BCA 2022 ASSESSMENT REPORT

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Prepared For:
Genton/Arup

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REPORT STATUS				
DATE	**REVISION**	**STATUS**	**AUTHOR**	**REVIEWED**
12.08.2022	0	Preliminary Assessment – for Client & Consultant Review	DG	NQ
18.08.2022	1	Conversion to draft BCA 2022 Assessment – SSDA Submission	DG	NQ

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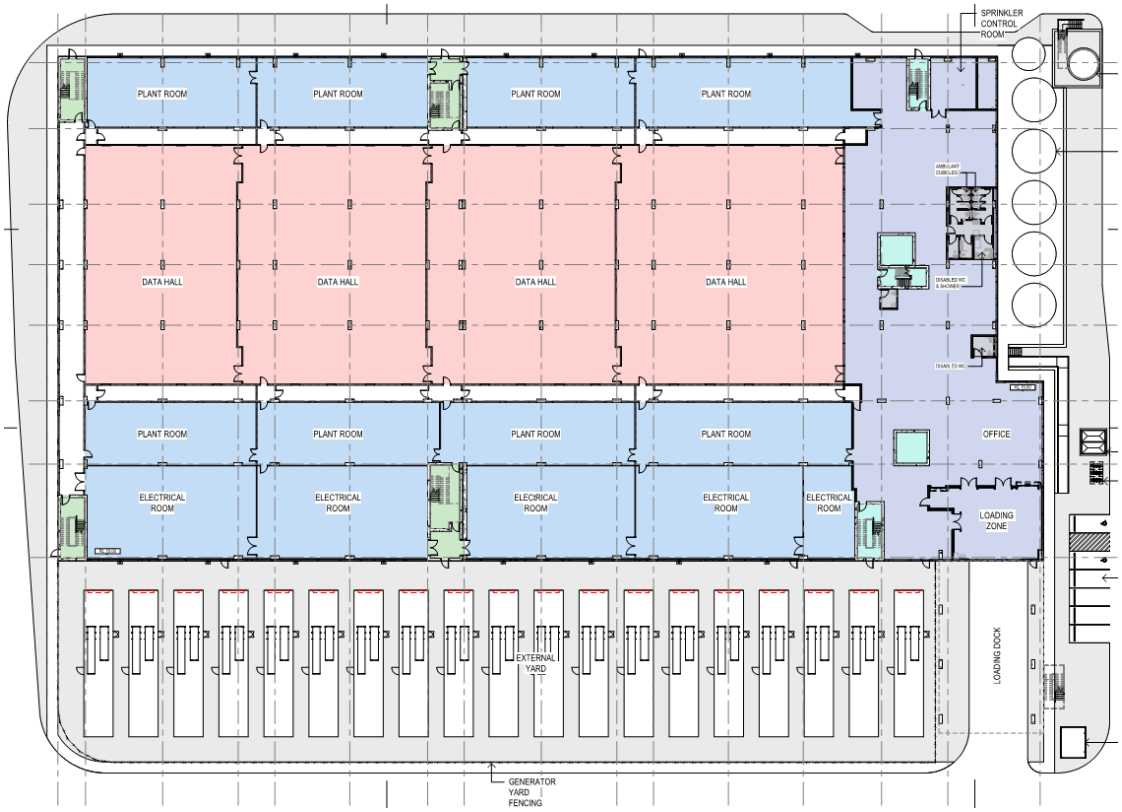
1.0 INTRODUCTION

1.1 BACKGROUND / PROPOSAL

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Genton to undertake a preliminary review of the proposed development, against the deemed-to-satisfy (DTS) provisions of the draft Building Code of Australia 2022 (BCA) pursuant to the provisions of Clause 19 of the *Environmental Planning & Assessment (Development Certification and Fire Safety) Regulation 2021*.

The following assessment is based upon the current draft version of the BCA 2022 that are not as yet in final version. This report / assessment will need to be updated when the final provisions are issued by the Australian Building Codes Board and as such will remain in draft form until this re-assessment has occurred.



Source: Genton Architecture, Drawing No. SSDA-100 dated 18.07.2022

1.2 AIM

The aim of this report is to:

- Undertake an assessment of the proposed Data Centre facility against the draft Deemed-to-Satisfy (DtS) Provisions of the BCA 2022 Volume 1. Note: The current advice from the Australian Building Codes Board is that BCA 2022 will come into effect no earlier than October 1st 2022 and it is understood that the CC Applications for this development will not be lodged until after this date. The BCA 2022 provisions are still in a draft version and as such our report below will be updated upon the release of the final revision of the NCC / BCA 2022 document.
- Identify any BCA compliance issues that require resolution/attention for the proposed development at the CC Application stage.

1.3 PROJECT TEAM

The following BM+G Team Members have contributed to this Report:

- Dean Goldsmith (Director)
- Nini Quach (Assistant Building Surveyor)

1.4 DOCUMENTATION

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

- BCA 2022 Volume 1

- Guide to the BCA 2022 Volume 1.
- Architectural Plans prepared by Genton:

Drawing No.	Rev.	Date	Drawing No.	Rev.	Date
SSDA-001	-	18.07.2022	SSDA-052	-	18.07.2022
SSDA-200	-	18.07.2022	SSDA-102	-	18.07.2022
SSDA-100	-	18.07.2022	SSDA-301	-	02.08.2022
SSDA-101	-	18.07.2022	SSDA-051	-	18.07.2022
SSDA-300	-	18.07.2022	SSDA-050	-	18.07.2022
SSDA-201	-	18.07.2022			

1.5 REGULATORY FRAMEWORK

- Pursuant to clause 19 of the Environmental Planning & Assessment Regulation (Development Certification & Fire Safety) 2021 (EP&A (DC&FS) Reg.) 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.
- Clause 14 of the Environmental Planning & Assessment (Development Certification & Fire Safety) Regulation 2021 states that a Certifier must not issue a Construction Certificate for alterations to an existing building unless the level of fire protection and structural capacity of the building is not reduced.
- Clause 64 of the Environmental Planning & Assessment Regulation 2021 states that a consent authority must consider whether an existing building must be brought into total or partial conformity with the BCA when assessing a DA for alterations to an existing building.

1.6 LIMITATIONS & EXCLUSIONS

The limitations and exclusions of this report are as follows:

- The following assessment is based upon a review of the architectural documentation.
- The provisions of the Disability (Access to Premises – Buildings) Standards 2010 have been assessed as they are generally consistent with the accessibility provisions of the BCA. No assessment has been undertaken with respect to the Disability Discrimination Act (DDA) 1992 as it does not contain any prescriptive design standards. The building owner should be satisfied that their obligations under the DDA have been addressed.
- The Report does not address matters in relation to the following:
  i. Local Government Act and Regulations.
  ii. NSW Public Health Act 1991 and Regulations.
  iii. Occupational Health and Safety (OH&S) Act and Regulations.
  iv. Work Cover Authority requirements.
  v. Water, drainage, gas, telecommunications and electricity supply authority requirements.
  vi. DDA 1992.
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1.7 TERMINOLOGY

+ **Alternative Solution / Performance Solution**
  A Building Solution which complies with the Performance Requirements other than by reason of satisfying the DtS Provisions.

+ **Building Code of Australia (BCA)**
  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 New South Wales (NSW) under the provisions of the EPA Act and Regulation. Building regulatory legislation stipulates that compliance with the BCA Performance Requirements must be attained and hence this reveals BCA's performance-based format.

+ **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 C1.1 and Specification C1.1, except as allowed for—
(i) certain Class 2, 3 or 9c buildings in C1.5; and
(ii) a Class 4 part of a building located on the top storey in C1.3(b); and
(iii) open spectator stands and indoor sports stadiums in C1.7.

