be required from both the mechanical system designer and the fire engineer confirming that the proposed smoke hazard management systems have the required capability to address the additional hazard resulting from the Lithium-ion battery storage in the building. Details of the proposed additional smoke hazard management systems are required to address the additional hazard resulting from the proposed storage or use of the building.
E3D3	Stretcher Facilities in Lifts: Stretcher facilities, complying with this clause, must be provided in lifts in at least one emergency lift as required by E3.4 or in building where lifts serve any storey above an effective height of 12m. A stretcher facility must accommodate a raised stretcher with a patient lying on it horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above the floor level. Comment: The lifts within the office portions of main Data Centre building serves storeys above an effective height of 12m and as such are required to accommodate a stretcher in accordance with the requirements of the clause above. Design certification required at CC Application stage – compliance is readily achievable.
E3D4	Warning Against use of Lifts in Fire: Warning signs required be provided must be displayed where they can be readily seen and must comply with the details and dimensions of Figure E3D4. Comment: Lift Contractor to note.
E3D5	Emergency Lifts: An emergency lift must be installed in: + A building exceeds 25m in effective height; and

	✦ A class 9a building which has patient care areas located on a level that does not have direct egress to a road or open space. The emergency lifts must be contained within their own fire resisting shaft; must serve all levels served by passenger lifts. Where two or more passenger lifts are installed at least two emergency lifts must be provided to serve those storeys served by the passenger lifts and where the passenger lifts are in separate shafts, at least one emergency lift must be installed in each shaft. Comment: The building does not exceed 25m in effective height and thus does not require emergency lifts.
E3D6	Landings: Access and egress to and from lift well landings must comply with the Deemed-to-Satisfy Provisions of Parts D2 & D3. Comment: Lift Contractor to note.
E3D7	Passenger Lift Types and Their Limitations: In an accessible building, every passenger lift must be one of the types identified in sub-clause (1) and not rely on a constant pressure device for its operation if the lift car is fully enclosed. Comment: Lift Contractor to note.
E3D9, E3D11, E3D12	Fire Service Controls and Recall Switches: These clauses set out requirements for fire service control and recall switches for lifts serving storeys above an effective height of 12m. Comment: Lift Contractor to note.
E4D4	Design & Operation of Emergency Lighting: Every required emergency lighting system must comply with AS 2293.1-2018. Comment: Electrical Consultant to note.
E4D5	Exit Signs: An exit sign must be clearly visible to persons approaching the exit and must be installed on, above or adjacent to each door providing egress from a building. Sub-clauses (a) to (d) set out the situations where exit signs are required to be installed. Comment: Electrical Consultant to note, details demonstrating compliance will be required to be included in the CC plans
E4D6	Direction Signs: If an exit is not readily apparent to persons occupying or visiting the building then exit signs must be installed in appropriate positions in corridors, hallways, lobbies, and the like, indicating the direction to a required exit. Comment: Electrical Consultant to note, details demonstrating compliance will be required to be included in the CC plans

3.5 Section F – Health and Amenity

F1D3	Stormwater Drainage: A roof balcony, podium or similar must have a system of stormwater drainage and the structural substrate must be graded with a minimum fall of 1:80 to a drainage outlet. Comment: Details of stormwater disposal are required to be prepared by a suitably qualified consultant and submitted with documentation for the CC Application.
F1D4	Exposed Joints: Exposed joints in the drainage surface on a roof, balcony, podium or similar horizontal surface part of a building must— ✦ Be protected in accordance with Section 2.9 of AS 4654.2; and ✦ Not be located beneath or run through a planter box, water feature or similar part of the building Comment: Details of compliance with the above are to be prepared by a suitably qualified consultant and submitted with documentation for the CC.

