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BCA ASSESSMENT REPORT

Rent a Space Self Storage Facility

4 Cross Street Brookvale NSW

Prepared for: Rent A Space Pty Ltd | Project No.: 200054 Date: 16 April 2020 | Status: Revision 02

Accredited Certifiers / Building Regulation Consultants

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		REPORT STATUS		
DATE	REVISION	STATUS	AUTHOR	PEER REVIEW
10/04/2020	01	Draft Issued for Client Information and Comment	Steven Rodriguez	Darko Kardum
16/04/2020	02	Report Re-Issued for Client Information and DA Submission	Steven Rodriguez	Darko Kardum

Prepared by:

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1. INTRODUCTION

1.1 REPORT BACKGROUND

Concise Certification Pty Ltd has been commissioned by Rent A Space Pty Ltd to provide professional Building Certification Services for the proposed development located at 4 Cross Street Brookvale NSW.

Our engagement involved a detailed desktop assessment of the architectural design documentation against the provisions of the National Construction Code Series (Volume 1) Building Code of Australia 2019 (BCA).

1.2 **REPORT PURPOSE**

The key objectives of the report are as follows:

- Undertake an assessment of the proposed development against the deemed to satisfy provisions of the National Construction Code Series Volume 1- Building Code of Australia 2019.
- Identify essential fire safety measures that are applicable to the proposed development in accordance with the Environmental Planning and Assessment Regulation 2000.
- Identify any Deemed-to-Satisfy compliance departures that require further resolution/attention for by either way of design change or Performance Based Solutions prior to the submission of the Construction Certificate application.
- Issue a collaborated fire engineering summary outlining the key compliance matters identified by the design team as deemed to satisfy departures requiring consideration by the project Fire Safety Engineer in order to assist in the preparation of the Fire Engineering Brief & Fire Engineering Brief Questionnaire (where required) to Fire & Rescue NSW).
- Verify that the referenced documentation has been reviewed by an appropriately qualified Building Surveyor and Accredited Accessibility Consultant and demonstrate that compliance with the BCA / Access to Premises – Building Standard 2010 is readily achievable.
- Enable the certifying authority to satisfy its statutory obligations under Clause 145 of the Environmental Planning and Assessment Regulation, 2000.
- Enable the certifying authority to satisfy its statutory obligations under Clauses 17 & 18 of the Building Professionals Regulation 2007.
- Accompany the submission of the DA Application to the Northern Beaches Council to enable the Consent Authority to be satisfied that the building design is capable of complying with the BCA and that subsequent compliance with the fire & life safety, accessibility, health & amenity and energy efficiency requirements of the BCA, will not give rise to design changes to the building which may necessitate the submission of further applications under Section 4.55 of the Environmental Planning and Assessment Act, 1979.

1.3 **REPORT DOCUMENTATION RELIED UPON**

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

- National Construction Code Series Volume 1 of the Building Code of Australia 2019 (BCA)
- National Construction Code Series Guide to the Building Code of Australia 2019
- Environmental Planning & Assessment Act 1979
- Environmental Planning & Assessment Regulation 2000
- Access to Premises Building Standards 2010
- Preliminary Fire Services concept plans prepared by Harding Architects
- Preliminary Fire Safety Engineering consultation with Scientific Fire Services
- Site Survey Plan No. SY074811.0001 (Rev 1) prepared by Land Partners dated 06/11/2019
- Draft Statement of Environmental Effects prepared by Willow Tree Planning dated 09 April 2020

Plan Number	Document Name	Revision	Date
1915 - DA - 100	Site Location Plan	-	Oct 19
1915 – DA -101	Site Context Plan	-	Oct 19
1915 – DA -102	Existing Site Plan	A	Oct 19
1915 – DA -103	Existing Site Photographs Plan	-	Oct 19
1915 - DA - 200	Ground Floor Plan	В	Oct 19
1915 – DA -201	First Floor Plan	А	Oct 19
1915 - DA - 202	Second Floor Plan	А	Oct 19
1915 – DA -203	Third Floor Plan	A	Oct 19
1915 - DA - 204	Roof Plan	А	Oct 19
1915 – DA - 300	Elevations 01Plan	-	Oct 19
1915 - DA - 301	Elevations 02 Plan	-	Oct 19
1915 – DA -302	Sections A & B Plan	-	Oct 19
1915 - DA - 303	Signage Plan	-	Oct 19

- Architectural Plans prepared by Harding Architects as detailed in the table below;

1.4 **REPORT LIMITATIONS & EXCLUSIONS**

The limitations and exclusions of this report are as follows:

- This report is based on a review of the referenced documentation in the report above.
- This Report does not address issues in relation to the design, maintenance or operation electrical, mechanical, hydraulic or fire protection services, Utility Services Provider Requirements (Water, Gas, Telecommunications and Electricity supply authorities), Local Government Act and Regulations, Occupational Health and Safety Act and Regulations or the like.
- This assessment does not incorporate the detailed requirements of the BCA Referenced Australian Standards and it's the responsibility of design and installation contractors to demonstrate and achieve compliance for all new works.
- Although our assessment has considered Part D of the BCA, detailed assessment is excluded from our services, and this is to be undertaken by an Energy Efficiency Consultant; or addressed via design certification from the Architect
- Although our assessment has considered Part J of the BCA, detailed assessment of the Energy Efficiency is excluded from our services, and this is to be undertaken by an Energy Efficiency Consultant; or addressed via design certification from the Architect.
- This assessment does not incorporate the detailed requirements of the BCA Referenced Australian Standards and it's the responsibility of design and installation contractors to demonstrate and achieve compliance for all new works.
- The commentary within this BCA Assessment Report does not relieve the Principal Designer, Principal Building Contractor and/or the Certifying Authority from their statutory obligations under the Work Health Safety Act, Safety in Design Principles, EP&A Act, BPB Act and they like and they are to be satisfied that the proposal meets their requirements prior to approval.
- Concise Certification Pty Limited cannot guarantee acceptance of this report by the Local Council, NSW Fire Brigades or other approval authorities.
- It is important to note that without the written permission from Concise Certification Pty Ltd, no part of this report may be reproduced in any form or by any means. This report is based solely on client instructions and therefore should not be relied upon or used by any third party without prior knowledge and instructions from Concise Certification Pty Ltd.

1.3 EXISTING & PROPOSED DEVELOPMENT

The subject development site is located at 4 Cross Street Brookvale NSW.

The site is legally described as Lot 2 in Deposited Plan 543012 and is generally rectangular in shape although it has a rear access handle/driveway which connects the rear of the facility.

The site has an approximate site area of 2,450msq and will have a total building area of ~8,345msq.



Figure 1 – Satellite Image (Source: Six Maps - April 2020)

Principle pedestrian and vehicular access to the site will be via the Cross Street entrance which is located on the Southern side of the site.

The rear driveway will be for exiting vehicles only which also connects to the Northern end of Cross street.

The Eastern, Northern and Western sides of the site adjoin existing commercial and industrial developments.

The site consists of a vacant allotment which has recently had a fire effected building demolished and the proposed DA application seeks approval for the construction of a new four (4) storey self-storage facility and generally entails the following:

- Site preparation works;
- Construction of a four (4) storey self-storage facility with administrations and drive through access driveway;
- Off-street car parking spaces and loading facilities;
- Building identification signage;
- Associated landscaping; and
- Associated services and utilities.

The building is understood to generally consist of a reinforced concrete super structure with concrete slab on ground and second floor level and concrete external pre-cast panel walls.

The first and third floor level floor structures are understood to generally consist of lightweight structural steel and tongue and groove flooring. The roof is proposed to be structural steel and metal sheeting.

The buildings structural analysis will be coordinated between the project structural and fire safety engineer and the design will be presented to FRNSW for consultation.

The building will be compartmentised into two (2) main fire compartments as detailed in the section and floor plans in BCA Clause C2.2 in the report below.

The following is a representation of the Ground floor proposal.



Figure 2 – Proposed Ground Floor Plan (Source: Harding Architects)

1.4 BUILDING CODE OF AUSTRALIA 2019 (BCA)

Pursuant to Clause 98 & 145 of the Environmental Planning and Assessment Regulation 2000 (EP&AR) all new building work must comply with the current provisions of the National Construction Code Series (Volume 1) Building Code of Australia (BCA). At the date of this assessment it was understood that a Part 6 <u>Construction Certificate Application</u> for the development would be made with a PCA prior to the 1st May 2022 and as such the relevant rendition of the BCA is **BCA 2019**.

1.5 REPORT STRUCTURE

The report consists of a Summary of Compliance Departures provided in the table under **Section 2** below, which is for the reader's ease of reference and most urgent attention.

Notwithstanding the summary of issues within **Section 2** must also be read in conjunction with the body of the assessment provided under **Section 3** of the report which further details compliance matters needing consideration in design development and during construction.

It is also the responsibility of all design consultants to ensure compliance with relevant BCA requirements, Australian Standards and Manufacturers Specifications. This report does not relieve design consultants from their obligations in designing to achieve compliance with the BCA. Furthermore, this report does not relieve the PCA from their statutory obligations required to assess the drawings in detail prior to the issue of a Construction Certificate.

2. SUMMARY OF KEY COMPLIANCE DEPARTURES

The following comprises a summary of the key compliance issues identified under the BCA Assessment in Section 3. The following comments are to be read in conjunction with the body of the report.

Relevant BCA Clauses	Description of Compliance Matter Requiring Resolution
BCA Parts B1.1- B1.4 (Structural Performance)	<u>BCA Part B and Spec C1.1</u> specify the key structural requirements and FRL's for buildings. Structural engineering drawings and design certification is required for the new works. Certification and details are to also address FRL's as specified under BCA Spec C1.1 (for Type C and Type B Construction and the Fire Safety Engineering Strategy accordingly.
	Note 1: Timber primary elements include tongue and groove flooring to the lightweight floor system which will require termite mitigation measures to be considered and details of compliance are to be provided with the Construction Certificate application.
	Note 2: The structural engineer and fire engineer will need collaborate on the design and demonstrate that the use of the proposed lightweight floor systems will not compromise the FRL's and lateral support requirements for the external walls which need to stay upright for a period of 240 mins. Furthermore, the design must ensure the infill floor systems are designed to negate catastrophic failure of the entire floor system in fire mode.
	Note 3: The Structural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.
BCA Clause C1.9	<u>BCA Clause C1.9</u> specifies the requirements and concessions applicable for the use of non-combustible building elements.
(Non- combustible	<u>BCA Clause C1.14</u> specifies the requirements for ancillary attachments to be non- combustible.
Building Elements) + BCA Clause	In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;
C1.14 (Ancillary Elements)	(a) The external metal cladding attached to the external wall of the building must comply with the provisions under BCA cl.C1.9 and/or A\$1530.1 for combustibility and Specifications or test reports are to be furnished at the Construction Certificate stage.
	(b) PVC polymer form work composite wall systems are not permitted in the external walls or to fire and stair shafts.
	(c) The business identification signage proposed on the external walls of the building is to ensure the substrate is non-combustible or alternatively confirm that it achieved a Material Group Rating of 1 or 2.
	<u>Note 1:</u> Our office does not endorse the use of any ACP's on this development unless they are 100% non-combustible and comply with A\$1530.1 and are 'attached' to external fire rated or non-combustible walls.
	<u>Note 2:</u> Any performance solutions for external walls must consider AS5113-2016 and FRNSW requirements. The use of, external claddings or permanent polymer formwork walls must be supported by Codemark Certification or the like and cross section wall details are required.
	<u>Note 3:</u> The Supporting Fire Test and/or Design Certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.
BCA Clause C2.2 (General Floor Areas and Volume Limitations)	BCA Clause C2.2 specifies the need for fire separation between fire compartments in a building. It is understood that horizontal fire separation will be provided within the building to a certain degree. In this regard, we understand that there will be two (2) main fire compartments proposed as follows;