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

+ **Climatic Zone**
Is an area defined in BCA Figure A1.1 and in Table A1.1 for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

+ **Deemed to Satisfy Provisions (DtS)**
Provisions which are deemed to satisfy the Performance Requirements.

+ **Effective Height**
The height to 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) from the floor of the lowest storey providing direct egress to a road or open space.

+ **Fire Resistance Level (FRL)**
The grading periods in minutes for the following criteria-
(a) structural adequacy; and
(b) integrity; and
(c) insulation,
and expressed in that order.

+ **Fire Source Feature (FSF)**
The far boundary of a road which adjoins 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 01 May 2011 by the Council of Australian Governments. The BCA Volume One (Class 2 to 9 Buildings) is now referenced as the National Construction Code Series Volume One — BCA.

+ **Occupation Certificate**
Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 6 of the EPA Act 1979.

+ **Open Space**
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 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-

(a) complying with the DtS Provisions; or

(b) formulating an Performance Solution which-
(i) complies with the Performance Requirements; or
(ii) is shown to be at least equivalent to the DtS Provisions; or

(c) a combination of (a) and (b).

2.0 BUILDING CHARACTERISTICS

2.1 BUILDING CLASSIFICATION

The following table presents a summary of relevant building classification items of the proposed Data Centre Facility:

BCA Class:	Class 5 (Office) Class 7b (Data Halls/ Client Store) Class 10a (External Plant Rooms/Structures)
Rise in Storeys:	Five (5) – See comments under C2D3 below
Effective Height:	Greater than 12m & less than 25m (TBC)
Type of Construction:	Type A Construction
Climate Zone:	Zone 6
Maximum Floor Area	Large Isolated Building >18,000m2 (TBC by Architect)
Maximum Volume:	Large Isolated Building >108,00m^3 (TBC by Architect)
Structural Importance Level:	Importance Level 1 TBC by Structural Engineer

2.2 FIRE SOURCE FEATURE

The distances from the Data Centre to the nearest Fire Source Features are:

Boundary	Distance to Fire Source Feature
Northern Boundary	>3m to a fire source feature
Southern Boundary	>3m to a fire source feature
Eastern Boundary	>3m to a fire source feature
Western Boundary	>3m to a fire source feature

Note: The plant and equipment structures in the External Yard on the Eastern side of the building are not considered as a Fire Source Feature to the main building as they are ancillary Class 10a buildings.

3.0 BCA ASSESSMENT

BCA DEEMED-TO-SATISFY COMPLIANCE ISSUES

The following comments have been made in relation to the relevant BCA provisions relating to the compliance issues associated with the proposed Data Centre Facility.

3.1 SECTION B – STRUCTURE

PART B1 – STRUCTURAL PROVISIONS

+ **Clause B1D3/B1D4 – Determination of Individual Actions / Determination of Structural Resistance of Materials and Forms of Construction**

  Structural engineering details prepared by an appropriately qualified structural engineer to be provided to demonstrate compliance with Part B1. This will include the following Australian Standards (where relevant):

  - AS 1170.0 – 2002 General Principles
  - AS 1170.1 – 2002, including certification for balustrades (dead and live loads)
  - AS 1170.2 – 2021, Wind loads
  - AS 1170.4 – 2007, Earthquake loads
  - AS 3700 – 2018, Masonry Structures
  - AS 3600 – 2018, Concrete Structures
  - AS 4100 – 1998, Steel Structures and/or
  - AS 4600 – 2018, Cold formed steel Structures.

- AS 2159 – 2009, Piling Design &Installation
- AS 1720 – 2010, Design of Timber Structure
- AS/NZS 1664.1 & 2 – 1997, Aluminium Structures
- AS 2047 – 2014, Windows and External Glazed Doors in buildings.
- AS 1288 – 2006, Glass in buildings.
- AS 3660.1 – 2014, Termite control (or confirmation no primary building elements are timber).

Comments: *Structural design details and certification will be required at CC application stage.*

Note: 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.

3.2 SECTION C – FIRE RESISTANCE

PART C2 - FIRE RESISTANCE AND STABILITY

+ Clause C2D2 – Type of Construction Required

The minimum type of fire-resisting construction of a building must be that specified in Table C2D2 and Specification 5 except as allowed for in this clause.

Comments: *Type A Construction applies to the proposed Data Centre – see notes under Clause C2D3 and Spec. 5 below.*

+ Clause 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.

Comments: The building has a rise in storeys of five (5), based upon the following assessment of the design:

- *The lift lobby enclosures on the Roof Level of the building over the Data Halls constitute a stand-alone storey.*
- *The average internal height of Ground Level & Level 1 exceeds 6m and as such must be counted as two (2) storeys per level per C2D3).*

+ Clause C2D10 – Non - Combustible Building Elements

In a building of Type A or Type B Construction a number of building elements are required to be non-combustible including external walls & common walls (including elements incorporated in them including the façade coverings, framing and insulation), lift pit flooring and floor framing, services risers, load-bearing internal walls and fire walls.

Note: C2D10(6) provides a list of materials that may be deemed as non-combustible without the need for verification testing per AS 1530.1.

Comments The external walls of the building (including all elements incorporated in the walls), the lift pits, the non-loadbearing internal walls that are required to be fire rated, any proposed fire walls 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 internal and external attachments to the external walls. Details are to be submitted with the CC application for assessment.

+ Clause C2D11 – Fire Hazard Properties

The fire hazard properties of the linings, materials and assemblies listed in this clause in a Class 2 to 9 building must comply with Specification 7 and the additional requirements of the NSW Provisions of the Code.

Comments: *Design certification required at CC application stage and installation certification (including relevant test reports confirming the critical radiant flux of floor linings, group number of wall and ceiling linings; spread of flame index for insulation materials; and flammability index for sarking materials) are required at OC stage in the form of a detailed schedule*

+ Clause 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).

Comments: The proposed elements of the facades of the building will require review to confirm that the proposed internal & external attachments of the external walls achieve compliance with the non-combustibility requirements of this clause. See comments under C2D10.

PART C3 - COMPARTMENTATION AND SEPARATION

+ Clause C3D3 – General Floor Area and Volume Limitations

Sets out the parameters for the maximum floor area and volume of Class 5, 6, 7, 8 & fire compartments, which are detailed in Table C3D3. Note: Where different maximum compartment sizes apply to multiple classifications in the building, the % split calculation method per the Guide to the BCA 2022 may be used.

Comments: *The proposed building is a Class 7b large isolated building (as identified under Clause C2D2 above) – 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.*

+ Clause C3D4 – Large Isolated Buildings

A Large Isolated Building that contain 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).

Comments: *The proposed warehouse building is required to be sprinkler protected and provided with a 6-meter-wide perimeter vehicular access in accordance with Clause C3D5(2) throughout (see notes below). This designation allows for a fire compartment of unlimited size within the buildings.*

Note: It is understood that a number of the HV switch rooms will be handed over at OC stage as a cold shell with no sprinklers installed. This will need to be addressed as a part of the fire engineering design for the building as a part of a fire engineering performance solution C2.3 E1.5.

+ Clause C3D5 – Requirements for Open Spaces & 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.