F1D5	External Waterproofing Membranes: External waterproofing membranes are required to comply with AS 4654.1 & 2. Comment: The rooftop plant area of the main Data Centre Building Is required to comply with the requirements of this clause. Details of how weatherproofing will be achieved through the F3P1 performance solution report. Details of compliance with the above are to be prepared by a suitably qualified consultant and submitted with documentation for the CC.
F1D6	Damp-Proofing: Damp Proofing requirements are as follows: + Moisture from the ground must be prevented from reaching certain parts of buildings as listed. + All damp-proofing materials and termite shields used as damp-proofing must comply with AS/NZS 2904 and AS 3660.1. + Certain buildings and parts of a building do not need to comply. Comment: Note.
F1D7	Damp Proofing of Floors on the Ground: If the floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870. Damp-proofing need not be provided if weatherproofing is not required or the floor is the base of a stair, lift or similar shaft which is adequately drained by gravitation or mechanical means. Comment: Architect to note.
F2D3 & F2D4	Wet Area Construction: These clauses set out the construction requirements for wet areas in Class 2-9 Building, in relation to floor and wall materials, surface grading, floor wastes and drainage. Comment: Note – Design Certification will be required to be provided at CC Application stage.
F2D4	Floor Wastes: Where a floor waste is provided, the fall of the floor plane to the floor waste is required to be between 1:80–1:50. Comment: Architect to note – Applies to all floor wastes internally and externally.
F3D2	Roof Coverings: This clause details the materials and appropriate standards, with which roofs must be covered with. The roofing requirements are set out in sub-clauses (a) to (g) which identifies the types of materials that may be used and the adopted Australian Standards that apply to their quality and installation. Comment: The rooftop plant area is to comply with the requirements of this clause. Details of how weatherproofing will be achieved through the F3P1 performance solution report. Details of compliance with the above are to be prepared by a suitably qualified consultant and submitted with documentation for the CC.
F3D3	Sarking: Sarking-type materials used for weatherproofing of roofs must comply with AS/NZS 4200 parts 1 and 2 Comment: Note.
F3D4	Glazed Assemblies: Glazed assemblies in an external wall must comply with AS2047 requirements for resistance to water penetration for windows, sliding doors with a frame, adjustable louvres, shop fronts and windows with one-piece framing Comment: Note.
F3D5	Wall Cladding: The following wall cladding materials are deemed to satisfy Performance Requirement F3P1: + Masonry, including masonry veneer, unreinforced and reinforced masonry, complying with AS 3700, + Autoclaved aerated concrete, complying with AS 5146.3, + Metal wall cladding, complying with AS 1562.1. Comment: Details are to be provided with the F3P1 Performance Solution Report, demonstrating compliance, prior to the issue of the CC.

F3P1 & F3D5

Performance Requirement F3P1: A roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause

- + Unhealthy or dangerous conditions, or loss of amenity for occupants; and
- + Undue dampness or deterioration of building elements.

Note 1: There are limited Deemed-to-Satisfy provisions for this Performance Requirement in respect to External Walls. DtS wall types include; masonry; autoclaved aerated concrete; and metal wall cladding only.

Note 2: Refer to Clause F3D2 for roof coverings.

Comment: A **Performance Solution Report** will be required to address the above, noting that the proposed design does not comprise of wholly DtS materials.

F4D3

Calculation Of Number Of Occupants And Facilities: This clause sets out the requirements for the calculation of the number of occupants and the number of sanitary facilities required to be installed in Class 2 to 9 buildings. The parameters for the calculation are set out in sub-clauses (a) to (d).

Comment: Noted – refer to D2D18, confirmation of population numbers are required.

F4D4

Facilities in Class 3 to 9 Buildings: This clause provides the requirements for sanitary facilities to be installed in Class 3-9 buildings in accordance with **Tables F4D4a – F4D4l**. The requirements and variations are set out in sub-clauses (1)-(11).

Comment: The required sanitary facilities for the proposed development have not been calculated per Tables F4D4a and F4D4b as yet until confirmation of the population and the proposed number of facilities proposed have been provided.