	In this regard, the architect proposed to have three (3) main fire compartments as follows;
	1. Fire Compartment 1 (FC1) – Ground & First Floor Level
	2. Fire Compartment 2 (FC2) – Second & Third Floor Level
	In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;
	a) Based on the Fire Compartment strategy proposed by the design team, the Floor Areas of Fire Compartments 1 and 2 appear to be less than the maximum limitations of 5,000m ² and 30,000m ³ however these need to be confirmed accordingly.
	b) It is understood that the FRL's to openings in the fire walls and lift shafts will also be designed with reduced FRL's which won't achieve the required 240 mins.
	Note 1: Detailed fire compartment plans including Floor Areas and Volumes are to be provided by the architect to accompany the FEBQ and Construction Certificate applications. Areas are to include the under-croft space which is considered to contribute to the buildings fire loads.
	<u>Note 2:</u> The project architect, fire engineer and structural engineer will require a collaborated design approach as it is understood that FRL's are proposed to be rationalised and omitted from the lightweight floor structures. FRNSW will need to review and support this proposal.
	Note 3: Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.
BCA Spec C1.1 + BCA Clauses C2.7 + C2.8 + C2.9	<u>BCA Spec C1.1 Table 3</u> requires certain building elements to achieve a Fire Resistance Level. <u>BCA Clause C2.7</u> requires fire wall separation and nominates the method of construction and <u>BCA Clause C2.8</u> requires higher FRL's to be adopted throughout, or appropriate fire separation between different Classifications to be provided and
(Fire Resisting Levels +	<u>BCA Clause C2.9</u> requires appropriate fire separation between different Classifications in consecutive storeys to be provided.
Separation between Classifications)	In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;
	a) There are mixed classifications on the Ground floor which are not proposed to be fire separated from each other as rationalisation of FRL's to the development is proposed by the project design team.
	b) Rationalisation of FRL's to all key building elements throughout the building i.e. floors, external walls, stair and lift shafts, concrete & steel columns, etc. Refer to Fire Compartment Plans above.
	c) It is understood that the FRL's to openings in the fire walls and lift shafts will also be designed with reduced FRL's which won't achieve the required 240 mins.
	 Rationalisation of FRL's to all key building elements throughout the building i.e. floors, external walls, stair and lift shafts, concrete & steel columns, etc. Refer to Fire Compartment Plans above.
	Fire Engineered Performance Solution: Where it is proposed to not have FRL's that will not comply with the provisions of BCA Clause C2.7 and/or Part C3, the design team will need pursue a Performance Based Solutions for the above. As such, we note that Scientific Fire Services have confirmed in their Preliminary Fire Safety Strategy that there may be scope to rationalise the FRL's offered to building elements by demonstrating compliance with BCA Performance Requirements CP1 and CP2
	Note: Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

BCA Clause C3.2/C3.4 (Protection of openings)	<u>BCA Clause C3.2</u> requires openings situated in the external walls located within 3m of the fire source features to be protected or addressed under performance solutions. In this regard, the following areas have been identified as openings which would be necessitating appropriate protection in accordance with Clause C3.4 and/or justification from the project fire safety engineer;
	a) Ground Floor (Nth) - The roller shutter and fire passageway discharge doors are located within 3m of the Northwest and Northeast boundaries and as such require protection in accordance with BCA cl. C3.4 In this regard, the roller shutter requires an FRL of/60/ mins and the fire exit doors requires a self-closing fire door achieving an FRL of/60/30 mins.
	b) Ground & First Floor (Sth) – There is an opening formed in the external plane of the building at the vehicular entrance under-croft which is proposed to be located within 3m of the South-Western boundary and given they cannot be protected DTS, they need addressing via performance.
	c) Ground Floor (Sth) – There is an opening in the external wall of the Meeting Room which is proposed to be located within 3m of the South-Eastern boundary which will need protection in accordance with BCA cl. C3.4.
	Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extent of fire protection required to the under-croft areas. The report will need to address BCA Performance Requirements CP1 & CP2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.
	Note: Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.
BCA Clause C3.10	<u>BCA Clause C3.10</u> requires openings situated in lift shafts to be protected or addressed under performance solutions.
(Openings to Lift Shafts)	In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;
	 Rationalisation of FRL's to the lift entry doors being steel construction in lieu of/60/ min FRL's. This proposal needs to take into consideration the fire compartmentation strategy.
	Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extent of fire ratings required to the list entry doors. The report will need to address BCA Performance Requirements CP2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.
	Note: Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.
BCA Clause D1.4 (Exit Travel	<u>BCA Clause D1.4</u> specifies the maximum egress travel distances permissible from a point on the floor to a point of choice where alternative exits are available or from a point on the floor to the nearest exits.
Distances)	In this regard, the following areas have been identified as areas which would be necessitating further design consideration and/or justification from the project fire safety engineer;
	a) Egress distances from the furthest point of the floor to the nearest exits across all levels are up to 45m (in lieu of 40m).
	Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extended egress distances accordingly. The report will need to address BCA Performance Requirements DP4 & EP2.2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

	<u>Note:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.
BCA Clause D1.5	<u>BCA Clause D1.5</u> specifies the maximum distances of travel permitted between alternative exits.
(Distance between Alternative Exits)	In this regard, the following areas have been identified as areas which would be necessitating further design consideration and/or justification from the project fire safety engineer;
LXII3)	a) Egress distances between alternative exits when measured back through the point of choice are up to 76m (in lieu of 60m) on the Ground Floor and 87m (in lieu of 60m) on the above Ground Levels.
	Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extended egress distances accordingly. The report will need to address BCA Performance Requirements DP4 & EP2.2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.
	Note: Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.
BCA Clause	BCA Clause D1.7 specifies the discharge requirements of fire isolated stairways.
D1.7 (Discharge of Exits)	In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;
	a) South Fire Stair – The fire isolated stair discharge location necessitates passing within 6m of the external openings of the Ground Floor to reach the roadway.
	b) Northern Fire Passageway – The fire isolated passageway discharges location necessitates passing by the roller shutters to the driveway. The roller shutter therefore requires protection which is activated from a fire internally. Note. The shutter also needs external activation due to proximity to boundary.
	Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the discharge of exit provisions and extent of protection requirements accordingly. The report will need to address BCA Performance Requirements DP4, DP5 & EP2.2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.
	<u>Note:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.
BCA Clause D2.20 (Directional Swing of Exit Doors)	<u>BCA Clause D2.20</u> specifies the requirements for final exit doors to swing in the direction of egress to avoid crowding/crushing in the event of an emergency where large population numbers are expected.
	In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;
	a) Ground Floor (Nth) – The door leading to the fire isolated passageway will be inward swinging to ensure it doesn't obstruct egress internally.
	b) Ground Floor (Sth) - The final discharge door leading into the under-croft needs to swing in the opposite direction (outwards).
	Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the directional door swings. The report will need to address BCA Performance Requirements DP2 and EP2.2 and carefully consider occupant evacuation.
	Note: Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

BCA Part D3, AS1428.1 (Accessibility requirements) + BCA Clause F2.4	<u>BCA Part D3</u> requires the building, carpark facility, access ways and general circulation provisions are required to comply with the accessibility provisions of this Clause and Australian Standard.		
	BCA Clause F2.4 requires adaptable and accessible sanitary facilities to be provided.		
	In this regard, the following areas have been identified as matters which may be requiring		
	further design consideration and/or justification via Performance-Based Alternative Solutions by the project Access Consultant;		
(sannary Facilities)	a) <u>Site access –</u> details demonstrating compliant grades are to be noted on the drawings for the review and comment of the access consultant. Circulation space to be achieved at the entry gates near the sliding gates on the driveways.		
	b) <u>Wheelchair Access</u> – There appears to be no dedicated wheelchair access route and therefore the vehicular driveway is the only means of wheelchair entrance to the building. In this regard the grades of the driveway need to be shown on the CC plans and hatched accordingly.		
	c) <u>Stairways/Tactiles –</u> Required Stairways will need to be AS1428.1 compliant and have details to be provided at the Construction Certificate stages ensuring there is sufficient space within the property.		
	d) <u>Storage Units</u> – Equitable access needs to be provided to individual storage unit entrances which have roller shutters and the access consultant is to review and comment on door latch hardware provisions in this regard – which will no doubt necessitate Management in Use procedures to be developed.		
	e) <u>Doorway Circulation at Under-croft Entrance</u> – The entry doors facing the under-croft could be compromised by a stationary vehicle in the parking space directly in front of these doors and it is recommended wheel stops and bollards are designed accordingly.		
	f) <u>Accessible Facilities –</u> it is understood there will be no more than 10 occupants working at the facility at any given time and as such the single unisex facility is considered adequate in this regard.		
	Accessibility Performance Solution: Notwithstanding the above, it is understood that the design team will obtain a Performance Based Solution prepared by an Accessibility Consultant to address the sanitary facility departures accordingly. In this regard, the report will need to demonstrate compliance with BCA Performance Requirement DP1 and be prepared to the satisfaction of the Accredited Certifier at the Construction Certificate stage.		
	Note: Architectural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application. It is also recommended that the detailed accessibility compliance report accompanies the Construction Certificate application.		
BCA Clause E1.3 (Fire	<u>BCA Clause E1.3</u> requires hydrants to be provided in the building. Fire Hydrants are to be shown on the architectural drawings at the Construction Certificate stage and design certification form a consultant is required against AS2419.1-2005.		
nyaranisj	<i>In this regard,</i> the following matters have been identified as DTS departures that will be requiring further consideration at the Construction Certificate application stage:		
	a) The fire hydrant booster assembly is located within 10m of the external walls and does not have a radiant heat shield provided on each side of the booster assembly achieving a minimum FRL of 90/90/90 mins.		
	 FRNSW require boosters to be parallel to the street front and the current proposals suggests perpendicular installations. 		
	 c) Internal hydrants are required to provide coverage to areas where coverage from the fire stair installations is not achieved. 		
	d) Internal hydrants must ensure they are not obstructed by parking spaces or the like and it is to be ensured a minimum of 1.0m is maintained at all times.		
	e) The fire services engineers are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.		

	Fire Engineered Performance Solution: It is understood that the design team will pursue a Performance Based Solution to rationalise the booster assembly arrangements. The report will need to address BCA Performance Requirement EP1.3 and carefully consider fire brigade intervention. Note 1: The fire services design engineer must demonstrate that they are Competent Fire Safety Practitioner (CFSP) and either be an NER service design engineer or be on the interim register of the Fire Protection Association Australia (FPAA). Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards. Note 2: We understand pressures from the street are sufficient to negate the need for a pump room. Note 3: Architectural & Fire Services details and design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with
	the Construction Certificate application.
BCA Clause E1.5	<u>BCA Clause E1.5</u> specifies the requirement for sprinkler systems in certain types of buildings. Sprinklers in this instance are required to comply with AS2118.1-2017.
(Sprinklers)	In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification by the project Fire Safety Engineer;
	a) The fire hydrant booster assembly is located within 10m of the external walls and does not have a radiant heat shield provided on each side of the booster assembly achieving a minimum FRL of 90/90/90 mins.
	b) FRNSW require boosters to be parallel to the street front and the current proposals suggests perpendicular installations.
	c) The sprinkler valve room has not been detailed on the plans and is to be in a location which is accessed directly from open space.
	d) We understand that an alternative type sprinkler head will be utilised which permits a reduced clearance of 300mm (in lieu of 500mm) beneath the sprinkler heads (Tyco flat head sprinklers) however these are contrary to the provisions of AS2118.1-2017.
	e) The fire services engineers are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.
	Fire Engineered Performance Solution: It is understood that the design team will pursue a Performance Based Solution to rationalise the booster assembly arrangements and use of the Tyco Flat Head sprinkler heads. The report will need to address BCA Performance Requirement EP1.4 and carefully consider fire brigade intervention.
	<u>Note 1:</u> The fire services design engineer must demonstrate that they are Competent Fire Safety Practitioner (CFSP) and either be an NER service design engineer or be on the interim register of the Fire Protection Association Australia (FPAA). Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.
	Note 2: We understand pressures from the street are sufficient to negate the need for a pump room.
	Note 3: Architectural & Fire Services details and design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

BCA Clause F4.5 (Ventilation of Rooms)	<u>BCA Clause F4.5</u> requires habitable rooms in a building to be mechanically ventilated and details of the extent of mechanical ventilation proposed to the self-storage levels will require further design consideration.
	<u>Note 1</u> : In this regard we note that the self-storage areas will require further design consideration to demonstrate how it is proposed to ventilate the spaces. Generally, ventilation of access corridors is sufficient, and the storage compartments themselves are considered to be excluded from requiring ventilation as they are considered spaces of a specialised nature occupied neither frequently nor for extended periods.
	Note 2: Mechanical engineer to confirm whether ventilation design is performance based or compliant with AS1668.2-2012. Design statement to the satisfaction of the Accredited Certifier is to be provided with the Construction Certificate application
BCA Part J (Energy Efficiency)	<u>BCA Part J</u> requires energy efficiency measures to be considered to class 5-9 buildings in areas which will be a conditioned space (as defined by the BCA). Detailed Section J compliance report to be provided at the Construction Certificate stage. In addition to the above, a Performance /Verification Report will be required given the extent of west face glazing <u>Note 1:</u> The provisions of Section J in BCA 2019 come into effect for all Construction Certificate applications submitted post 30 April 2020.
	Note 2: In order to demonstrate compliance, it is understood that a Section J report and Verification report from an ESD Consultant will be submitted with the Construction Application. Glazing calculators to accompany reports.