Comments: *The proposed building does not comply with the provisions of C3D5 and thus the following non-compliance issues are required to be addressed as a Performance Solution by the Fire Engineer to demonstrate compliance with Performance Requirement C1P9:*

- *Perimeter Vehicular Access is greater than 18m from the building along the North Western and Eastern sides of the building.*

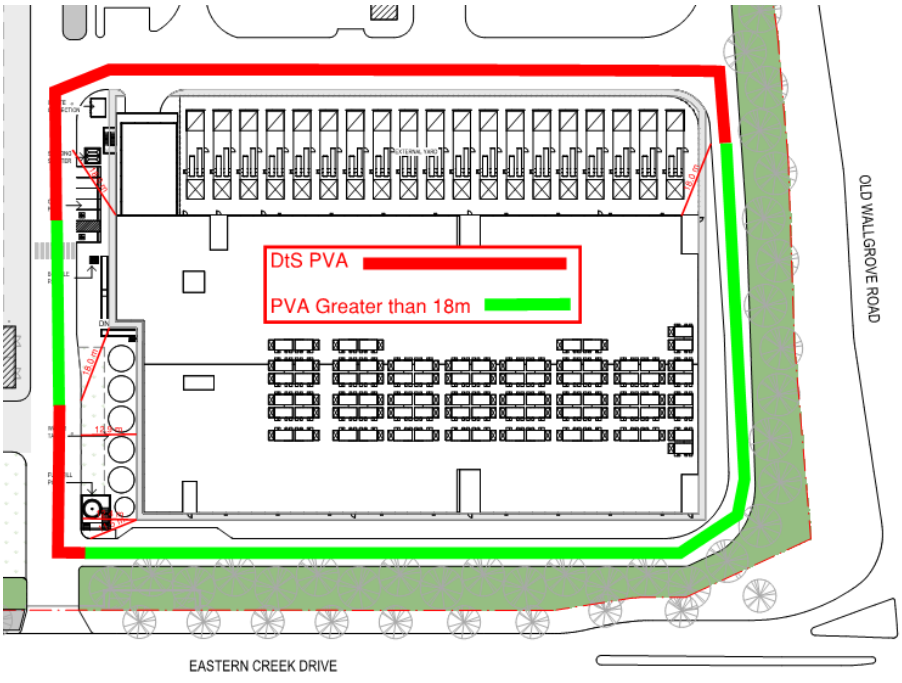

Figure 2 – Perimeter Vehicular Access Assessment

+ Clause C3D7 – Vertical Separation of openings in external walls

If 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 and horizontal or vertical spandrel with an FRL of 60/60/60, and for the purposes of C2.6, window or other opening means that part of the external wall of a building that does not have an FRL of 60/60/60 or greater.

Comments: Spandrel protection is not required as the building will be sprinkler protected throughout. Note: If there are areas/rooms in the building where an alternative fire suppression system is proposed (other than compliant sprinklers) this concession may require re-assessment and/or the provision of a Performance Solution from the Fire Engineer

+ Clause C3D8 – Separation by Fire Walls

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

- FRL in accordance with Table 3 of Spec. C1.1 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.

Comments: Any Fire Walls that are proposed to separate different classifications in accordance with the comments under Clause C2.8 below are required to be designed in accordance with C2.7(a) and (c) and will require the greater FRL of the classifications they are separating per Table 3 of Spec. C1.1 i.e. an FRL of 240/240/240.

Note 1: The requirements of Clause C2.7 above do not apply to any fire rated walls that are a requirement of the operator of the facility.

Note 2: Any openings in the proposed fire walls are required to be protected in accordance with C3.5 & C3.15 and structural elements may not cross the proposed fire walls. Note 2: Confirmation is to be provided on whether a performance solution is proposed in order to allow for reduced FRL's for all non-loadbearing fire separation elements.

+ Clause C3D9 – Separation of Classifications in the Same Storey

If a building has parts of different classifications located alongside one another in the same storey, each element must have the required higher FRL for the classifications concerned. Alternatively, the parts must be separated by a fire wall having the higher FRL for the classifications prescribed in Tables S5C11d & S5C21c of BCA Specification 5 (for Type A or Type B Construction), or Table S5C 24c (for Type C Construction).

Comments: In accordance with C2.8(a), the building elements on Ground Floor & Level 1 are required to achieve the FRL requirements of the Class 7b Data Hall & Storage areas as specified in BCA Specification 5 (4hr fire ratings per Type A Construction). Alternatively, Fire Walls are required between the different classifications on each storey achieving the higher FRL of the different parts i.e. the Class 7b part must be separated from the Class 5 part on Ground Floor & Level 1 by a Fire Wall of concrete or masonry construction (if loadbearing) achieving an FRL of 240/240/240. Note 1: Consideration may be given to a Performance Solution in order to allow for reduced FRL's for all non-loadbearing fire separation elements from the Fire Engineer demonstrating compliance with BCA C1P1.

+ Clause C3D11 – Separation of Lift Shafts

Applies to all classes of buildings and specifies the protection requirements for openings for lift shafts and lift landing doors. The requirements are set out in sub-clauses (a), (b) (c) & (d) which relate to openings in Type A, B and C construction. Also note the Deemed to Satisfy Provisions of Part C3.

Comments: The lifts in the building are required to be enclosed in fire rated shafts achieving an FRL in accordance with Table 3 of Specification C1.1. Details are to be provided at the CC application stage. Additionally, the lift shafts must be enclosed at the top by construction achieving an FRL of -/120/120 unless the shaft walls extend beyond the roof covering.

+ Clause 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.

Comments: *The current design is compliant with the above requirement*

+ Clause C3D13 – Separation of Equipment

Equipment as listed below must be separated from the remainder of the building with construction complying with an FRL as required by Specification 5, but not less than 120/120/120 and a doorway protected with a self-closing fire door having an FRL not less than -/120/30.

- Lift motors and lift control panels; or
- Emergency generators used to sustain emergency equipment operating in the emergency mode; or
- Central smoke control plant; or
- Boilers; or
- A battery system installed in the building that has a voltage of 12 volts or more and a storage capacity of 200kWh or more.

Note: Separating construction must have –

- an FRL as required by Specification C1.1, but not less than 120/120/120/; and
- any doorway protected with a self-closing fire door having an FRL of not less than -/120/30.

Comments: Where batteries which have a total voltage of 12 volts or more and a storage capacity of 200 kWh or more are installed in individual electrical switch rooms or other plant areas/enclosures, they must be separated from the remainder of the building by construction achieving an FRL as required by Spec C1.1, but no less than 120/120/120, and doorways protected with a self-closing fire door having an FRL of not less than -/120/30. Details demonstrating compliance are to be included in the CC Application plans. Note: Refer to additional comments in Clauses E1.10 and E2.3 below regarding any proposed Lithium-Ion batteries that may be incorporated within the Data Halls In addition, consideration will need to be given to fire separation in accordance with C2.12 for any proposed lift motor rooms or central smoke control plant serving each Data Centre Building and details demonstrating compliance will be required to be submitted with the CC Application.

+ Clause C3D14 – Electricity Supply System

An electricity substation, electrical conductors & main switchboards which sustains 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 located within a building must be protected in accordance with sub-clause (3).

Note: 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.

Comments: *Any substations located within the building and any main switchboards which sustain emergency equipment operating in the emergency mode are required to be separated from the remainder of the building by construction having an FRL of not less than 120/120/120 and have a doorway protected with a self-closing fire door having an FRL of not less than -/120/30. The compartmentation plans referenced in C3D9 above demonstrate compliance with the above requirements.*

PROTECTION OF OPENINGS

+ Clause C4D4 – Separation of External Walls and Associated Openings in Different Fire Compartments

The distance between parts of external walls and openings within them in different fire compartments separated by a fire wall must not be less than that set out in Table C4D4, unless those parts of each wall have an FRL not less than 60/60/60 and any openings are protected in accordance with C4D5.

Comments: *The provisions of C4D4 may apply where Fire Walls are proposed to address compliance with C3D9 – further details required to confirm compliance at CC Application stage.*

+ Clause C4D5 – Acceptable Methods of Protection

- Where protection is required, doorways, windows and other openings must be protected as follows:
  (i) Doorways –
    (A) Internal or external wall- wetting sprinklers as appropriate used with doors that are self-closing or automatic closing; or
    (B) -/60/30 fire doors that are self-closing or automatic closing.