Occupancy Class as per F4D4								
		Closet Pans		Urinals		Washbasins		Complies
		Required	Proposed	Required	Proposed	Required	Proposed	Yes/No
Total	Male	TBC	TBC	TBC	TBC	TBC	TBC	TBC
	Female	TBC	TBC	-	-	TBC	TBC	TBC

Note 1: Where sanitary compartments are noted as Unisex on the floor plans they are required to be allocated as either Male or Female per Clause F2D4(1).

Note 2: Where individual stand-alone sanitary compartments are they must be allocated for use by Males or Females only unless they are designed as a unisex accessible compartment per Clause F2D4(1).

Note 3: As mentioned under D2D18 above, these population numbers may be considered excessive for the development and hence more accurate population numbers may be provided by Stack.

F4D5

Accessible Sanitary Facilities: Accessible unisex sanitary compartments must be provided, in accordance with F4D6 and unisex showers must be provided in accordance with Table F4D7, in buildings or parts that are required to be accessible. The details for the provision of disable facilities and the standard, AS 1428.1, are set out in sub-clauses (a) to (i).

Comments: Accessible toilet facilities and ambulant sanitary facilities are required in the building and are required to achieve compliance with the provisions of F4D5 and F4D6. Details demonstrating that the design of each facility complies with AS 1428.1 are to be provided at the CC application stage, however, compliance is readily achievable.

F4D8

Construction of Sanitary Compartments: Other than in an early childhood centre, sanitary compartments must have doors and partitions that separate adjacent compartments and extend:

- + From floor level to the ceiling in the case of a unisex facility; or
- + A height of not less than 1.5m above the floor if primary school children are the principal users; or
- + 1.8m above the floor in all other cases.

	The door to a fully enclosed sanitary compartment must open outwards; or slide: or be readily removable from the outside of the sanitary compartment, unless there is a clear space of at least 1.2m, measured in accordance with Figure F4D8 between the closet pan within the sanitary compartment and the doorway. Comment: Design certification to be submitted at CC Application.
F5D2	Height of Rooms and Other Spaces: The ceiling heights in Class 2 to 9 buildings must not be less than required in sub-clauses (1) to (8) of this clause. The minimum ceiling heights for a Class 5, 6 & 7 building are as follows: + Corridor or Passage, Bathroom, Storeroom, etc. – 2.1m + Remainder – 2.4m. The minimum ceiling heights for a <u>Class 9b building</u> are as follows: + A part (including a corridor serving the part) that accommodates not more than 100 persons – 2.4m; A part (including a corridor serving the part) that accommodates more than 100 persons – 2.7m. Comment: Architect to ensure compliance. Ceiling heights are to be reviewed at the Construction Certificate state with the detailed section drawings.
F6D5	Artificial Lighting: Artificial lighting is required where it is necessary to minimise the hazard to occupants during an emergency evacuation. Sub-clauses (1) - (3) sets out the places where artificial lighting is always required in all classes of buildings and the standard to which it must be installed. Comment: Design certification to be submitted at CC Application.
F6D6	Ventilation of Rooms: A habitable room, office, shop, factory, workroom, sanitary compartment, bathroom, shower room, laundry and any other room occupied by a person for any purpose must have natural ventilation complying with F6D7 or a mechanical or air-conditioning system complying with AS1668.2 and AS/NZS 3666.1. Comment: Design certification to be submitted at CC Application.
F6D8	Ventilation Borrowed from Adjoining Room: Natural ventilation must consist of openings, windows, doors or other devices which can be opened—with a ventilating area not less than 5% of the floor area of the room required to be ventilated. Additionally, open to a suitably sized space open to the sky or an adjoining room in accordance with F6D8. Comment: Design certification to be submitted at CC Application.