It is important to note that the above is not an exhaustive list of the matters requiring attention and the summary is to be read in conjunction with the remainder of the report in Section 3 below.

3. BCA ASSESSMENT

The following is a summary of relevant areas of BCA Compliance that will need to be considered & addressed for the proposed development prior to the issue of a Construction Certificate.

General Provisions:

The key building characteristics and classifications for the proposed development as determined by Volume 1 of the Building Code of Australia are as follows:

BUILDING CHARACTERISTICS	
- BCA CLASSIFICATION:	Class 5 (Admin/Reception), Class 7a (Carparking), Class 7b (Storage) &
	10b (Pylon Sign)
- RISE IN STOREYS:	Four (4)
- STOREYS CONTAINED:	Four (4)
- TYPE OF CONSTRUCTION:	Type A Construction (Table 3 of BCA Spec C1.1)
- EFFECTIVE HEIGHT:	Less than 12m (20.7m – 11.40) = <u>9.3 m</u>)
- FIRE COMPARTMENTATION:	Complies with BCA Clause C2.2
- CLIMATE ZONE:	Climate Zone CZ5
- CRITICAL FIRE SERVICES:	Sprinklers (AS2118.1-2017), Drenchers (AS 2118.2-2010), BOWS (AS1670.1-2018),
	Hydrants (AS2419.1-2005), Hose Reels (AS2441-2005), Extinguishers (AS2444-
	2001), Emergency Lights & Exit Signs (AS2293.1-2018), Fire Shutters (AS1905.2),
	Lightweight Construction (AS1530.4-2005) + Fire Safety Engineering

<u>Note</u>: Although the Class 5 offices on the ground floor level occupy less than 10% of the storey, there is more than one principle classification and as such has not adopted the other classifications accordingly.

Fire Source Features:

The main entrance via Cross Street is located on the Southern side of the site. The rear driveway will be for existing vehicles which also connects to the Northern end of Cross street. The Eastern, Northern and Western sides of the site adjoin existing commercial and industrial developments.

Having regard to the above, the distances from the external walls of the proposed building to the nearest Fire Source Features / allotment boundaries are noted as follows;

FIRE SOURCE FEATURE	DISTANCE TO FIRE SOURCE FEATURE
– NORTH SIDE	<3m from the rear boundaries (Approx. 0m)
– EAST SIDE	<3m from the side allotment boundary (Approx. 0m)
- WEST SIDE	<3m from the side boundary (Approx. 0m)
- SOUTH SIDE	>6m from the far Boundary of Cross Street (Approx. 24m)

<u>Note:</u> Refer to BCA Clauses C3.2/C3.4 & Spec C1.1 in the report below for further commentary regarding fire source features and requirements for fire protection.

Floor Area / Volume:

The maximum permissible fire compartment sizes for the different classification in the development must comply with the limitations of BCA Table C2.2 for a building of Type A Construction. In this regard, the architect proposed to have two (2) main fire compartments as follows;

- Fire Compartment 1 (FC1) Ground & First Floor Level;
- Fire Compartment 2 (FC2) Second & Third Floor Level;

<u>Note:</u> Refer to comments under BCA Clause C2.2 where the design team has proposed a Performance Based Solution to address the combined floors/fire compartments. Detailed fire compartment plans including Floor Areas and Volumes are to be provided by the architect to accompany the FEBQ and Construction Certificate applications.

Section A – Classification of Buildings & Structures:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section A of the BCA subject to compliance with the following:

- <u>BCA cl. A3.1 Principles of Classification.</u> The classification of a building or part of a building is determined by the purpose for which it is designed, constructed or adapted to be used. In this regard it is understood the building will be a Self-Storage premises with new Class 5 (Office), Class 7a (Carparking), Class 7b (Storage) and Class 10b (Pylon Signage) classifications and uses accordingly.
- <u>BCA cl. A3.3 Multiple Classification:</u> Each part of a building must be classified separately and where these parts have different purposes – If not more than 10% of the floor area of a storey – being the minor use, is used for a purpose which is a different classification applying to the major use, may apply to the whole storey.

<u>Note:</u> This provision does not apply to certain minor uses as set out in this clause. The proposal consists of new ancillary Class 5 (Admin/Reception), Class 7a (Carpark) and Class 7b (Storage) uses and appropriate separation and concessions will be adopted accordingly – refer to Section C of the report below.

<u>Section B – Structural Provisions:</u>

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section B of the BCA subject to compliance with the following:

3. <u>BCA cl's. B1 – B3 Structural provisions</u>: Structural engineering documentation for structural works must comply with the structural provisions of BCA Clauses B1.1, B1.2 & B1.3. Table B1.2 identifies the Importance Levels of Building & Structures that must be considered by the structural engineer.

<u>Note:</u> The Structural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

 <u>BCA cl. B1.4 – Materials and Forms of Construction</u>: Structural resistance of materials and forms of construction must comply with BCA clause B1.4. Structural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

The design must consider (but not be limited to) the following Australian Standards and any other appropriate standards accordingly:

- AS 1170.0 2002 General Principles
- AS 1170.1 2002, including certification for balustrades (dead and live loads)
- AS 1170.2 2011, Wind loads
- AS 1170.4 2007, Earthquake loads
- AS 1288 2006, Glass in buildings + B1.4(h)(iii) To protect against nickel sulphide inclusions.
- A\$1530.4-2014, Fire-Resistance Tests on Elements of Construction
- A\$1657-2013, Fixed platforms, Walkways, Stairways and Ladders
- AS/NZS 1664.1 and 2 1997, Aluminium construction
- AS/NZS 1684.1, 2 and 3 2010, Residential Timber Framed Construction
- AS 1720.1 2010, Design of Timber Structure
- AS 1720.5 2015, Nail plated timber roof structures
- AS 2159 2009, Piling
- AS 2047 2014, Windows in buildings
- AS 3600 2018, Concrete code
- AS3666.1-2014 Termite Management
- AS 3700 2018, Masonry code
- AS 4100 1998, Steel Structures and/or AS 4600 2018, Cold formed steel
- AS 4600 2005, Cold formed steel

<u>Note 1:</u> Timber primary elements include tongue and groove flooring to lightweight floor system require termite mitigation measures to be considered and details of compliance are to be provided with the Construction Certificate application.

<u>Note 2:</u> The structural engineer and fire engineer will need collaborate on the design and demonstrate that the use of the proposed lightweight floor systems will not compromise the FRL's and lateral support requirements for the external walls which need to stay upright for a period of 240 mins. Furthermore, the design must ensure the infill floor systems are designed to negate catastrophic failure of the entire floor system in fire mode.

<u>Note 3:</u> The Structural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

Section C – Fire Resistance and Compartmentation:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section C of the BCA subject to compliance with the following:

- 5. <u>BCA Clause C1.1 & C1.2 Type of Construction and Rise in Storeys:</u> The building will be **Type A Construction** by virtue of the Rise in Storeys of the building being assessed as **four (4)**.
- 6. <u>BCA cl. C1.8 Lightweight construction</u>: Lightweight construction must comply with Specification C1.8 if used in a wall system in accordance with sub-clauses (a) & (b). The fire rated applications must comply with manufacturers specifications and be certified accordingly.

<u>Note</u>: Architectural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

7. <u>BCA cl. C1.9 Non-combustible Building Elements:</u> Changes to the BCA in 2016, amended the provisions under Spec C1.1 and C1.12 and included a new C1.9 clause accordingly.

The provisions of this clause are intended to provide a series of <u>requirements and concessions for the</u> <u>use of non-combustible building elements</u> and these provisions are specified below;

- a) In a building required to be of <u>Type A or B construction</u>, the following building elements and their components must be non-combustible:
 - (i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation.
 - (ii) The flooring and floor framing of lift pits.
 - (iii) Non-loadbearing internal walls where they are required to be fire-resisting.
- b) <u>A shaft, being a lift, ventilating, pipe, garbage, or similar shaft</u> that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of non-combustible construction in—
 - (i) a building required to be of Type A construction; and
 - (ii) a building required to be of Type B construction, subject to C2.10, in-
 - A. a Class 2, 3 or 9 building; and
 - B. a Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys.
- c) <u>A loadbearing internal wall and a loadbearing fire wall</u>, including those that are part of a loadbearing shaft, must comply with Specification C1.1.
- d) The requirements of (a) and (b) do not apply to gaskets, caulking, sealants & damp-proof courses.
- e) The following materials may be used wherever a <u>non-combustible material</u> is required:
 - (i) Plasterboard.
 - (ii) Perforated gypsum lath with a normal paper finish.
 - (iii) Fibrous-plaster sheet.
 - (iv) Fibre-reinforced cement sheeting.

- (v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
- (vi) Bonded laminated materials where—
 - A. each lamina, including any core, is non-combustible; and
 - 3. each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and
 - C. the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;

- a) The external metal cladding attached to the external wall of the building must comply with the provisions under BCA cl.C1.9 and/or A\$1530.1 for combustibility and Specifications and/or test reports are to be furnished at the Construction Certificate stage.
- b) PVC polymer form work composite wall systems are not permitted in the external walls or to fire and stair shafts.

<u>Note 1:</u> Our office does not endorse the use of any ACP's on this development unless they are 100% non-combustible and comply with A\$1530.1 and are 'attached' to external fire rated or non-combustible walls.

<u>Note 2:</u> Any performance solutions for external walls must consider AS5113-2016 and FRNSW requirements. The use of, external claddings or permanent polymer formwork walls must be supported by Codemark Certification or the like and cross section wall details are required.

<u>Note 3:</u> The Supporting Fire Test and/or Design Certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

<u>Note 4:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

- <u>BCA cl. C1.10 Early Fire Hazard Properties</u>: Floor, wall & ceiling linings, sarking, and any other linings and attachments are required to comply with the requirements under Clause & Specification C1.10. in this regard we provide the following notes which are to be read in conjunction with the tables in the BCA:
 - All reflective foils such as sarking/insulations need to achieve compliance and have a flammability index of not greater than 5.
 - All insulation materials (including sarking, mineral wool and other fabricated batt, poly or the like products) located in external walls and other walls required to be non-combustible, <u>must</u> <u>be tested to comply with AS1530.1 or be addressed under Performance Solutions</u> (in line with recent ABCB Practice Notes).
 - Ceiling and wall linings are to have a Material Group Number of 1, 2 or 3 in sprinklered protected buildings.
 - Timber feature wall or ceiling linings (or the like) are to comply with the Material Group Ratings under Table C1.10 and are also to have a Material Group Number of 1, 2 or 3 in sprinklered protected buildings.
 - Flooring such as carpets, vinyls, floating floors etc need to achieve a Critical Radiant Flux of not less than 1.2 (where sprinklers are installed).