(ii) Windows –
(A) Internal or external wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or
(B) -/60/- automatic closing fire shutters.
(iii) Other openings –
(A) Excluding voids – internal or external wall-wetting sprinklers, as appropriate; or
(B) Construction having FRL not less than -/60/-.

- Fire doors, fire windows and fire shutters must comply with **Specification 12.**

Comments: Note – see comments under Clause CD4D above & D2D12 below.

+ Clause 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.

Comments: Doorways in any proposed Fire Walls in accordance with the comments under Clause C3D9 above must be protected with fire doors achieving an FRL of -/240/30 in accordance with this clause.

+ 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.

Comments: Details of the proposed fire door locations are to be provided with the CC application plans in accordance with this clause – compliance is readily achievable in this regard.

+ Clause C4D9 – 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.

Comments: Architect/Services Consultants to note and ensure compliance with regards to restriction of services penetrating the fire isolated stairs and passageway.

+ Clause C4D11 – Openings in Fire-isolated Lift 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

Comments: Certification from the Lift Consultant to confirm compliance is to be provided with the CC application.

+ Clause 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 though openings in these building elements, required to resist the spread of fire.

Comments: Certification will be required at Occupation Certificate application stage as applicable.

+ Clause 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.

Comments: Note - Certification will be required at Occupation Certificate application stage as applicable.

+ Specification 5 – Fire Resisting Construction

The new building works are required to comply with the requirements detailed under Tables S5C11a-S5C11g of Specification 5 for Type A Construction. In this regard the proposed building elements are required to comply.

Comments: The proposed date centre facility 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.*

Any proposal to reduce the FRLs of building elements that are required to be fire rated must be addressed as a Performance Solution from the Fire Engineer

Note 1: Loadbearing internal walls and loadbearing Fire Walls must be constructed of concrete or masonry.

Note 2: The top of the shafts that are required to achieve an FRL must be enclosed by construction achieving an FRL of -/120/120, except for the top of a shaft extending beyond the roof covering, other than one enclosing a fire-isolated stairway. See additional comments under C3D11 above regarding the top of the lift shafts.

Note 3: Details of the fire rating at the slab edge are to be provided for review where a curtain wall system (or the like) is proposed to determine if a Performance Solution is required.

Note 4: Consideration may be given to a Performance Solution in order to allow for reduced FRL's for all non-loadbearing fire separation elements from the Fire Engineer demonstrating compliance with BCA C1P1.

+ Specification 7 – Fire Hazard Properties.

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.

Comments: Refer to comments under Clause C2D11 above – certification will be required at both CC and OC Application stages.

+ Specification 8 – Performance of External Walls in Fire

This specification contains measures to minimise in the event of fire the likelihood of external walls collapsing outwards as complete panels and the likelihood of panels separating from supporting members.

Comments: Structural Design certification and details demonstrating compliance are required to be provided at CC Application stage.

3.3 SECTION D – ACCESS & EGRESS

PART D2 - PROVISION FOR ESCAPE

+ Clause D2D3 – Number of Exits 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.

Note: Not less than 2 exits must be provided from any storey that involves a vertical rise within the building of more than 1.5m unless the floor area of the storey is not more than 50m^2 and the distance of travel from any point on the floor to a single exit is not more than 20m.

Comments: *The current configuration of exits is compliant with the requirements of this clause.*

+ Clause D2D4 – When Fire Isolated Stairways & 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.

Comments: *All exit stairs from the building are required to be fire isolated as they connect more than 3 storeys. Refer to additional comments under D2D12 below in relation to discharge from fire isolated exits.*

+ Clause 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.

Comments: *The exit travel distances in the proposed date centre facility are non-compliant with clause D2D5. In this regard the following non-compliance issues will be required to be addressed as Performance Solutions by the fire safety engineer to address these con-compliances.*

- *Ground Level – Up to 50m to the nearest exit from the data halls; up to 24m to a point of choice to alternative exits from the Loading Dock Area.*
- *Level 1 – Up to 55m to the nearest exit from the data halls; up to 65m to the nearest exit from the North Eastern electrical room.*

Note 1: The exit travel distances have not been assessed on the rooftop level as this level is not an Occupiable Outdoor Area.

+ Clause D2D6 – Distances Between Alternative Exits

Exits required as alternative exits must be –

(a) 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
(b) not less than 9m apart; and
(c) not more than – 60m apart.
(d) Located so that the alternative paths of travel do not converge such that they become less than 6m apart.

Comments: The distance between alternative exits are non-compliant within the data hall areas of the building. In this regard the following non-compliance issues will be required to be addressed as Performance Solutions by the Fire Safety Engineer to demonstrate compliance with Performance Requirements DP4 & EP2.2.

- *Ground Level – Up to 98m between alternate exits in the Data Halls, up to 76m between alternate exits in the plant rooms.*
- *Level 1 – Up to 110m between alternate exits in the Data Halls, Up to 71m between alternate exits in the Plant and Electrical Rooms.*

Note 1: The above assessment assumes egress is available back through the Data Halls and associated Corridors.

Note 2: The distance between alternative exits has not been assessed on the rooftop level as this level is not an Occupiable Outdoor Area.

+ **Clause D2D7, D2D8 & D2D9 – Dimensions of Exits**

These clause details the minimum dimensions such as height and width of paths of travel, and doorways from Class 2 to 9 buildings, depending on the uses and functions carried out within them.

Comments: *Population numbers are to be confirmed by Genton/Arup in order to determine compliance with these clauses. Final details showing compliant dimensions of all exits (including minimum 1m wide clearances and min. clear height of 2.1m) from each building are to be confirmed on the CC Application plans. In this regard however, given the number of exits proposed and the nature of use of the facility it is considered that compliance with the provisions of D1.6 is readily achievable.*

Exit corridors and stairs and other paths of travel are to be a minimum 1m in width and 2m in height clear of any obstructions. The unobstructed height of any doorway may be reduced to not less than 1980mm and the width may be reduced by 250mm from the required exit dimensions listed below.

+ **Clause D2D12 – Travel via Fire isolated Exits**

Sets out the requirements for safe discharge from various compartments and areas within a building, into a fire isolated stairway or passageway or ramp.

D2D12(1) states that only a public corridor, sole occupancy unit occupying the whole storey or a sanitary compartment/airlock or the like are permitted to open directly into a fire isolated exit.

Where a fire isolated exit discharges within a building into covered area it is required to comply with either D2D12(2)(b) or (c) which specifies the maximum distance to open space, minimum natural ventilation to the covered area and unobstructed height.

D2D12(3) states that where a path of travel from the point of discharge of a fire isolated exit necessitates passing within 6m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, that part of the wall must have –

- an FRL of not less than 60/60/60; and
- Any openings protected internally in accordance with BCA Clause C4D5,
- For a distance of 3m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser.

Comments: The external walls that are within 6m (measured horizontally) of the discharge path from the proposed fire isolated stairs are required to achieve an FRL of 60/60/60 with any openings protected in accordance with C4D5 for a height of 3m above the path of travel.

+ **Clause 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 discharge points from the building are required to be protected in accordance with the requirements of this clause – Architect to note.*

+ **Clause 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.

Comments: In accordance with the comments under D2D7, D2D8 & D2D9 above, the maximum population numbers of the building are to be confirmed by Genton/Arup to facilitate an assessment of the required egress widths under D2D7, D2D8 & D2D9, and the required sanitary facilities under F4D4 below.

PART D3 - CONSTRUCTION OF EXITS

+ **Clause 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.

Comments. Certification will be required at CC application stage for the design of the proposed fired isolated exits.

+ Clause D3D8 – Installations in Exits & 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.