3.6 Section J – Energy Efficiency

Part J4	Building Fabric: The provision of insulation of the building envelope will be required in the proposed Building, in accordance with Clauses J4D3 to J4D7, and the Tables therein, including Thermal Construction General, Roof and Ceiling Construction, Rooflights, Walls, and Floors. Design details and/or certification of design will be required to be provided in this regard. Comment: This section applies to the building envelope of any air-conditioned spaces proposed within the Main Data Centre building. Design details and/or certification of building envelope design will be required to be submitted with the application for a Construction Certificate.
Part J5	Building Sealing: The provision of a compliant building sealing is required to all chimneys & flues, roof lights, windows & doors, Exhaust Fans, Ceilings Walls, & floors in accordance with Clauses J5D3 to J5D7. Comment: This section applies to any air-conditioned spaces proposed within the Main Data Centre building. Design details and/or certification of building envelope design will be required to be submitted with the application for a Construction Certificate. Refer to Section J Consultant's Report.

Part J6	Airconditioning & Ventilation Systems: Details and/or design certification which confirm that any proposed air-conditioning system or unit within the proposed building achieves compliance with the relevant requirements of Part J6 will be required to be provided from the mechanical engineer. Comment: Details or certification demonstrating compliance will need to be submitted with the application for a Construction Certificate. Refer to Section J Consultant's Report.
Part J7	Artificial Light & Power: Details and/or design certification which confirm that all artificial lighting, power control, and boiling/chilled water units within the proposed building achieves compliance with the relevant requirements of Part J7 will be required to be provided from the electrical engineer Comment: Consultant certification required at CC Application Stage. Refer to Section J Consultant's Report.
Part J8	Hot Water Supply, & Swimming Pool & Spa Pool Plant: Details and/or design certification which confirm that any proposed hot water supply system within the proposed building achieves compliance with the relevant requirements of Part J8 (Section 8 of AS 3500.4) will be required to be provided from the hydraulic engineer. Comment: Details and certification demonstrating compliance will need to be submitted with the application for a Construction Certificate. Refer to Section J Consultant's Report.
Part J9	Facilities for Energy Monitoring: Provision for monitoring of energy consumption must be provided to a building where the floor area exceeds 500m², and must be capable of recording the consumption of gas and electricity. In addition, where the floor area of the building exceeds 2,500m² the energy monitoring facilities must be capable of individually recording air-conditioning, lighting, appliance power, central hot water supply, lifts/escalators, and other ancillary plant and being connected to a single interface monitoring system. Comment: Details or certification demonstrating compliance with J9D3 for energy monitoring, J9D4 for provision for EV charging stations, and J9D5 for solar, will need to be submitted with the application for a Construction Certificate. Refer to Section J Consultant's Report.



4.0 Conclusion

This report contains an assessment of the referenced architectural documentation for the proposed Data Centre at 78 Lockwood Rd, Erskine Park against the Deemed-to-Satisfy provisions of the Building Code of Australia 2022.

Arising from the assessment, key compliance issues have been identified that require further resolution, either by way of fire engineered Performance Solutions or plan amendments prior to the Construction Certificate stage.

Notwithstanding the above, it is considered that the proposed development can readily achieve compliance with the BCA subject to resolution of the matters identified in this report.



Appendices

+ Appendix 1 – References Tables

Table 1: Non-Combustibility Requirements

+ Building Element	+ Type A Construction
External wall	Non-combustible
Common wall	Non-combustible
Floor and floor framing of lift pit	Non-combustible
All loadbearing internal walls (including those of shafts)	Concrete, masonry or fire-protected timber
Loadbearing fire walls	Concrete, masonry or fire-protected timber
Non-loadbearing internal walls required to be fire-resistant	Non-combustible
Non-loadbearing lift, ventilating, pipe, garbage and the like shafts which do not discharge hot products of combustion.	Non-combustible (subject to conditions outlined in C2D10)