<u>Note 1:</u> The Supporting Fire Test and/or Design Certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application. BCA Clause C1.10 relates to internal linings only and not linings associated with external walls.

<u>Note 2:</u> Architectural details and design certification is to be provided with the Construction Certificate application

9. <u>BCA cl. C1.14 – Ancillary Elements:</u> The provisions of this clause are intended to clarify that the Ancillary Elements listed under this clause may be applied to an <u>external wall that is required to be non-combustible</u>.

An ancillary element must not be fixed, installed or attached to the <u>internal parts or external face of</u> <u>an external wall</u> that is required to be non-combustible unless it is one of the following:

- a) An ancillary element that is non-combustible.
- b) A gutter, downpipe or other plumbing fixture or fitting.
- c) A flashing.
- d) A grate or grille not more than $2 m^2$ in area associated with a building service.
- e) An electrical switch, socket-outlet, cover plate or the like.
- f) A light fitting.
- g) A required sign.
- h) A sign other than one provided under (a) or (g) that—
 - (i) achieves a group number of 1 or 2; and
 - (ii) does not extend beyond one storey; and
 - (iii) does not extend beyond one fire compartment; and
 - (iv) is separated vertically from other signs permitted under (h) by at least 2 storeys.
- i) An awning, sunshade, canopy, blind or shading hood other one provided under (a) that-
 - (i) meets the requirements of Table 4 of Specification C1.10 as for an internal element; and
 - (ii) serves a storey—
 - A. at ground level; or
 - B. immediately above a storey at ground level; and
 - (iii) does not serve an exit, where it would render the exit unusable in a fire.
- j) A part of a security, intercom or announcement system.
- k) Wiring.
- I) A paint, lacquer or a similar finish.
- m) A gasket, caulking, sealant or adhesive directly associated with (a) to (k).

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;

(a) The business identification signage proposed on the external walls of the building is to ensure the substrate is non-combustible or alternatively confirm that it achieved a Material Group Rating of 1 or 2.

<u>Note 1:</u> Our office does not endorse the use of any ACP's on this development unless they are 100% non-combustible and comply with A\$1530.1 and are 'attached' to external fire rated or non-combustible walls.

<u>Note 2:</u> Architectural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

10. <u>BCA cl. C2.2 – General Floor Area and Volume Limitations</u>: The total proposed floor area and volume sizes of the fire compartments must comply with the limitations of C2.2 (below) for the classifications concerned.

Classification	Type A construction	Type B construction	Type C construction
5, 9b or 9c	Max <i>floor area</i> —8 000 m²	Max <i>floor area</i> —5500 m ²	Max <i>floor area</i> —3000 m ²
	Max volume—48000 m ³	Max volume—33 000 m³	max volume—18000 m ³
6, 7 , 8 or 9a (except for	Max <i>floor area</i> —5 000 m²	Max <i>floor area</i> —3500 m ²	Max <i>floor area</i> —2 000 m²
patient care areas)	Max volume—30000 m ³	Max volume—21000 m ³	Max volume—12000 m ³

Table C2.2 Maximum size of fire compartments or atria

It is understood that **horizontal fire separation** will be provided within the building however there will be 2 main fire compartments (in lieu of 4) as detailed below;

- Fire Compartment 1 (FC1) Ground & First Floor Level
- Fire Compartment 2 (FC2) Second & Third Floor Level



Figure 4 – Fire Compartment Plan (Source: Harding Architects)



Figure 5 – Fire Compartment Plan (Source: Harding Architects)

It is also understood that the fire compartment sizes of each fire compartment above will comply with the maximum limitations of the Table C2.2 (see below).

Fire Compartment 1 – Ground & First Floor Levels				
FLOOR AREA & VOLUME	TYPE A LIMITATIONS	Proposed	Complies	
- MAX FLOOR AREA	5,000m ²	Approx. 3,685m ²	Yes	
- MAX VOLUME	30,000m ³ Approx. 23,200m ³		Yes	
Fire Compartment 2 – Second & Third Floor Levels				
FLOOR AREA & VOLUME	TYPE A LIMITATIONS	Proposed	Complies	
- MAX FLOOR AREA	5,000m ²	Approx. 4520m ²	Yes	
- MAX VOLUME	30,000m ³	Approx. 26,645m ³	Yes	

Figure 6 - Table C2.2 Compliance Assessment (Source: Concise)

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;

a) Based on the Fire Compartment strategy proposed by the design team, the Floor Areas of Fire Compartments 1 and 2 appear to be less than the maximum limitations of 5,000m² and 30,000m³ however these need to be confirmed accordingly.

b) It is understood that the FRL's to openings in the fire walls and lift shafts will also be designed with reduced FRL's which won't achieve the required 240 mins.

<u>Note 1:</u> Detailed fire compartment plans including Floor Areas and Volumes are to be provided by the architect to accompany the FEBQ and Construction Certificate applications. Areas are to include the under-croft space which is considered to contribute to the buildings fire loads.

<u>Note 2:</u> The project architect, fire engineer and structural engineer will require a collaborated design approach as it is understood that FRL's are proposed to be rationalised and omitted from the lightweight floor structures. FRNSW will need to review and support this proposal.

<u>Note 3:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

- 11. <u>BCA cl. C2.6 Vertical Separation of Openings in External Walls:</u> As the building is proposed to be sprinkler protected <u>throughout in accordance with AS2118.1-2017</u>, spandrel separation is not required to be provided between all levels at external openings of the building.
- 12. <u>BCA cl. C2.7 Separation by Fire Walls:</u> Fire Walls are generally provided to provide separation between classifications and/ or to separate fire compartments.

A required fire wall must be constructed in accordance with the provisions of this clause and achieve the respective FRL's under BCA Specification C1.1.

Openings and services in a fire wall must be protected in accordance with Part C3 of the BCA, and any building elements penetrating the fire wall must not reduce the fire resisting performance of the wall and demonstrated by the structural engineer.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;

a) There are mixed classifications on the Ground floor which are not proposed to be fire separated from each other as rationalisation of FRL's to the development is proposed by the project design team.

Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extent of fire separation required on the Ground floor. The report will need to address BCA Performance Requirements CP1 & CP2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

<u>Note:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

13. <u>BCA cl. C2.8 – Separation of classifications in the same storey:</u> This clause requires fire separation between classifications where different fire ratings are specified under BCA Specification C1.1.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;

a) Similar to C2.7 above, there are mixed classifications on the Ground floor which are not proposed to be fire separated from each other as rationalisation of FRL's to the development is proposed by the project design team.

Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extent of fire separation required on the Ground floor. The report will need to address BCA Performance Requirements CP1 & CP2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

<u>Note:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

14. <u>BCA cl. C2.9 – Separation of Classifications on different storeys:</u> Where parts of different classifications are situated above one another in adjoining storeys, they must be fire separated so that the floor

between the adjoining parts has an FRL of not less than the prescribed under Spec C1.1 for the classification of the lower storey.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;

a) Rationalisation of FRL's to all key building elements throughout the building i.e. floors, external walls, stair and lift shafts, concrete & steel columns, etc. Refer to Fire Compartment Plans above.

Fire Engineered Performance Solution: Similar to the discussions under BCA Clauses C2.7 & C2.8 above, it is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extent of fire ratings required to building elements throughout the building. The report will need to address BCA Performance Requirements CP1 & CP2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

<u>Note:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

15. <u>BCA cl. C2.10 Separation of Lift Shafts</u>: Any proposed lifts are to ensure compartmentation is maintained with fire rated shafts walls commensurate the horizontal fire separation proposed and openings complying with BCA Clause C3.10. Passenger lift landing doors are to be protected in accordance with BCA cl. C3.10 achieving a minimum FRL of --/60/--.

<u>Note 1</u>: Fire ratings will need to be commensurate to the classifications of the areas they connect or pass by and/or commensurate the FRL's addressed by the project Fire Safety engineering strategy.

<u>Note 2:</u> Architectural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

16. <u>BCA cl. C2.12 Separation of Equipment</u>: Any emergency generators, boilers or battery storage enclosures are required to be fire separated from the remainder of the building by construction having a minimum FRL of 120/120/120. Doors to the enclosure are to be self-closing --/120/30 fire doors.

<u>Note:</u> Consideration for the need for fire separation of any server/comms room may be required where it is proposed to have Batteries/UPS's a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours. Electrical/IT contractor to advise further in this regard.

 <u>BCA cl. C2.13 Electricity Supply Systems</u>: Any electrical substations, electrical conductors, or main switchboards that sustain emergency equipment operating in emergency mode are required to be fire separated from the remainder of the building by construction having a minimum FRL of 120/120/120. Doors to the enclosure are to be self-closing --/120/30 fire doors.

<u>Note 1:</u> The implementation of fire hydrant/sprinkler pumps and other services will necessitate the MSB to be fire rated accordingly.

<u>Note 2:</u> Additionally, there is to be a suitable portable fire extinguisher located between 2m and 10m of the room. Fire rating details are to be noted on the drawings.

18. <u>BCA cl. C3.2 – Protection of Openings in External Walls:</u> Any openings proposed within the external walls that are located within 3m of a side or rear allotment boundary, 3m from an adjoining building on the same allotment or 6m from the far boundary of an adjoining roadway are required to be protected externally in accordance with Clause C3.4. Openings may also be protected by non-translucent construction achieving an FRL of 30 mins such as blade walls or the like.

In this regard, the following areas have been identified as openings which would be necessitating appropriate protection in accordance with Clause C3.4 and/or justification from the project fire safety engineer;

a) Ground Floor (Nth) - The roller shutter and fire passageway discharge doors are located within 3m of the Northwest and Northeast boundaries and as such require protection in accordance with BCA cl. C3.4 In this regard, the roller shutter requires an FRL of --/60/-- mins and the fire exit doors requires a self-closing fire door achieving an FRL of --/60/30 mins.

- b) Ground & First Floor (Sth) There is an opening formed in the external plane of the building at the vehicular entrance under-croft which is proposed to be located within 3m of the South-Western boundary and given they cannot be protected DTS, they need addressing via performance.
- c) Ground Floor (Sth) There is an opening in the external wall of the Meeting Room which is proposed to be located within 3m of the South-Eastern boundary which will need protection in accordance with BCA cl. C3.4.

Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extent of fire protection required to the under-croft areas. The report will need to address BCA Performance Requirements CP1 & CP2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

<u>Note:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

- 19. <u>BCA cl. C3.4 Acceptable Methods of Protection:</u> Where protection of openings is required, doorways, windows and other openings must be protected externally as follows:
 - Doorways External wall- wetting sprinklers as appropriate used with doors that are self-closing or automatic closing; or -/60/30 fire doors that are self-closing or automatic closing.
 - Windows External wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or -/60/- automatic closing fire shutters.
 - Other openings Excluding voids internal or external wall-wetting sprinklers, as appropriate; or Construction having FRL not less than -/60/-.

<u>Note 1:</u> The rear roller shutter to the North needs devises to activate the shutter in fire mode located both externally to comply with BCA cl. C3.2 above and internally to comply with BCA cl. D1.7 below. Design team to ensure shutter mechanisms are carefully selected in this regard.

<u>Note 2:</u> Architectural details and specifications confirming extent of protection and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

20. <u>BCA cl. C3.8 – Openings in Fire Isolated Exits:</u> The doors to the fire isolated exits / passageways are required to be self-closing --/60/30 fire doors and where any window openings in the external wall of the fire isolated exits are located within 6m of other openings of the same building (unless other openings of the same stair), the window is to be protection in accordance with Clause C3.4.

<u>Note:</u> The discharge doors to the fire stairs need to be protected in accordance with C3.4.