Comments: *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.*

+ Clause D3D9 – Enclosure of Space under Stairs and Ramps

The space below a required fire-isolated stairway or ramp in a fire-isolated shaft must not be enclosed to form a cupboard or other enclosed space. If the required stairway or ramp is non-fire-isolated, (including an external stairway) any cupboard underneath must have an FRL of 60/60/60, with a self-closing -60/30 door.

Comments: *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.*

+ Clause D3D14 – Goings & Risers

This clause sets out the detailed requirements for the construction and geometry of the goings and risers in required stairways. These details are set out in sub-clauses (1) to (3) and Table D3D14 Riser and Going Dimensions.

Comments: All stairs are to have dimensions that comply with Table D3D14 (below), have solid risers, and are to have contrasting nosings and slip resistant surfaces throughout in accordance with clause 11 of AS1428.1-2009. (See diagram in Part D3 below). Refer to the slip resistance requirements for stairs below under Clause D3D15.

Note: Although not specifically required, the stairs serving the raised platform areas around the class 10a buildings may be compliant with Table D2.13 or AS 1657 per Clause D2.18.

Riser and Going Dimensions (mm)			
	Riser (R)	**Going (G)**	**Quantity (2R + G)**
Maximum	190	355	700
Minimum	115	250	550

+ Clause D3.15 – Landings

The dimensions and gradients of landings in stairways are set out in this clause; the configuration will depend on the proposed use of a building.

Landing surfaces must be slip resistant OR have slip resistant nosings not less than that listed in Table D3D15 when tested in accordance with AS4586 - 2013.

Application	**Surface conditions**	
	Dry	**Wet**
Ramp steeper than 1:14	P4 or R11	P5 or R12
Ramp steeper than 1:20 but not steeper than 1:14	P3 or R10	P4 or R11
Tread or landing surface	P3 or R10	P4 or R11

Comments: Architect to note – design certification required at CC Application Stage.

+ Clause D3D16 – Thresholds

The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless –

In a building required to be accessible by Part D4, the doorway –
- Opens to a road or open space; and
- Is provided with a threshold ramp or step ramp in accordance with AS1428.1-2009;

In other cases –
- Opens to a road or open space, external stair landing or external balcony; and

- The door sill is not more than 190mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.

Comments: *Architect to note. Details demonstrating compliance will be required to be included in the CC application plans.*

+ Clause D3D17, D3D18, D3D19 & D3D20 – Balustrades or Other Barriers

This clause details 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.

Comments: Details demonstrating compliance are to be submitted with the CC Application drawings for assessment against the above criteria.

+ Clause D3D22 – Handrails

This Clause sets out the requirements regarding the location, spacing and extent of handrails required to be installed in buildings.

Comments: *Details of the proposed handrails are to be provided for assessment with the application for the Construction Certificate.*

Note 1: Refer to Part D3 for additional requirements for handrails associated with accessible compliant stairways, in all areas other than those subject to a D3.4 concession.

Note 2: A handrail is required where the external egress paths of access to the street have a gradient greater than 1:20. See additional comments under Clause D3.3 below, noting consideration will need to be given to the accessibility requirements of AS1428.1-2009.

+ Clause 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 AS1657 if it only serves a machinery room, boiler house, lift-machine rooms, plant rooms or the like.

Comments: Details of where AS1657 compliant stairs or ladders are to be sued for access/egress in the building are to be include in the CC Application plans, including in relation to the class 10a buildings as referenced above.

+ Clause 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: Compliance is readily achievable – design certification required at CC Application stage.

+ Clause D3D25 – Swinging Doors

A swinging door in a required exit or forming part of a required exit must be installed to the requirements of sub-clause (1). This clause only applies to swinging doors in doorways serving a required exit or forming part of a required exit. It does not apply to other doorways – see notes in the Guide to the BCA.

Comment: The proposed exit doors are required to swing in the direction of egress in accordance with D3D25(a) – compliance is readily achievable.

+ Clause D3D26 – Operation of Latch

A door in a required exit or forming part of a required exit and in a path of travel to a required exit must be readily openable without a key from the side that faces a person seeking egress, by a single downward action or pushing action on a single device which is located between 900mm & 1.1m from the floor. This clause prohibits the use of devices such as deadlocks and knobs where knobs must be operated in a twisting motion in accordance with sub-clauses (a) & (b). D3D26 also sets out exceptions in relation to buildings where special security arrangements are required in relation to the uses carried out.

Comments: *Architect to note. Details demonstrating compliance will be required to be included in the CC plans.*

Note 1: A fail-safe device which automatically unlocks the door upon the activation of the sprinkler system of a fire alarm system may be installed to any door that is required to be locked form the side that faces a persons seeking egress.

Note 2: Although not specifically required, the provisions of D3D26 for nominated egress doors in the Class 10a building is recommended.

+ Clause D3D28 – Signs on Doors

This clause requires the use of signs to alert persons that the operation of certain doors that are required for evacuation in an emergency, must not be impaired and must be installed where they can be readily seen. Sub-clause (4) provide the requirements for the installation of such signs, the detail contained in them.

Sub-clause (1)-(3) clause details the doors where the signs must be installed, which includes a fire door to a fire isolated exit, a smoke door, a horizontal exit, and discharge door from a fire isolated exit.

Comments: *Certification will be required at OC application stage.*

Any new self-closing fire and/or smoke doors leading into the fire stair or forming part of a Horizontal Exit are to be provided stating "FIRE SAFETY DOOR DO NOT OBSTRUCT DO NOT KEEP OPEN".

Any new automatic closing fire and/or smoke doors which are held on hold open devices that leads into the fire stair or forming part of a Horizontal Exit and any doors that discharge from the fire stairs to outside are to be provided with signage that states "FIRE SAFETY DOOR DO NOT OBSTRUCT".

PART D4 - ACCESS FOR PEOPLE WITH A DISABILITY

+ Clause D4D2 – 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.

Comments: *Compliant access is required throughout all areas in the building in accordance with AS 1428.1-2009 with the exception of those areas subject to a D4D5 concession. Details demonstrating that the main entrance to the building is compliant with AS 1428.1-2009 (including all security lobbies are to be provided at CC application stage.*

It is noted than an Access consultant report is to be obtained for this project and as such reference should be made to that report in relation to compliance with the provisions of Part D4.

+ Clause 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 E4, 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.

Comments: *It is noted than an Access Consultant's Report is to be obtained for this project and as such reference should be made to that report in relation to compliance with the provisions of Part D4. Regardless,*

the following is a summary of some key matters which need to be considered from Clause D4D4 and AS 1428.1-2009:

- *An accessible path of travel is to be provided from the allotment boundary and from the accessible car spaces and is to be detailed on the Construction Certificate plans. Where a kerb is proposed, a kerb ramp is to be provided so the accessible path is free from steps.*
- *Every ramp, except a fire-isolated ramp, must comply with clause 10 in AS1428.1-2009.*
- *Every stairway, except a fire-isolated stairway, must comply with clause 11 of AS1428.1-2009.*
- *Every fire-isolated stairway must comply with clause 11.1(f) and (g) of AS1428.1-2009.*
- *Every passenger lift must comply with clause E3D7 and E3D8.*
- *Accessways must have passing spaces complying with AS1428.1-2009 at a maximum 20m intervals on those parts of the accessway where a direct line of sight is not available and turning spaces complying with AS1428.1-2009 within 2m of the end of accessways and at a maximum 20m intervals along the accessway.*
- *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.*
- *The minimum width of an accessible doorway must have a clear opening width of not less than 850mm in accordance with AS1428.1.*
- *All doorways on a continuous path of travel shall have a minimum luminance contrast of 30% provided between: door leaf and door jamb; or door leaf and adjacent wall; or architrave and wall; or door leaf and architrave; or door jamb and adjacent wall. The minimum width of the area of luminance contrast shall be 50mm.*
- *Circulation space to the doorways that are required to be accessible are to comply with Section 13 of AS1428.1-2009, as detailed below.*
- *Turning Spaces and Passing Spaces in all areas are required to be provided on each level of the building in accordance with Clauses 6.4 & 6.5 of AS 1428.1-2009.*

Stairways

- *Every common area stairway must be constructed in accordance with Clause 11 of AS1428.1, except if they serve the areas in the building that a D4D5 Exemption has been applied to. Details will need to be confirmed on the plans for CC.*
- *Stairs shall have opaque risers (i.e. solid)*
- *Stair nosings shall comply with Figure 27 in AS1428.1-2009, which achieve a colour contrast luminance of 30% to the background (tread).*
- *Stairways are to be served by Tactile Ground Surface Indicators in accordance with AS1428.4.1, except if they are within a fire isolated exit.*

Handrails

- *Handrails shall be installed along stairways as follows:*
  - *Shall be continuous through the flight and where practicable, around landings and have no obstruction on or above up to a height of 600mm,*
  - *Installed along both sides of the stairway (giving consideration also to 1m unobstructed width)*
  - *Shall have a compliant hand clearance in accordance with Figure 29 of AS 1428.1-2009.*

+ Clause 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.