Table 2: Fire Hazard Properties Requirements – Floor Linings

+ Table S7C3 of Specification 7 Critical Radiant Flux of Floor Linings and Floor Coverings			
+ Class of Building	Building Not Fitted with a Sprinkler System	Building Fitted with a Sprinkler System (other than a FPAA101D or FPAA10H System)	Fire-isolated Exits and Fire Control Rooms
Class 2, 3, 5, 6, 7, 8 or 9b, excluding: + Class 3 accommodation for the aged; and + Class 9b	2.2 kW/m ²	1.2 kW/m ²	2.2 kW/m ²

Table 3: Fire Hazard Properties Requirements – Wall and Ceiling Linings

+ Table S7C4 of Specification 7 – Wall and Ceiling Lining Materials (Materials Groups Permitted)				
Class of Building	Fire-isolated Exits and Fire Control Rooms	Public Corridors	Special Areas	Other Areas
Class 5, 6, 7, 8 or 9b schools, Unsprinklered	Walls: 1 Ceilings: 1	Walls: 1, 2 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2	Walls: 1, 2, 3 Ceilings: 1, 2, 3
Class 5, 6, 7, 8 or 9b schools, Sprinklered	Walls: 1 Ceilings: 1	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3	Walls: 1, 2, 3 Ceilings: 1, 2, 3

Table 4: Fire-Resisting Construction – Type A Construction

+ Building Element	+ Class of Building - FRL: (in minutes) Structural adequacy/integrity/insulation			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL – (Including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is:				
For loadbearing parts:				
Less than 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3m	90/60/60	120/90/90	180/180/120	240/240/180
3m or more	90/60/30	120/60/30	180/120/90	240/180/90
For non-loadbearing parts:				
less than 1.5m	–/90/90	–/120/120	–/180/180	–/240/240
1.5 to less than 3m	–/60/60	–/90/90	–/180/120	–/240/180
3m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN - Not incorporated in an external wall				
For loadbearing columns	90/–/–	120/–/–	180/–/–	240/–/–
For non-loadbearing columns	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS	90/90/90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS				
Fire-resisting lift and stair shafts				
Loadbearing	90/90/90	120/120/120	180/120/120	240/120/120s
Non-loadbearing	–/90/90	–/120/120	–/120/120	–/120/120
Bounding public corridors, public lobbies and the like:				
Loadbearing	90/90/90	120/–/–	180/–/–	240/–/–
Non-loadbearing	–/60/60	–/–/–	–/–/–	–/–/–
Between or bounding sole-occupancy units:				
Loadbearing	90/90/90	120/–/–	180/–/–	240/–/–
Non-loadbearing	–/60/60	–/–/–	–/–/–	–/–/–
Ventilating, pipe, garbage, and the like shafts not used for the discharge of hot products of combustion:				
Loadbearing	90/90/90	120/90/90	180/120/120	240/120/120
Non-loadbearing	–/90/90	–/90/90	–/120/120	–/120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES, AND:				
COLUMNS	90/–/–	120/–/–	180/–/–	240/–/–
FLOORS	90/90/90	120/120/120	180/180/180	240/240/240
ROOFS	90/60/30	120/60/30	180/60/30	240/90/60

Notes:

1. Any lightweight construction in a fire wall or an internal wall required to have an FRL is to comply with Specification 11.
2. A loadbearing internal wall and a loadbearing fire wall (including those that are part of a loadbearing shaft) must be constructed from; concrete or masonry.
3. Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part must typically achieve the same FRL. Where that part is also required to be non-combustible, the supporting part must also be non-combustible.
4. The method of attaching or installing a finish, lining, ancillary element, or service installation to a building must not reduce the fire-resistance of that element to below that required.
5. Fire rated shafts are required to be enclosed at the top and bottom by construction having an FRL of not less than what the shaft requires (in both directions)
6. The concession granted under S5C15 results in the roof of the building not being required to be fire rated (the building is provided throughout with sprinklers). Notwithstanding, the Atrium provisions override this general concession in BCA Specification 5.
7. Lift shafts are required to be enclosed at the top of the shaft with fire rated construction having an FRL of 120/120/120.
8. Fire isolated exits are to be provided with a fire rated "lid" that achieves an FRL of 120/120/120.
9. Where roof lights are proposed they are required to be located not less than 3 metres from a roof light in an adjoining fire separated part; and must not be more than 20% of the area of the roof.
10. Any loadbearing internal walls or loadbearing fire walls are to be masonry or concrete.
11. External walls must be non-combustible construction. Non-loadbearing parts of an external wall that are more than 3m from a fire source feature need not be fire rated.
12. Internal columns in this building (being less than 25m in effective height) that are in the storey immediately below the roof, can be constructed as follows:
 - a. Building with a rise in storeys exceeding 3 – FRL 60/60/60
 - b. Building with a rise in storeys not exceeding 3 – no FRL