- <u>BCA cl. C3.9 Service Penetrations in Fire Isolated Exits:</u> Fire isolated exits are not to be penetrated by any services other than electrical wiring for lighting, or security and essential services; ducting for stair pressurisation systems (if adequately fire separated from the remainder of the building) and water supply pipes for fire services.
- 22. <u>BCA cl. C3.10 Openings in Fire Isolated Lift Shafts:</u> The doors to the lift shafts are to be protected by doors having an FRL of -/60/- and comply with AS 1735.11.

In addition, if the lift call panels exceed 35000mm² they must be backed by construction with a rating of not less than --/60/60.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;

a) Rationalisation of FRL's to the lift entry doors being steel construction in lieu of --/60/-- min FRL's. this proposal needs to take into consideration the fire compartmentation strategy.

Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extent of fire ratings required to the list entry doors. The report will need to address BCA Performance Requirements CP2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

<u>Note:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

- 23. <u>BCA cl. C3.12 Openings in Floor and Ceilings:</u> Where services pass through a floor required to have an FRL or a ceiling with a resistance to the incipient spread of fire, the service must be located within a fire rated shaft complying with Table 3 of BCA Specification C1.1, or the service must be protected with appropriate fire seals conforming to BCA C3.15.
- 24. <u>BCA cl. C3.13 Openings in Shafts:</u> Openings to service shafts are required to be protected by --/30/30 panel (if in a sanitary compartment), or a self-closing --/60/30 fire door, or a --/60/30 access panel. If the shaft is a garbage shaft, a door hopper of non-combustible construction is permitted to be installed.
- 25. <u>BCA cl. C3.15 Openings for Service Installations:</u> Where service installations penetrate the walls or floors required to have an FRL with respect to integrity and insulation they are to be protected by fire seals having an FRL of the building element concerned. Fire seals are required to comply with Specification C3.15 and Manufacturers Specifications.

<u>Note 1:</u> BCA cl. C3.15 and AS1668.1 provides concessions for mechanical ducts in services shafts to have no fire rated bases on the premise these shafts contain no other services other than mechanical duct work. Where other services are proposed to be installed, the base of the mechanical shaft need to be fire rated and fire seals installed to all penetrations e.g. fire dampers, fire collars etc.

<u>Note 2:</u> Sprinkler design is to consider mechanical services shafts which are not proposed to be provided with a fire rated base and whether these require sprinklers in the shaft.

 <u>BCA Spec. C1.1 – Fire Resisting Construction</u>: The building is of Type A Construction and as such all new building elements will need to comply with the FRL's detailed in Section 3 and Table 3 of BCA Specification C1.1.

BUILDING ELEMENT	Class 5 & 7a	Class 7b
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is:		
For load bearing parts -		
Less than 1.5m	120/120/120	240/240/240
1.5 to less than 3m	120/90/90	240/240/180
3m or more	120/60/30	240/180/90
For non-load bearing parts -		
Less than 1.5m	/120/120	/240/240
1.5 to less than 3m	/90/90	/240/180
3m or more	//	//
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire source feature to which it is exposed is-		
Less than 3m	120//	240//
3m or more	//	//
COMMON WALLS & FIRE WALLS		240/240/240

Table 3 Type A Construction:

INTERNAL WALLS		
Fire Resisting lift and stair shafts –		
Loadbearing	120/120/120	240/120/120
Non-loadbearing	/120/120	/120/120
Ventilating, pipe, garbage, and the like shafts not used for the discharge of hot products of combustion –		
Loadbearing	120/90/90	240/120/120
Non-loadbearing	/90/90	/120/120
OTHER LOADBEARING INTERNAL WALLS & COLUMNS	120//	240//
FLOORS	120/120/120	240/240/240
ROOFS	Non- Combustible	Non- Combustible

Figure 7 – Summary of Table 3 of BCA Spec C1.1 (Source: NCC/BCA Volume 1)

Additional Summation of Notes / Requirements

<u>Note 1:</u> All <u>external walls</u> must be non-combustible construction and achieve an FRL in line with Table 3 above.

<u>Note 2:</u> All <u>fire resisting walls</u> are also to be non-combustible and achieve an FRL in both directions. (Generally, all external load bearing walls irrespective of distance <u>and</u> non-load bearing walls and columns within 3m of the fire source features must achieve 240 mins).

<u>Note 3:</u> All <u>load bearing internal walls</u> including loadbearing shaft walls and fire walls are to be concrete or masonry construction and generally achieve FRL's of 240 mins.

<u>Note 4:</u> Any required <u>fire walls</u> are to extend to the underside of the floor next above or if on the top storey, they must extend to the underside of a roof structure. Fire walls are to achieve an FRL of 240/240.

<u>Note 5:</u> All <u>floors structures</u> must be non-combustible construction and generally achieve FRL's of 240 mins.

<u>Note 6:</u> The walls to all <u>fire rated shafts</u> must achieve the fire rating from both directions i.e. from inside and outside the shaft.

<u>Additionally, all shafts are required to be enclosed</u> at the top and bottom with fire rated construction having an FRL similar to the shaft. See subclause 2.7 for exemptions to this clause for services shafts that project beyond the roof.

<u>Note 7:</u> The use of <u>structural steel columns & beams supporting floors and/or in bedded in the external walls</u> are required to achieve 240 mins FRL's. Internal columns on the top level supporting the roof only require 60/60/60 mins FRL's.

Note 8: The use of internal <u>structural steel columns supporting roof top</u> are required to achieve 60/60/60 mins FRL's. External load bearing columns require 240/240/240 mins FRL's.

<u>Note 9:</u> The <u>roof structure</u> need not achieve an FRL and only needs to be non-combustible due to sprinklers being proposed throughout.

<u>Note 10:</u> All designers are to review BCA Specification C1.1 for further clarifications regarding required Fire Resistance Levels. Departures are to be addressed under Performance Based Alternative Solutions.

In this regard, the following areas have been identified as areas which would be necessitating further design consideration and/or justification from the project fire safety engineer;

a) Rationalisation of FRL's to all key building elements throughout the building i.e. floors, external walls, stair and lift shafts, concrete & steel columns, etc. Refer to Fire Compartment Plans above.

Fire Engineered Performance Solution: Similar to the discussions under BCA Clauses C2.7, C2.8 and C2.9 above, it is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extent of fire ratings required to building elements throughout the building. The report will need to address BCA Performance Requirements CP1 & CP2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

Note: Architectural Details confirming extent of FRL's, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

Section D – Access and Egress:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section D of the BCA subject to the compliance with the following:

 <u>BCA cl. D1.2 – Number of Exits Required:</u> The building is required to be provided with a minimum of one (1) exit from each above ground level storey and a minimum of two (2) exits from each basement level.

In this regard, the following designated exits are proposed from each respective level;

- Ground Floor (x2) Sth Main entrance Doorway and Rear Fire isolated Passageway
- First Floor Level (x2) North Fire Stair and South Fire Stair
- Second Floor Level (x2) North Fire Stair and South Fire Stair
- Third Floor Level (x2) North Fire Stair and South Fire Stair
- Fourth Floor Level (x2) North Fire Stair and South Fire Stair

Note: In this regard, it is considered that the building generally complies with the minimum number of exit provisions of D1.2

28. <u>BCA cl. D1.3 – When Fire Isolated Exits are Required:</u> Given the buildings egress stairs will pass through more than 3 storeys in the sprinkler protected building, the stair is required to be contained within a fire rated shaft achieving minimum FRL's in line with those applicable to each part as per BCA Specification C1.1 above.

<u>Note:</u> Architectural Details confirming extent of FRL's, to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

 <u>BCA cl. D1.4 – Exit Travel Distances:</u> In accordance with the provisions of this clause, no point on the floor must be more than 20 metres from a single exit or a point of choice where travel in different directions is available. Where alternative exits are available the total distance may be increased to 40m accordingly.

In this regard, the following areas have been identified as areas which would be necessitating further design consideration and/or justification from the project fire safety engineer;

a) Egress distances from the furthest point of the floor to the nearest exits across all levels are up to 45m (in lieu of 40m).

Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extended egress distances accordingly. The report will need to address BCA Performance Requirements DP4 & EP2.2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

Note: Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

30. <u>BCA cl. D1.5 – Distances Between Alternative Exits:</u> The distance between alternative exits within the building must not exceed 60 metres and/or be located less than 9m apart.

In this regard, the following areas have been identified as areas which would be necessitating further design consideration and/or justification from the project fire safety engineer;

a) Egress distances between alternative exits when measured back through the point of choice are up to 76m (in lieu of 60m) on the Ground Floor and 87m (in lieu of 60m) on the above Ground Levels.

Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the extended egress distances accordingly. The report will need to address BCA Performance Requirements DP4 & EP2.2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

Note: Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

31. <u>BCA cl. D1.6 – Dimensions of Exits and Paths of Travel to Exits:</u> The unobstructed height throughout an exit or a path of travel to an exit must be not less than 2 metres, except for doorways which may be reduced to not less than 1980mm. In addition, the unobstructed width of an exit or a path of travel to an exit must be not less than 1 metre or the required exit width determined under D1.6.

It is considered that the proposed design of the base building complies with the egress width provisions of D1.6. Furthermore, there are ample exits to permit future internal configurations which will not compromise compliance.

32. <u>BCA cl. D1.7 – Travel Via Fire Isolated Exits:</u> A fire stair is required to discharge directly to the road or open space unless otherwise within the confines of the building utilised solely for pedestrian or vehicle access and where the subject area is open for at least 2/3 and is within 20m to open space.

In addition to the above requirements, where a path of travel from the point of discharge from a fire isolated exit necessitates passing within 6m of any external wall or opening within an external wall of the same building (measure horizontally at right angles), that part of the wall must achieve a minimum FRL of 60/60/60 mins and any opening protected <u>internally</u> in accordance with BCA Clause C3.4 i.e. fire shutters, or drenchers etc.

Furthermore, where a fire isolated exit or passageway is provided, there must be no more than 3 access doors serving that exit on each level unless otherwise they are via air locks or public lobbies or the like. A tenancy or plant room cannot open directly into to a fire isolated stairway or passageway in this regard.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;

- a) South Fire Stair The stair discharge location necessitates passing within 6m of the external openings of the Ground Floor to reach the roadway.
- b) Northern Fire Passageway The fire isolated passageway discharges location necessitates passing by the roller shutters to the driveway. The roller shutter therefore requires protection which is activated from a fire internally. Note. The shutter also needs external activation due to proximity to boundary.

Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the discharge of exit provisions and extent of protection requirements accordingly. The report will need to address BCA Performance Requirements DP4, DP5 & EP2.2 and carefully consider occupant evacuation and fire brigade intervention in the event of a fire.

Note: Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

33. <u>BCA cl. D1.10 – Discharge from Exits:</u> Upon egress occupants must have suitable paths of travel including compliant stairways and ramps (where required) between the building and the Roadway. Graded surfaces must not be steeper than 1:8 and pedestrian egress ramps require handrails.

<u>Note:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

34. <u>BCA cl. D1.13 – Number of Persons Accommodated:</u> Clause D1.13 and Table D1.13 provide a method which may be 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.

In this regard, we note that the building has ample exits to accommodate the expected population numbers proposed within the building.

- 35. <u>BCA Part D2 Construction of Exits:</u> The stair treads and risers, stair landings, door thresholds, balustrades and handrails are to comply with the provisions of these clauses. Further details will be required prior to issue of the Construction Certificate.
- 36. <u>BCA Part D2.2 Fire Isolated Stairways and Ramps:</u> A stairway required to be located in a fire resisting shaft must be constructed from non-combustible construction and if there is structural failure it must not impair the fire resisting performance of the shaft.
- 37. <u>BCA cl. D2.7 Installations in Exits and Paths of Travel</u>: Services or equipment comprising electricity meters, distribution boards, central telecommunication distribution boards/equipment, electrical motors or other motors serving equipment in the building, can be installed in a corridor or the like, leading to a required exit if the services or equipment are enclosed with non-combustible construction or appropriate fire-protection covering and doorways suitably sealed against smoke spread from the enclosure.
- 38. <u>BCA cl. D2.11 Pedestrian Ramps:</u> Pedestrian ramps located between the discharge locations from the fire stairs and the Road must be no steeper than 1:8 and these gradients need to be detailed on the Construction Certificate drawings.
- 39. <u>BCA cl. D2.13 Treads and Risers:</u> The stairs must comply with the tread, riser and going dimensions of this clause and the nosing of the stairs must be provided with a non-slip treads and meet the provisions of AS1428.1-2009.