Comments: It is recommended that advice be obtained from an Access Consultant at the CC Application stage in this regard; however, consideration to an exemption for the Data Halls and Plant Rooms (on health & safety risk basis) may be appropriate on this project. Confirmation from the operator of the facility will be required 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.

+ **Clause 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.

Comments: *In the case of the Class 5 & 7b buildings 1 compliant accessible space is required for every 100 parking spaces or part thereof. In this regard, the current architectural drawing indicate that compliance is achieved.*

+ **Clause 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 E4E5 to be provided with an exit sign. The latter is to state EXIT and state the level eg. LEVEL 1.

Comments: *It is noted that an Access Consultant's Report is to be obtained for this project and as such reference should be made to that report in relation to compliance with the provisions of Part D4.*

Note: Signage, including Braille & tactile signage where appropriate, is required to comply with BCA clause D4D7 and Section 8 of AS 1428.1-2009 for sanitary facilities, ambulant facilities and accessible car parking spaces. In addition, the signage to the accessible toilet facilities is to also identify the facility for left and right-handed use.

+ **Clause 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.

Comments: *Compliant tactile indicators are required in all areas of the building to all ramps, stairs, paths approaching a driveway and any overhead obstruction less than 2m in height.*

+ **Clause 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.

Comments: Architect to note. Details demonstrating compliance will be required to be included in the CC plans.

+ **Clause 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.

Comments: *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 1000m above the plane of the finished floor level.*

3.4 SECTION E – SERVICES AND EQUIPMENT

Part E2 - FIRE FIGHTING EQUIPMENT

+ **Clause 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 AS2419.1-2005 and details where internal hydrants must be located.

E1D2(3) – details concessions to AS 2419.1-2005 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.

Comments: *The building must be served by a compliant hydrant system incorporating a ring main. Detailed plans showing the location of the hydrants (and booster assembly) providing coverage to all areas of the building and a design certificate to AS2419.1-2005 are to be provided with the CC application.*

Hydrant booster assemblies are required to be accessible to the fire brigades, operable by a fire brigade pumping appliance located within 8m and located within sight of the main entry of the building in accordance with Clause 7.3 of AS2419.1-2005. It is understood that the proposed building is to be served by the existing Hydrant & Sprinkler Booster Assembly on the site. The location of the booster will need to be reviewed by the Fire Engineer to determine if a Performance Solution is required.

In addition, given the extended egress distances in the building, additional hydrant fittings may be required at remote locations (in addition to those in the fire stairs) in order to achieve compliant coverage or additional hose lengths will need to be used to achieve compliant coverage (as a Performance Solution). The positioning of remote hydrants should take into consideration the FRNSW 25m location requirements for progressive fire-fighting on each level.

Note: It is understood that a new hydrant system is proposed to serve the Date Centre in order to meet the requirements of AS2419 Part 1 - 2021.

+ **Clause 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.

Comments: The Class 7b Data Hall, Storage, Plantroom (including Electrical Rooms) & Loading Dock areas must be provided with fire hose reels in accordance with this clause. Plans shall be provided with the construction certificate documentation together with a design certificate to AS2441-2005 that details the coverage provided by the fire hose reels on each level. It is noted that a Performance Solution by the Fire Engineer may be necessary if hose reels are to be deleted from the Class 7b portions of the building.

Note 1: The Class 5 Office areas are subject to the concession in E1D3(1) and are not required to be provided with fire hose reel coverage.

+ **Clauses E1D4, E1D8, E1D9, E1D11 & E1D12 – 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 or 18.

Specification E17 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.

Comments: As the building is designated as a Large Isolated Building, it is required to be sprinkler protected throughout. 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 AS2419.1-2005 for a hydrant booster. It is understood that the proposed building is to be served by the existing Hydrant & Sprinkler Booster Assembly on the site. The location of the booster will need to be reviewed by the Fire Engineer to determine if a Performance Solution is required.

Note 1: The use of the existing sprinkler infrastructure on the site is to be included in the Trial Design along with details of the standard of performance of the existing system.

Note 2: Protection to the eastern external wall from the Diesel Generators that are non-sprinkler protected is also to be referenced in the Trial Design per Section 3.2 of AS 2118.1-2017.

+ **Clause E1D14 – Portable fire extinguishers**

Portable fire extinguishers must be provided as listed in E1D14 and must be selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444.

Comments: Fire extinguishers will be required to be installed in the proposed building in accordance with sub-clauses (1), (3) & (5) and AS 2444-2001 in the class 5 office areas.

+ **Clause E1D15 – Fire Control Centres**

A fire control centre facility in accordance with Specification 19 must be provided for a building having an effective height of more than 25m and in a Class 6, 7, 8 or 9 building with a total floor area of more than 18,000m².

Specification E19 describes the construction and content of required fire control centres or rooms.

Comments: As the total floor area of the building exceeds 18,000m² it is required to be provided with a Fire Control Centre that complies with Spec 19 (Clauses S19C2 – S19C5). Further details which demonstrate compliance with the requirements of Spec. 19 will be required to be included on the CC Application plans.

+ E1D17 – Provisions for Special Hazards

Suitable provisions are to be made for firefighting in a building if special problems of fighting fire could arise due to the nature or the quantity of goods stored, displayed or used; and/or the proximity of the building to a firefighting water supply.

Comments: It is noted that if Lithium-Ion batteries (or equivalent) are proposed to be stored/utilised within Data Halls in significant quantities, 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.

PART E2 - SMOKE HAZARD MANAGEMENT

+ Clause 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, and 22.

Comments: As the floor area and volume of the building is greater than 18,000m^2 and 108,000m^3 respectively, an automatic smoke exhaust system (incorporating a smoke detection system) is required to be provided. Consideration to a Performance Solution addressing the required smoke hazard management systems may be given which 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 (refer to the comments under Clause C2.8 above regarding the possibility of Fire Walls to separate different classifications on each storey) must be designed to operate as a smoke control system in accordance with AS1668.1-2015 OR 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 AS1670.1-2018. Details and design certification shall be provided with the CC application.

+ Clause E2D21 – Provisions for Special Hazards

Additional smoke hazard management measures may be required in a building to address any additional risk that result from special characteristics, functions, type of quantities of storage or mix of classifications within a fire compartment.

Comments: It is noted that if Lithium-Ion batteries (or equivalent) are proposed to be stored/utilised within Data Halls in significant quantities, 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 buildings.

PART E3 - LIFT INSTALLATIONS

+ Clause 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 2000mmm long x 1400mm high above the floor level.

Comments: The lifts within the building serve the rooftop storey which is above an effective height of 12m and as such they need to accommodate a stretcher in accordance with the requirements of the clause above. Design certification required at CC application stage

+ Clause 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**.