+ Appendix 2 – Fire Safety Schedule

The following table is a list of the required fire safety measures within the building. These measures may be subject to further change pending the outcomes of the final Fire Safety Engineering Review to confirm the works are permissible.

Table 5: Fire Safety Schedule

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Required
Access Panels, Doors & Hoppers	BCA 2022 Clause C4D14 AS 1530.4 – 2014 & Manufacturer's Specifications	✓
Alarm Signalling Equipment	AS 1670.3 – 2018	✓
Automatic Fail-Safe Devices	BCA 2022 Clause D3D26	✓
Automatic Fire Detection System	BCA 2022 Spec. 20 AS 1670.1 – 2018	✓
Automatic Fire Suppression Systems (Sprinklers)	BCA 2022 Spec. 17 AS 2118.1 – 2017	✓
Building Occupant Warning System activated by the Sprinkler System	BCA 2022 Spec. 17 Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018	✓
Stretcher Lifts	BCA 2022 Clause E3D3	✓
Emergency Lighting	BCA 2022 Clause E4D2 & E4D4 AS 2293.1 – 2018	✓
Emergency Evacuation Plan	AS 3745 - 2010	✓
Exit Signs	BCA 2022 Clauses E4D5, NSW E4D6 & E4D8 AS 2293.1 – 2018	✓
Fire Control Centre	BCA 2022 Spec 19	✓
Fire Dampers	BCA 2022 Clause C4D15 AS 1668.1 – 2015 & AS 1682.1 & 2 – 2015 Manufacturer's Specification	✓
Fire Doors	BCA 2022 Clauses C3D13, C3D14, C4D8 & C4D12 AS 1905.1 – 2015 and Manufacturer's Specification	✓
Fire Hose Reels	BCA 2022 Clause E1D3 AS 2441 – 2005	✓
Fire Hydrant Systems	BCA 2022 Clause E1D2 AS 2419.1 – 2021	✓
Fire Seals	BCA 2022 Clause C4D15, AS 1530.4 – 2014 & AS 4072.1 – 2014 and Manufacturer's Specification	✓
Lightweight Construction	BCA 2022 Clause C2D9 AS 1530.4 – 2014 and Manufacturer's Specification	✓
Mechanical Air Handling Systems (Automatic Shutdown)	BCA 2022 Clause E2D3 AS/NZS 1668.1 – 2015 & AS 1668.2 – 2012	✓

+ Statutory Fire Safety Measure	+ Design/Installation Standard	+ Required
Portable Fire Extinguishers	BCA 2022 Clause E1D14 AS 2444 – 2001	✓
Required Exit Doors (Power Operated)	BCA 2022 Clause D3D24(2)	✓
Smoke Hazard Management Systems: - Smoke Exhaust System	BCA 2022 Part E2 Spec. 21 AS/NZS 1668.1 –2015	✓
Warning & Operational Signs	BCA 2022 Clause D3D28, D4D7, & E4D4. AS 1905.1 – 2015 EP&A (DCFS) Regulations 2021 Section 108	✓
Fire Engineered Performance Solutions: TBC	TBC	✓