The following will apply in relation to the construction of all stairways:

- Stairway must have not more than 18 and not less than 2 risers in each flight.
- Goings and risers within the stair flights must be constant throughout each flight.
- Off-set treads between flights are to be provided refer to A\$1428.1-2009.
- Goings and risers are to be in accordance with BCA Table D2.13 i.e.:

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

Detail 8 - Tread and riser dimensions (Source: BCA Table D2.13 Volume 1)

- Risers must be solid construction with no gaps and treads must have non-slip finishes and stair nosings in accordance with BCA Part D3 and A\$4586-2013 and A\$1428.1-2009.

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
Nosing or landing edge strip	Р3	P4

Detail 9 - Slip Resistance Classifications (Source: BCA Table D2.14 Volume 1)

<u>Note:</u> Architectural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

- 40. <u>BCA cl. D2.14 Landings:</u> A review of the plans has confirmed that landings are compliant throughout. Notwithstanding the above, compliance is to be ensured when introducing the smoke barriers and doors to address the compliance departures referenced under D2.4 above.
- <u>BCA cl. D2.15 Thresholds:</u> Doors must not have a ramp or step closer to the door that the width of the door leaf except where opening to open space, where the change in level may be a maximum of 190mm.

Note: Threshold ramps are permitted where door open directly to a road or open space and not in any cases.

- 42. <u>BCA cl. D2.16 Balustrades or other barriers:</u> Balustrades throughout are to comply with the provisions of this clause. The following summary is provided for your ease of reference;
 - All balustrades generally must achieve a minimum of 1m in height above any fall more than 1m with no gaps greater than 125mm.
 - In addition, where the fall exceeds 4 metres the balconies must not have any climbable elements (on the barrier or within 1.0m of the barrier) located between 150mm and 760mm above the floor which can serve as climbable elements and footholds for children.
 - For fire stairs, where the fall exceeds 1m, the balustrading must be a minimum of 865mm above the nosing of the tread with a rail no more than 150mm above the line of the nosing of the tread and no gaps greater than 460mm there above. At the landing of stairs where the landing exceeds 500mm in length the balustrade must be increased to 1m in height, with a rail no more than 150mm above the landing and no gaps greater than 460mm.
 - Glass balustrades are to comply with A\$1170 & A\$1288-2006 requiring interlinking rails and end point fixtures. NB: No frameless glass balustrades are permitted.

<u>Note:</u> The Architectural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

- 43. <u>BCA cl. D2.17 Handrails:</u> A handrail is required along one side of <u>all</u> proposed stairways located a minimum of 865-mm above the stair nosing and 1.0m above landings greater than 500mm. The handrail must also be continuous between flights. Please note the additional handrail requirements for stairs required to be accessible under AS1428.1-2009.
- 44. <u>BCA Clause D2.18 Fixed Platforms, walkways, stairways and ladders:</u> Access to the roof top plant deck must be via a compliant ladder which complies with AS1657-2013.

Note: Architectural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

45. <u>BCA cl. D2.20 – Swinging Doors:</u> A swinging door in a required exit or forming part of a required exit must be installed to the requirements of this clause which requires all doors to swing in the direction of egress unless they serve certain tenancies with floor areas less than 200m² and the doors are the only exits from that space.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Fire Safety Engineer;

- a) Ground Floor (Nth) The door leading to the fire isolated passageway will be inward swinging to ensure it doesn't obstruct egress internally.
- b) Ground Floor (Sth) The final discharge door leading into the under-croft needs to swing in the opposite direction (outwards).

Fire Engineered Performance Solution: It is understood that the design team has engaged a Fire Safety Engineer to develop a Performance Based Solution to rationalise the directional door swings. The report will need to address BCA Performance Requirements DP2 and EP2.2 and carefully consider occupant evacuation.

<u>Note:</u> Architectural Details, design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

46. <u>BCA cl. D2.21 - Operation of Latch</u>: A door in a required exit or in a path of travel to an exit must be readily openable from the side facing a person seeking egress, by a single hand downward action or pushing action on a device located between 900mm and 1100mm above finished floor level. The hardware is to also comply with Section 13 of AS1428.1-2009 (as applicable to the use).

Note: In this regard, the individual storage units are considered sole occupancy units with floor areas less than 200msq. as such the proposed roller shutters are permitted in this regard.

47. <u>BCA cl. D2.23 – Signs on Doors:</u> The doors to the fire isolated exits are to have signage located on the outside of the fire isolated exit stating "Fire Safety Door, Do Not Obstruct, Do Not Keep Open".



Where they are proposed to be held open with magnamatic devices they are to state "Fire Safety Door - Do Not Obstruct" (on both sides of the door). In addition, the discharge doors from the fire stairs are to also have signage located on either side of the door stating "Fire Safety Door – Do Not Obstruct".

FIRE	SAF	ETY	DOOR
	DO NOT	OBSTRU	СТ

All signage is to have lettering not less than 20-mm in height.

Statutory fire exit signage "Offences Relating to Fire Stairs" is also to be erected adjacent each fire door on the outside in accordance with Clause 183 of the EP & A Regulation 2000.



48. <u>BCA Part D3 - Access for People with a Disability</u>: Access and facilities for people with disabilities will need to be provided to satisfy the requirements of Part D3 of the BCA & A\$1428.1-2009, and the Access to Premises – Buildings Standards 2010 satisfying the client's obligations under the DDA. Under Table D3.1, the subject building must be accessible as follows:

Class of Building	Access Requirements
Class 5, 7a & 7b	To and within all areas normally used by the occupants.

In this regard, the above and below details are to be noted on the Construction Certificate documentation and complied with during construction of the development;

- Access from the street to the principal pedestrian entrance of the building is to be provided in accordance with AS1428.1-2009. External accessible paths / thoroughfares providing access to the building are to be noted with compliant gradients and landings at entry doors etc. This includes accessible paths of travel between the accessible carparking space and the building.
- The door to the main entrances and to doors in areas required to be accessible within the building are required to have a clear width of not less than 850mm and satisfy the circulation space requirements under AS 1428.1 2009.

<u>Note:</u> Where an entry door is proposed to have multiple door leaves (except an automatic opening door) <u>one of the door leaves</u> must have a clear width of not less than 850mm.

- The circulation space around all accessible swinging and sliding doors is required to comply with Clause 13.3 and Figure 31 of AS 1428.1-2009. Circulation space requirements are to be detailed on the CC drawings refer to Section 13 of AS1428.1-2009.
- All door handles and related hardware to swinging doorways are required to be a type 'D' handle which allows the door to be unlocked and opened with one hand in accordance with Clause 13.5.2.
- 30% luminance contrasts are to be provided to all new doorways e.g. contrasting between door leaf & jamb; or door leaf & wall; or architrave & wall; or door leaf & architrave and/or door jamb & adjacent wall. Please ensure the office components comply in this regard.
- All frameless glass panels or fully glazed doors on an accessway are to be clearly marking in accordance with AS 1428.1. In this instance, all frameless glass panel or fully glazed doors, including glazing capable of being mistaken for a doorway or opening, shall be marked with a full width solid non transparent contrast line not less than 75mm wide is required to be located between 900mm and 1000mm above floor level.
- All the stairs are to be provided with contrast stair nosing's between 50 and 75mm deep across the full width of the path of travel. The strip may be set back 15mm from the front of the nosing and must possess a minimum luminance contrast of 30% to the background. The strip must not extend down the riser more than 10mm.
- Fire Stairs need to comply with BCA Clause D2.17(a)(iii)(vi) & Clause D3.3(a)(iii) which require compliance with AS1428.1-2009 clause 12 and 11(f) & (g) respectively i.e. nosings, handrail design etc.
- Stair treads in the fire stairs will need to be off-set as per the diagrams in AS1428.1-2009.
- Accessways must have passing spaces complying with AS 1428.1 at maximum 20 metre intervals on those paths of travel where a direct line of sight is not available, and turning spaces within 2 metres of the end of a path of travel and at maximum 20 metre intervals (corridor width of 1540mm x 1800mm required).
- External and internal surfaces are to comply with Section 7 of AS1428.1-2009.
 - Walking surfaces to be slip resistant and certification in respect to the slip resistance of any tiles and vinyl will be required at the Occupation Certificate stage to verify compliance with AS/NZS 4586.
 - Any proposed carpets within the building are to have a pile height or pile thickness not exceeding 11mm and the carpet backing thickness shall not exceed 4mm (total thickness shall not exceed 15mm).
- Braille tactile signage is to be provided to all sanitary facilities and ambulant facilities. In addition, the signage to the accessible facilities is to also identify the facility for left & right-handed use.
- Braille signage is also required in accordance with the new BCA 2013 provisions at every designated exit door provided with an Exit sign required under E4.5 and state "Exit Ground".
- Tactile indicators are to be provided to all stairs and ramps in the site. In addition, tactile indicators or another type of barrier will need to be provided around the stair obstruction where the stair is less than 2 metre above floor level. Tactiles are also required between the shared zone and vehicular driveway.
- Accessible sanitary facility to comply with Section 15 of AS1428.1-2009.
- Ambulant facilities (where required) are to comply with Section 16 of AS1428.1-2009
- The carparking areas and the accessible car spaces are required to satisfy the requirements of AS/NZS2890.6. In this regard, one space for every 100 car spaces is required and compliance is achieved.

- Areas that would be considered inappropriate because of the particular purpose for which the area is used or where it would pose a health or safety risk for people with a disability access is not required to be provided and written confirmation will be required by the client e.g. plant areas etc.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification via Performance-Based Alternative Solutions by the project Access Consultant;

- g) <u>Site access</u> details demonstrating compliant grades are to be noted on the drawings for the review and comment of the access consultant. Circulation space to be achieved at the entry gates near the sliding gates on the driveways.
- h) <u>Wheelchair Access</u> There appears to be no dedicated wheelchair access route and therefore the vehicular driveway is the only means of wheelchair entrance to the building. In this regard the grades of the driveway need to be shown on the CC plans and hatched accordingly.
- i) <u>Stairways/Tactiles –</u> Required Stairways will need to be AS1428.1 compliant and have details to be provided at the Construction Certificate stages ensuring there is sufficient space within the property.
- j) <u>Storage Units</u> Equitable access needs to be provided to individual storage unit entrances which have roller shutters and the access consultant is to review and comment on door latch hardware provisions in this regard which will no doubt necessitate Management in Use procedures to be developed.
- k) <u>Doorway Circulation at Under-croft Entrance</u> The entry doors facing the under-croft could be compromised by a stationary vehicle in the parking space directly in front of these doors and it is recommended wheel stops and bollards are designed accordingly.
- 1) <u>Accessible Facilities –</u> it is understood there will be no more than 10 occupants working at the facility at any given time and as such the single unisex facility is considered adequate in this regard.

Accessibility Performance Solution: Notwithstanding the above, it is understood that the design team will obtain a Performance Based Solution prepared by an Accessibility Consultant to address any of the departures accordingly. In this regard, the report will need to demonstrate compliance with BCA Performance Requirement DP1 and be prepared to the satisfaction of the Accredited Certifier at the Construction Certificate stage.

Note: Architectural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application. It is also recommended that the detailed accessibility compliance report accompanies the Construction Certificate application.

Section E – Essential Fire Safety Measures:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section E of the BCA subject to the compliance with the following:

Refer to <u>Appendix 1</u> for a table of the relevant Essential Fire and Other Safety Measures applicable which is to be read in conjunction with the following;

25. <u>BCA cl. E1.3 – Fire Hydrants</u>: A fire Hydrant system is required to be provided in a building with a total floor area greater than 500m² and the system is to be designed to comply with AS2419.1-2005 and Fire & Rescue NSW operational requirements.