Comments: Lift Contractor to note.

+ Clause E3D6 – Landings

Access and egress to and from lift well landings must comply with the Deemed-to-Satisfy Provisions of Parts D2 & D3.

Comments: Compliance is readily achievable. Details to be confirmed with the documentation provided with the construction Certificate application.

+ Clause 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.

Comments: Lift Contractor to note – Design Certification required at CC Application stage confirming compliance with E3D7.

PART E4 - EMERGENCY LIGHTING, EXIT SIGNS AND WARNING SYSTEMS

+ Clause E4D2 – Emergency Lighting Requirements

This clause details when emergency lighting must be installed in Class 2 to 9 buildings. The requirements for buildings and parts of buildings are detailed in sub-clauses (a) to (i) and each sub-clause must be considered as more than one may apply to any single building

Comments: Emergency Lighting is required throughout the building in accordance with E4D2, E4D4 and AS/NZS 2293.1-2018.

+ Clause E4D4 – Design & Operation of Emergency Lighting

Every required emergency lighting system must comply with AS 2293.1-2018.

Comments: Electrical Consultant to note. Design Certification required at CC Application stage.

+ Clause 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.

Comments: Electrical Consultant to note. Details demonstrating compliance will be required to be included in the CC plans.

+ Clause 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.

Comments: Electrical Consultant to note. Details demonstrating compliance will be required to be included in the CC plans.

+ Clause E4D8 – Design & Operation of Exit Signs

Every required exit sign must comply with AS 2293.1-2018 and be clearly visible at all times when the building is occupied by any person having the legal right of entry into the building.

Comments: Electrical Consultant to note. Details demonstrating compliance will be required to be included in the CC plans.

3.5 SECTION F – HEALTH & AMENITY

PART F1 – SURFACE WATER MANAGEMENT, RISING DAMP AND EXTERNAL WATERPROOFING

+ Performance Requirement F3P1

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

a) Unhealthy or dangerous conditions, or loss of amenity for occupants; and
b) Undue dampness or deterioration of building elements.

Note 1: There are no Deemed-to-Satisfy provisions for this Performance Requirement in respect to External Walls.

Note 2: Refer to Clause F3D2 for roof coverings.

Comments: Design statement and a documented Performance Solution is to be provided with the Construction Certificate application for each building, either by using:

- *The Verification Methods in Clause F2V1; or*
- *Other verification methods deemed acceptable by the Certifier; or*
- *Evidence to support that the use of the material or product, form of construction or design meets the Performance Requirements or the DTS provisions, such as a Certificate of Conformity (eg. CodeMark); or*
- *By way of Expert Judgement.*

+ Clause 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.

Comments: Details of stormwater disposal are required to be prepared by a suitably qualified consultant and submitted with documentation for the CC.

+ Clause F1D6 – Damp Proofing

- This sub-clause requires that moisture from the ground must be prevented from reaching certain parts of buildings as listed.
- This sub-clause requires that all damp-proofing materials and termite shields used as damp-proofing must comply with AS/NZS 2904 and AS 3660.1.
- This sub-clause lists the buildings and parts of building that do not need to comply with (a).

Comments: Note.

+ Clause 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.

Comments: Note.

+ Clause F1D7 – Subfloor Ventilation

The sub-floor space between the suspended floor of a building and the ground must be in accordance with sub-clauses (a) to (g). This clause specifies the minimum sub-floor ventilation openings and the height of sub-floor timbers above the ground level for the three climatic zones set out in **Table F1D8** of the BCA.

Comments: Note.

PART F2- WET AREAS AND OVERFLOW PROTECTION

+ Clause F2D2 – Wet Area Construction

This clause sets out the construction requirements for rooms containing urinals in Class 2-9 Building, in relation to floor and wall materials, surface grading, floor wastes and drainage.

Comments: Note – Design Certification required at CC Application stage.

PART F3 – ROOF AND WALL CLADDING

+ Clause 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.

Comments: Note – design certification required at CDC Application stage.

+ Clause F3D3 – Sarking

Sarking-type materials used for weatherproofing of roofs must comply with AS/NZS 4200 parts 1 and 2.

Comments: Note.

+ Clause 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

Comments: *Details to be provided with the application for the Construction Certificate.*

PART F4 – SANITARY AND OTHER FACILITIES

+ Clause 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).

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

+ Clause F4D4 – Facilities in Class 3 to 9 Buildings

This clause provides the requirements for sanitary facilities to be installed in Class 3, 5, 6, 7, 8 and 9 buildings in accordance with **Tables F4D4a – F4D4l**. The requirements and variations are set out in sub-clauses (1)-(11).

Comments: *As indicated above, the maximum population numbers are required to be provided by Genton / ARUP or the Operator of the facility for the proposed buildings to assess if the toilet facilities are adequate to achieve compliance with Table F2.3.*

Details of the proposed sanitary facilities are to be provided at CC Application stage; however, it is considered compliance is readily achievable based on the current design.

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).

+ Clause F4D5 to F4D7 – Accessible Sanitary Facilities

Accessible unisex sanitary facilities and ambulant facilities must be provided, in accordance with F4D5 & F4D6 and unisex showers must be provided in accordance with F4D7, in buildings or parts that are required to be accessible. The detailed design of accessible and ambulant facilities must comply with AS 1428.1-2009.

Comments: *Accessible unisex sanitary compartments are required at each bank of toilets where one or more toilets is provided. In addition to an accessible unisex sanitary compartment at that bank of toilets, an ambulant sanitary facility is required to be provided for use by male and female persons per AS 1428.1-2009. Where multiple banks of toilets are provided on a storey, at least 50% of the banks must comply with the above. Additionally, at least 1 accessible unisex sanitary compartment must be provided on every storey containing sanitary compartments, including Level 1 & 2. Design certification is to be provided at CC application stage demonstrating that the design of each facility complies with AS 1428.1-2009, however, it is considered compliance is readily achievable based on the current design.*

It is noted that an Access Consultant's Report is to be obtained for this project and as such reference should be made to that report in relation to compliance with the provisions of Clauses F4D5 to F4D7.

+ Clause 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.

Comments: *Details to be provided at CC application stage confirming compliance with the above requirements.*

PART F5 – ROOM HEIGHTS

+ Clause 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 Class 9b building 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.

Comments: Architect to ensure compliance. Ceiling heights are to be reviewed at the Construction Certificate state with the detailed section drawings.

PART F6 – LIGHT AND VENTILATION

+ Clause 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.

Comments: Design certification to be submitted at CC Application.

+ Clause F6D7 – 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.

Comments: Design certification to be submitted at CC Stage for each building.

+ Clause F6D7 – 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.

Comments: Design certification to be submitted at CC Application Stage.

3.6 SECTION J – ENERGY EFFICIENCY

+ Part J1 – Building Fabric

The provision of insulation of the building envelope will be required in the proposed Building, in accordance with Clauses J3D1 to J3D7, 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.

Comments: This section applies to any air-conditioned spaces proposed within the Data Centre buildings. Design details and/or certification of building envelope design will be required to be submitted with the application for a Construction Certificate.

+ Part J3 – Building Sealing

The provision of a compliant building envelope / fabric is required to all next external walls and roof elements, in accordance with Clauses J3D3 to J3D7, including Thermal Construction General, Roof and Ceiling Construction, Rooflights, Glazing, Walls, and Floors.

Comments: This section applies to any air-conditioned spaces proposed within the Data Centre buildings. Design details and/or certification of building envelope design will be required to be submitted with the application for a Construction Certificate.

+ Part J5 – 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 J5** will be required to be provided from the mechanical engineer.

Comments: Details or certification demonstrating compliance will need to be submitted with the application for a Construction Certificate.