The location of the hydrant booster will need to be in sight of the main entrance of the new building and adjacent to the vehicular entrance as such as per the provisions of AS 2419.1-2005. The fire booster must be located greater than 10m from any substation/kiosk, gas storage/meters and other hazardous materials. This includes gas metres and regulators.

Any Internal Hydrants are to be located within the fire isolated stairways at the landing of the storey they serve. In addition, if floor coverage cannot be achieved supplementary fire hydrants (daisychain arrangements) may be provided to suit the operational requirements of the NSW Fire Brigades. Any 'required' hydrant pump room is required to have a door opening to a road or open space, or a door opening direct into a fire isolated airlock connected to a fire stair. The hydrant pump room need to be accessible directly from open space or from a fire stair.

In this regard, the following matters have been identified as DTS departures that will be requiring further consideration at the Construction Certificate application stage:

- a) The fire hydrant booster assembly is located within 10m of the external walls and does not have a radiant heat shield provided on each side of the booster assembly achieving a minimum FRL of 90/90/90 mins.
- b) FRNSW require boosters to be parallel to the street front and the current proposals suggests perpendicular installations.
- c) Internal hydrants are required to provide coverage to areas where coverage from the fire stair installations is not achieved.
- d) Internal hydrants must ensure they are not obstructed by parking spaces or the like and it is to be ensured a minimum of 1.0m is maintained at all times.
- e) The fire services engineers are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

Fire Engineered Performance Solution: It is understood that the design team will pursue a Performance Based Solution to rationalise the booster assembly arrangements. The report will need to address BCA Performance Requirement EP1.3 and carefully consider fire brigade intervention.

<u>Note 1:</u> The fire services design engineer must demonstrate that they are Competent Fire Safety Practitioner (CFSP) and either be an NER service design engineer or be on the interim register of the Fire Protection Association Australia (FPAA). Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

Note 2: We understand pressures from the street are sufficient to negate the need for a pump room.

<u>Note 3:</u> Architectural & Fire Services details and design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

26. <u>BCA cl. E1.4 – Hose Ree</u>ls: A fire hose reel system is required to serve a building where one or more internal fire hydrants are installed or in a building where the floor area greater than 500m² and the system is to be designed to comply with AS 2441 – 2005.

Hose reels are required to be located within 4 metres of an exit or adjacent to internal Hydrants. Hose reel enclosures are to be sign posted and they must not obstruct egress paths required by BCA cl. D1.6 above. In addition, Fire Hose Reels must be located so that the hose will not pass through doorways fitted with a fire door, other than a door associated with Clauses C2.12, C2.13, C3.11 and C3.13.

<u>Note 1:</u> The fire services design engineer must demonstrate that they are Competent Fire Safety Practitioner (CFSP) and either be an NER service design engineer or be on the interim register of the Fire Protection Association Australia (FPAA). Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

<u>Note 2:</u> Architectural & Fire Services details and design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

49. <u>BCA cl. E1.5 – Sprinklers:</u> A sprinkler system must be installed in the building and comply with Table E1.5, Specification E1.5 and installed in accordance with AS2118.1-2017.

The sprinkler valves are to be enclosed in a secured room and be accessible directly from the road and open space.

In this regard, the following areas have been identified as matters which may be requiring further design consideration and/or justification by the project Fire Safety Engineer;

- a) The fire sprinkler booster assembly is located within 10m of the external walls and does not have a radiant heat shield provided on each side of the booster assembly achieving a minimum FRL of 90/90/90 mins.
- b) FRNSW require boosters to be parallel to the street front and the current proposals suggests perpendicular installations.
- c) The sprinkler valve room has not been detailed on the plans and is to be in a location which is accessed directly from open space.
- d) We understand that an alternative type sprinkler head will be utilised which permits a reduced clearance of 300mm (in lieu of 500mm) beneath the sprinkler heads (Tyco flat head sprinklers) however these are contrary to the provisions of AS2118.1-2017.
- e) The fire services engineers are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

Fire Engineered Performance Solution: It is understood that the design team will pursue a Performance Based Solution to rationalise the booster assembly arrangements and use of the Tyco Flat Head sprinkler heads. The report will need to address BCA Performance Requirement EP1.4 and carefully consider fire brigade intervention.

Note 1: The fire services design engineer must demonstrate that they are Competent Fire Safety Practitioner (CFSP) and either be an NER service design engineer or be on the interim register of the Fire Protection Association Australia (FPAA). Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

<u>Note 2:</u> We understand pressures from the street are sufficient to negate the need for a pump room.

<u>Note 3:</u> Architectural & Fire Services details and design certification and Fire Safety Engineering Report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

27. <u>BCA cl. E1.6 – Portable Fire Extinguishers:</u> Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444-2001 and also to protect buildings that don't have fire hose reel coverage.

<u>Note:</u> Architectural details and Design Certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

- <u>BCA cl. E1.9 Precautions during Construction</u>: The appointed builder must ensure that prior to the building passing an effective height of 12m, that appropriate fire hydrants, hose reels and extinguishers are available.
- <u>BCA cl. E2.2 Smoke Hazard Management:</u> Class 2 to 9 buildings must comply with the provisions of the Clause / Specification and Tables within to manage smoke during a fire. Smoke hazard provisions apply to buildings and are to be installed in accordance with Table E2.2a & E2.2b as applicable.

The building will be provided with an automatic fire suppression system (sprinklers) throughout and the system will be installed in accordance with AS2118.1-2017.

A Clause 7 Building Occupant Warning system must be provided **THROUGHOUT THE BUILDING** in accordance with A\$1670.4-2018

A fire indicator panel needs to be installed at the **MAIN ENTRANCE** of the building and within close proximity of the fire hydrant booster assemblies. System Monitoring will also be required with back to base interface as per Clause 7.

Mechanical ventilation systems in the building are required to be designed in accordance with AS/NZS 1668.2-2012 (A/C systems) and will need to be interfaced to the FIP to auto shut down on activations of the buildings fire alarms.

<u>Note 1:</u> The fire services design engineer must demonstrate that they are Competent Fire Safety Practitioner (CFSP) and either be an NER service design engineer or be on the interim register of the Fire Protection Association Australia (FPAA). Furthermore, the designer must have suitable qualifications in the respective fields they are designing to, and their design details and certifications are to identify any shortfalls or departures associated with the either the BCA or the relevant Australian Standards.

<u>Note 2:</u> Architectural & Fire Services details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

50. <u>BCA Clause E3.2/E3.8 – Stretcher Lift:</u> Stretcher lifts are required to serve each storey. As such the lift is required to have a clear space of not less than 600mm wide x 2000mm long x 1400mm high.

Note: The Detailed lift specifications and design certification is to be provided at the CC stages.

- 51. <u>BCA cl. E3.3 Warning Against use of Lifts in Fire:</u> Signage "DO NO USE LIFT IF THERE IS A FIRE" is to be provided near the lift call button in letters not less than 10-mm in height.
- 52. <u>BCA cl. E3.6 Facilities for People with Disabilities:</u> As the lifts are required to be provided for disabled access they must be compliant with a lift specified under Table E3.6a (as appropriate) and the provisions of AS1735.12 as follows:
 - Have complying handrails.
 - Have minimum internal floor dimensions of 1400 x 1600mm.
 - Have doors with a minimum clear.
 - Be fitted with a series of door opening sensory devices / passenger protection devices.
 - Upper lift landing door requirements.
 - Have lift and landing control buttons.
 - Appropriate lighting provisions and audible and visual indications, and
 - Emergency hands free communication devices.

Note: Lift supplier details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

- 53. <u>BCA cl. E3.7 Fire Service Control:</u> The lifts serving storeys above an affective height of 12 metres must be provided with fire service controls. Confirmation is required from the Lift Contractor.
- 54. <u>BCA cl. E4.2 & E4.4 Emergency Lighting:</u> Emergency Lighting is required in the building in accordance with AS 2293.1-2018.

<u>Note</u>: Architectural & Fire Services details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction application.

55. <u>BCA cl. E4.5 & E4.6 – Exit Signs:</u> Exit signs 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. Signs are required to comply with AS 2293.1-2018.

In this regard, it noted that new emergency exit sign installations will be installed to provide compliant coverage in the proposed building.

<u>Note</u>: Architectural & Fire Services details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

BCA Section F - Health & Amenity:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section F of the BCA subject to the compliance with the following:

56. <u>BCA Clause F1.0 – External Wall Weatherproofing</u>: The buildings external walls and features are to be designed to prevent the penetration of moisture and water in accordance with BCA Performance Requirement FP1.4 and the design criteria under Volume 2 can be used as a guide.

<u>Note:</u> Architectural details and design certification/performance solution report to the satisfaction of the Accredited Certifier are to be provided with the Construction Certificate application.

- 57. <u>BCA cl. F1.1 Stormwater Drainage:</u> Stormwater drainage must be installed as per AS 3500.3 -2003. All plumbing works are to comply with BCA Volumes 1 and 3.
- 58. BCA cl. F1.5 Roof Coverings: All new roofing must be covered with
 - Metal roof sheeting comply with AS 1562.1
 - Plastic roof sheeting complying with AS/NZS 4256 parts 1, 2 3 and 5 and AS/NZS 1562.3
- <u>BCA cl. F1.6 Sarking:</u> Sarking must be installed to roof and walls for weatherproofing as per AS/NZS 4200.1 and 2 1994. Damp proofing between external abutting walls of any adjacent buildings is also to be considered.
- 60. <u>BCA cl. F1.7 Waterproofing of Wet Areas:</u> Wet areas in the building are required to comply with AS 3740-2004.
- 61. <u>BCA cl. F1.9 & F1.10 Damp Proofing:</u> Compliance with the provisions of the BCA and the referenced Australian Standard is required.
- 62. <u>BCA cl. F1.13 Glazed Assemblies:</u> Glazed assemblies in an external wall of a building are required to comply with AS 2047 requirements for resistance to water penetration. All other glazing installations are to comply with AS1288-2006 and full height glazing is to be toughened glass and provided with decals/motifs.
- 63. <u>BCA cl. F2.3 Facilities in Class 3 to 9 Buildings:</u> This clause provides the requirements for sanitary facilities to be installed in Class 3, 5, 6, 7, 8 and 9 buildings in accordance with Table F2.3.

<u>Note</u>: Final Confirmation of total population numbers, Architectural details and accessibility report to the satisfaction of the Accredited Certifier are to be provided with the Construction application.

- 64. <u>BCA cl. F2.4 Facilities for People with Disabilities:</u> The accessible WC's must be designed in accordance with the requirements of Section 15 of AS 1428.1-2009. Additionally, the Ambulant Facilities need also comply with Section 16 of AS1428.1-2009. In this regard, there is less than 10 persons expected to occupy the building and the single accessible sanitary facility complies.
- 65. <u>BCA cl. F2.5 Construction of Sanitary Compartments:</u> The door to fully enclosed sanitary facilities must open outwards, slide or be readily removable from the outside unless there is a clear space of 1.2 metres measured in accordance with figure F2.5.

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 F2.5 between the closet pan within the sanitary compartment and the doorway.

66. <u>BCA cl. F3.1 – Height of Rooms:</u> The floor to ceiling heights in the commercial parts of the building must not be less than 2.4 metres in habitable rooms and 2.1 metres in the bathrooms and storerooms.

In addition, the floor to ceiling height in car parking areas must be not less than 2.2 metres to comply with BCA minimum requirements and AS2890.1 the carparking design standard. Floor to ceiling heights in the remainder must be 2.4 metres generally in retail space and store areas, toilets and corridors etc may be 2.1-metres.

Note: Architectural details and design certification to the satisfaction of the Accredited Certifier are to be provided with the Construction application.

67. <u>BCA cl. F4.4 – Artificial Lighting:</u> Artificial lighting is required where it is necessary to minimise the hazard to occupants during an emergency evacuation. In this regard, we note that artificial lighting is required throughout the building in accordance with AS/NZS 1680.0-2009

<u>Note</u>: Design statement to the satisfaction of the Accredited Certifier is to be provided with the Construction Certificate application.

 <u>BCA cl. F4.5 – Ventilation of Rooms:</u> The building is required to be provided with either mechanical ventilation complying with A\$1668.2-2012 or natural ventilation achieving 5% of the floor area of the room served.

Note 1: In this regard we note that the self-storage areas will require further design consideration to demonstrate how it is proposed to ventilate the spaces. Generally, ventilation of access corridors is sufficient, and the storage compartments themselves are considered to be excluded from requiring ventilation as they are considered spaces of a specialised nature occupied neither frequently nor for extended periods.

<u>Note 2:</u> Mechanical engineer to confirm whether ventilation design is performance based or compliant with A\$1668.2-2012. Design statement to the satisfaction of the Accredited Certifier is to be provided with the Construction Certificate application.

69. <u>BCA cl. F4.8 – Restrictions on locations of Sanitary Facilities:</u> A sanitary compartment must not open directly to a workplace normally occupied more than one (1) person.

In this regard compliance is readily achieved.

70. <u>BCA cl. F4.11 – Carparks:</u> The carpark areas are required to be ventilated in accordance with AS 1668.2 – 2012 or Section 4 of AS1668.4.

Note: The current carpark design does not meet the open deck carpark provisions and mechanical systems will be required.

Open-deck carpark means a carpark in which all parts of the parking *storeys* are cross-ventilated by permanent unobstructed openings in not fewer than 2 opposite or approximately opposite sides, and—

- (a) each side that provides ventilation is not less than $\frac{1}{6}$ of the area of any other side; and
- (b) the openings are not less than $\frac{1}{2}$ of the wall area of the side concerned.

<u>Note</u>: Design statement to the satisfaction of the Accredited Certifier is to be provided with the Construction application.

BCA Section G - Health & Amenity:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section G of the BCA subject to the compliance with the following:

71. <u>BCA cl. G1.01 (NSW) – Provision for Cleaning of Windows</u>: A building must provide a safe manner of cleaning windows located 3 or more storeys above ground level. In this regard, the windows must be able to be cleaned from within the building, or provisions made for cleaning of windows by a method complying with the OH&S Act 2000 and regulations made under the Act e.g. roof anchors etc.

<u>Note:</u> Design statement to the satisfaction of the Accredited Certifier is to be provided with the Construction Certificate application

BCA Section J – Energy Efficiency

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section J of the BCA subject to the compliance with the following:

72. <u>BCA Section J Energy Efficiency</u>: The proposed building will be subject to the Energy Efficiency requirements under this section. In this regard the applicable requirements include J1 – Building Fabric, J2 – External Glazing, J3 – Building Sealing, J5 – Air Conditioning and Ventilation Systems, J6 – Artificial Lighting and Power, J7 – Hot Water Supply and J8 – Access for Maintenance.

The building is located in Climate Zone 5 and the relevant provisions of the BCA are to be applied to each classification concerned adoringly.



Figure 10 – Section J Climate Zones (Source: NCC/BCA Climate Zone Map)

In this regard, it is understood that only the office parts of the Building will be a conditioned space with all other storage areas only being served by supply air systems (not heating or cooling systems) as such, in accordance with the BCA definitions below, it ocnside4rd that J1, J2 and J3 do not apply to the storage building parts.

Envelope , for the purposes of Section J, means the parts of a building's *fabric* that separate a conditioned space or habitable room from—

- (a) the exterior of the building; or
- (b) a non-conditioned space including-
 - (i) the floor of a rooftop plant room, lift-machine room or the like; and
 - (ii) the floor above a *carpark* or warehouse; and
 - (iii) the common wall with a carpark, warehouse or the like.
- **Conditioned space** means a space within a building, including a ceiling or under-floor supply air plenum or return air plenum, where the environment is likely, by the intended use of the space, to have its temperature controlled by *air-conditioning*, but does not include—
 - (a) a non-habitable room of a Class 2 building or Class 4 part of a building in which a heater with a capacity of not more than 1.2 kW or 4.3 MJ/hour provides the airconditioning; or
 - (b) a space in a Class 6, 7, 8 or 9b building where the input energy to an airconditioning system is not more than 15 W/m² or 15 J/s.m² (54 KJ/hour.m²); or
 - (c) a lift shaft.

Air-conditioning , for the purposes of Section J, means a *service* that actively cools or heats the air within a space, but does not include a *service* that directly—

- (a) cools or heats cold or hot rooms; or
- (b) maintains specialised conditions for equipment or processes, where this is the main purpose of the *service*.

<u>Note 1:</u> The provisions of Section J in BCA 2019 come into effect for all Construction Certificate applications submitted post 30 April 2020.

<u>Note 2</u>: In order to demonstrate compliance, it is understood that a Section J report and Verification report from an ESD Consultant will be submitted with the Construction Application. Glazing calculators to accompany reports.

General /Safety in Design Requirements:

- 73. External and internal surfaces are to comply with the slip resistance criteria referenced under AS/NZS 4586-2013.
- 74. All safety and toughened glazing needs to have permanently affixed labels as required by AS1288 2006.
- 75. Roof anchoring systems and roof access provisions for the elevated planter beds need to comply with Work, Health and Safety legislation, Work Cover requirements, AS1657 -2013 etc.
- 76. External carpark areas including driveways, turning circles and car spaces are to comply with AS2890.1 -2004 and AS2890.6-2009.
- 77. Shared wheelchair access and vehicular access ways are to be delineated with hatched markings and safety signage.
- 78. Areas where occupants could trip, fall and cause injury (over and above areas listed in the BCA) should be provided with suitable barriers and signage.

4. CONCLUSION

This report contains an assessment of the referenced architectural documentation for the proposed development located at 4 Cross Street Brookvale NSW, against the Deemed-to-Satisfy provisions and Performance Requirements of the National Construction Code Series (Volume 1) Building Code of Australia 2019.

The detailed desktop assessment of the building was carried out against the technical provisions of the BCA. It is noted that the proposed development must comply with the relevant requirements and this can be achieved by complying with the following:

- a) Complying with the Deemed-to-satisfy (DTS) Provisions; or
- b) Formulating a Performance Solution which considers one or more of the BCA Assessment methods and 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 the above.

In view of the above assessment, we can confirm that subject to the matters outlined under **Section 2** and **Section 3** of this report above being adequately addressed by the project Architect, Structural Engineer, Fire Safety Engineer, Competent Fire Safety Practitioners/Design Consultants, Access Consultant, ESD consultants and other key Stakeholders, that compliance with the BCA will be readily achieved.

Note: Refer to Attached Appendix - Fire Safety Schedule

APPENDIX: PRELIMINARY FIRE SAFETY SCHEDULE

The following comprises a preliminary fire safety schedule containing statutory fire safety measures that will apply to the new buildings

Statutory Fire Safety Measure		Design/Installation Standard	
Auto	omatic Fail-Safe Devices	BCA Clause D2.21+ Fire Engineered Performance Based Solution	
Aları	n Signalling Equipment (Main FIP)	AS 1670.3 – 2004 and Manufacturer's Specification + Fire Engineered Performance Based Solution	
Auto (Spri	omatic Fire Suppressions System nkler System)	BCA Spec. E1.5 & AS 2118.1 – 2017, Manufacturer's Specification + Fire Engineered Performance Based Solution	
Build	ling Occupant Warning System	BCA Spec E2.2 and/ or Clause 3.22 of AS 1670.4 – 2018	
Eme	rgency Lighting	BCA Clause E4.4 & AS 2293.1 - 2018	
Exit S	ligns	BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 – 2018	
Fire	Dampers	BCA Clause C3.15, AS 1668.1 - 2015 & AS 1682.1 & 2 - 2012 and Manufacturer's Specification	
Fire	Doors	BCA Clause C2.12, C2.13, C3.4, C3.8, C3.10 and AS 1905.1 – 2015+ Fire Engineered Performance Based Solution	
Fire	Hose Reels	BCA Clause E1.4 & AS 2441 – 2005	
Fire	Hydrant Systems	BCA Clause E1.3 & AS 2419.1 – 2005 + Fire Engineered Performance Based Solution	
Fire	Seals	BCA Clause C3.15 & AS 1530.4 - 2014 & AS 4072.1 - 2005	
Fire	Shutters	BCA Spec. C3.4, AS1905.2-2005, Manufacturer's Specification + Fire Engineered Performance Based Solution	
Fire	Compartmentation, Fire Rated Floors & External fire Rated Walls	BCA Clause C2.2, C2.7, C2.8, C2.9, D1.7, Manufacturer's Specification + Fire Engineered Performance Based Solution	
Ligh	tweight Construction	BCA Clause C1.8 & AS 1530.4 – 2005 + Fire Engineered Performance Based Solution	
Mec (Aut Exhc	chanical Air Handling Systems comatic shutdown of air handing system + Carpark gust/Manual override functions at FIP)	BCA Clause E2.2, AS/NZS 1668.1 - 2015 & AS 1668.2 – 2012	
Path	s of Travel	EP & A Regulation Clause 186 + Fire Engineered Performance Based Solution	
Porte	able Fire Extinguishers (Common areas and MSB)	BCA Clause E1.6 & AS 2444 – 2001	
Wall-Wetting Sprinklers		BCA Clause C3.2, C3.4 & AS 2118.2 – 2010 and Manufacturer's Specification + Fire Engineered Performance Based Solution	
War	ning & Operational Signs	Section 183 of the EP&A Regulation 2000, AS 1905.1 – 2015, BCA Clause C3.5, C3.8, D2.23, D3.6, E1.3, E1.4, E1.5, E2.2a & E3.3 + Fire Engineered Performance Based Solution	
Fire	Engineered Performance Based Solutions for the following:	The relevant Performance Requirements associated with the	
-	<u>BCA Spec C1.1 & BCA cl.s C2.2, C2.7, C2.8, C2.9:</u>	proposed Fire Engineered Performance Solutions:	
	Rationalisation of FRL's to key building elements	- CF1, CF2, CF7, DF2, DF4, DF3, DF6, EF1.3, EF1.4 & EF2.2	
	throughout & rationalisation of the need to tire separate		
-	<u>BCA Clause C2.2</u> : Rationalisation of the fire compartment strategy including FRL's to separating construction and lift doors.		
-	<u>BCA Clause C3.2/C3.4</u> : Rationalisation of the extent of protection provided to the openings situated in the external walls of the building.		
-	<u>BCA Clause C3.10</u> : Rationalisation of the extent of protection provided to the openings situated in the buildings lift shafts.		
-	<u>BCA Clause D1.4:</u> Rationalisation of the extended egress travel distances to the nearest exits being up to 45m (in lieu of 40m).		
-	<u>BCA Clause D1.5:</u> Rationalisation of the extended egress travel distances between alternative exits being up to 87m (in lieu of 60m).		

	Statutory Fire Safety Measure	Design/Installation Standard
-	<u>BCA Clause D1.7</u> : Rationalisation of the extent of fire ratings and protection to external walls and openings, as well as discharge locations.	
-	<u>BCA Clause D2.20</u> : Rationalisation of the directional door swing to fire exist doors being against the direction of egress.	
-	<u>BCA Clause E1.3</u> : Rationalisation of the fire hydrant system arrangements including location of the booster assembly and any other departures identified by the Fire Services Consultants.	
-	<u>BCA Clause /Specification E1.5</u> : Rationalisation of the sprinkler system arrangements including location of the booster assembly, access arrangement to the valve room, type of sprinkler heads utilised and any other departures identified by the Fire Services Consultants.	

<u>Note:</u> The above performance solutions include Category 2 fire safety provisions and pursuant to Clause 144 of the EP&A Regulation 2000, formal fire engineering brief and report referrals to Fire & Rescue NSW will be require prior to the CC application stage.