+ **Part J6 – 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 J6** will be required to be provided from the electrical engineer.

Comments: Consultant certification required at CC Application Stage.

+ **Part J7 – 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 J7** (Section 8 of AS 3500.4) will be required to be provided from the hydraulic engineer.

Comments: Details and certification demonstrating compliance will need to be submitted with the application for a Construction Certificate.

+ **Part J8 – 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.

Comments: Details or certification demonstrating compliance will need to be submitted with the application for a Construction Certificate.

4.0 SUMMARY OF KEY COMPLIANCE ISSUES

The following comprises a summary of the key compliance issues identified under the assessment contained above in this report and includes the required Performance Solutions. These matters are to be addressed prior to issue of the Construction Certificate.

4.1 MATTERS REQUIRING FURTHER RESOLUTION / NON-FIRE SAFETY PERFORMANCE SOLUTIONS

	BCA Clause/s	Description
1.	C2D10 & C2D14	A schedule of the non-combustible materials proposed to form part of the external walls as well as the internal and external attachments to the external walls are required to be provided for assessment.
2.	C3D8, C3D9 & C4D4	Confirmation is to be provided that the Class 7b FRLs are to be applied throughout the building. Alternatively, where Fire Walls are proposed to separate the Class 5 & 7b areas to apply the different FRL requirements to the various classifications, details of the proposed 240/240/240 FRL Fire Walls will need to be provided for review.
3.	D2D7, D2D8, D2D18 & F4D4	The proposed population of the building is required to be confirmed by Genton and details of the proposed sanitary facilities are to be provided to facilitate an assessment of the overall required egress widths and sanitary facility requirements.
4.	D2D12 & C4D5,	Details of the protection of the external walls along the discharge paths from the fire-isolated stairs identified under D1.7 are to be provided to confirm compliance.
5.	Part D4, F4D4 & AS1428.1-2009	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 D3.4 to the various Class 7b portions of the building will also be required.
6.	E1D2 & E1D4 - E1D13	Details of the standard of performance of the existing fire services infrastructure on the site are to be provided for inclusion in the fire engineering trial design for the project.
7.	E1D17, E2D21	Details of the additional fire services and smoke control to address additional hazard resulting for any proposed battery storage/use are to be incorporated in the Trial Design of the proposed fire engineered design of the building.
8.	F3P1	A Performance Solution report is to be provided by the Architect / Façade Engineer to demonstrate how the external walls & roof are designed to prevent the penetration of water into the building.
9.	Section J	A Section J Compliance Report or JV3 Report will be required with the CC application.

4.2 MATTERS TO BE ADDRESSED AS FIRE SAFETY ENGINEERED PERFORMANCE SOLUTIONS

	BCA Clause/s	Description
1.	Spec 5 C3D9, C3D8	Confirmation is to be provided if it is proposed to rationalised FRL's for all load-bearing elements in the building, including floors, columns, beams, etc.
2.	C3D5	A performance solution is required to address the Perimeter Vehicular Access non compliances along the eastern side of the development.
3.	D2D5, D2D6	The current plans indicate that exit travel distances, and distances between alternative exits within the building will not comply with D1.4 & D1.5.
4.	E1D3	Confirmation is to be provided if fire hose reels are proposed to be omitted from the Class 7b areas of the building to determine if a Performance Solution is required from the Fire Engineer.
5.	E1D17/E2D21	Provision of additional fire services & smoke hazard management requirements to address additional hazard resulting from any proposed battery storage/use.
6.	E2D3–E2D20	Confirmation is to be provided if a Performance Solution is proposed to rationalise the requirements associated with the required automatic smoke exhaust system.

5.0 CONCLUSION

This report contains an assessment of the referenced architectural documentation for proposed Data centre Facility at Eastern Creek against the Deemed-to-Satisfy Provisions of the BCA 2022 Volume 1. Arising from the review, it is considered that the proposed development can readily achieve compliance with the relevant provisions of the BCA. Where compliance matters are proposed to comply with the Performance Requirements (rather than DtS Provisions), the development of a Performance Solution Report will be required prior to the issue of the Construction Certificate.

The following fire safety measures are required for the new Data Centre:

Statutory Fire Safety Measure	**Design / Installation Standard**
Alarm Signaling Equipment	AS 1670.3 – 2018
Automatic Fire Detection System *Note: This only applies to buildings where an automatic smoke exhaust system is required.*	BCA Spec. 20 & AS 1670.1 – 2018 & AS/NZS 1668.1 – 2015
Automatic Fire Suppression Systems	BCA Spec. 17 & AS 2118.1 – 2017
Building Occupant Warning System activated by the Sprinkler System	BCA Spec. 17, Clause 8 and / or Clause 3.22 of AS 1670.1 – 2018
Emergency Lighting	BCA Clause E4D4 & AS 2293.1 – 2018
Exit Signs	BCA Clauses E4D5, E4D6 & E4D8; and AS 2293.1 – 2018
Fire Control Centre	BCA Spec. E1D15
Fire Doors	BCA Clause C3D13, C3D14 and AS 1905.1 – 2015 and manufacturer's specification
Fire Hose Reels (Class 7b parts only)	BCA Clause E1.4 & AS 2441 – 2005
Fire Hydrant Systems	BCA Clause E1D3 & AS 2419.1 – 2005
Fire Seals	BCA Clause C4D15, AS 1530.4 – 2014 & AS 4072.1 – 2005 and manufacturer's specification
Lightweight Construction	BCA Clause C2D9 & AS 1530.4 – 2014 and manufacturer's specification
Paths of Travel	EP&A (DC&FS) Regulation 2021 Clause 109
Perimeter Vehicular Access	BCA Clause C3D5
Portable Fire Extinguishers	BCA Clause E1D14 & AS 2444 – 2001
Smoke Hazard Management Systems	BCA Part E2 & AS/NZS 1668.1 –2015
Warning & Operational Signs	EP&A (DC&FS) Regulation 2021 Clause 108 BCA Clause D4D7 & E3D4 AS 1905.1 – 2015

6.0 APPENDIX 1 – SPEC. 5 FRL REQUIREMENTS (TYPE A 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—				
Table S5C11a :For *loadbearing* parts—				
less than 1.5 m	90/90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/60/ 30	120/ 90/ 60	180/120/ 90	240/180/120
3 to less than 9 m	90/30/ 30	120/30/ 30	180/90/ 60	240/ 90/ 60
9 to less than 18 m	90/30/–	120/30/–	180/ 60/–	240/ 60/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
Table S5C11b :For non-*loadbearing* parts—				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 30	–/ 90/ 60	–/120/ 90	–/180/120
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
Table S5C11c: EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is—				
Table S5C11c: For *loadbearing* columns—				
less than 18 m	90/–/–	120/–/–	180/–/–	240/–/–
18 m or more	–/–/–	–/–/–	–/–/–	–/–/–
Table S5C11c: For non-*loadbearing* columns—	–/–/–	–/–/–	–/–/–	–/–/–
Table S5C11d: 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*—				
Table S5C11e: *Loadbearing*	90/ 90/ 90	120/120/120	180/120/120	240/120/120
Fire-resisting stair *shafts*—				
Table S5C11f: Non-*loadbearing*	–/ 90/ 90	–/120/120	–/120/120	–/120/120
Bounding *public corridors*, public lobbies and the like—				
Table S5C11e: *Loadbearing*	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Table S5C11e: Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—				
Table S5C11e: *Loadbearing*	60/ 60/ 60	120/–/–	180/–/–	240/–/–
Table S5C11f: Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
S5C11g: OTHER LOADBEARING INTERNAL WALLS and COLUMNS—	60/–/–	120/–/–	180/–/–	240/–/–
S5C11g: ROOFS	–/–/–	=/=/=	–/–/–	–/–/–