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Project: Campbell's Stores – Sydney Harbour

Report: BCA Assessment Report

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1 BASIS OF ASSESSMENT

1.1 Location and Description

The premises, the subject of this report are located at Hickson Road, The Rocks and is known as the Campbell's Stores. The premises are currently occupied throughout and are currently being used as four separate retail restaurant Tenancies.

The overall site is bounded to the north east by the promenade adjoining Sydney Harbour, to the north west by the Hyatt Hotel, to the south east by adjacent ANSAC and Overseas Passenger Terminal sites and to the south west by Hickson Road. There is no vehicular access to the site other than to the loading dock area at the eastern end of the current development.

It is proposed to refurbish the entire development to create 12 to 16 separate retail restaurant tenancies over three storeys as well as construct a new reduced Bay 12 building portion.

1.2 Purpose

The purpose of this report is to provide a detailed BCA assessment of the existing building to identify any current areas of deficiency and non-compliance with the deemed-to-satisfy provisions of the Building Code of Australia, 2015 (BCA2015) (if any) and of the relevant Building Regulatory Legislation applicable at the time of original construction of the overall building.

Fire Safety Upgrading requirements are also to be provided, where it is considered occupant fire and life safety is currently deficient. The report also takes into consideration the existing level of compliance of the subject development, the proposed future alterations and additions and makes recommendations on works required to achieve general compliance with either the Deemed to Satisfy or performance based provisions of BCA2015 as applicable as well as those items that will need to be included in the future Fire Engineering Assessment.

N.B. The upgrading strategy contained within Part 4.3 of this report should not be construed as an upgrading to achieve strict compliance with the current deemed to satisfy provisions of the BCA. Any upgrading recommendations contained within Part 4.3 of the report are to address any current deficient (if any) occupant fire and life safety provisions within the building.

1.3 Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code Series Volume 1 – Building Code of Australia, 2015 Edition (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate application to the Accredited Certifying Authority for private developments or time of tender / prior to works commencing for Crown Developments. The BCA is updated generally on a three-yearly cycle, starting from the 1st of May 2015.

1.4 Basis of Assessment

The content of this report reflects: -

- a) detailed inspection of the building on 25 May 2015;
- b) the performance and deemed-to-satisfy provisions of the Building Code of Australia, 2015 incorporating the NSW variations where applicable;
- c) The Disability (Access to Premises – Buildings) Standards 2010;
- d) A review of the Design plans and Specifications listed in Annexure A of this Report;
- e) Copy of the Annual Fire Safety Statement dated 26 February 2013 displayed adjacent to the current Main Fire Indicator Panel in the Loading Dock area;
- f) Ongoing liaising with the Fire Safety Engineer on the project – Core Engineering during the design development phase.

1.5 Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for:

- (a) the structural adequacy or design of the building;

- (b) the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and
- (c) the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

- (a) the National Construction Code – Plumbing Code of Australia Volume 3
- (b) the Disability Discrimination Act 1992 including the Disability ((Access to Premises – Buildings) Standards 2010 – unless specifically referred to), (Note: The provision of disabled access to the subject development has been assessed against the deemed to satisfy provisions of Part D.3 and F2.4 of BCA2015 only);
- (c) Demolition Standards not referred to by the BCA;
- (d) Work Healthy and Safety Act 2011;
- (e) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Telecommunications Supply Authority, Water Supply Authority, Electricity Supply Authority, Work Cover, Roads and Maritime Services (RMS), Roads and Transport Authority, Local Council, ARTC, Department of Planning and the like; and
- (f) Conditions of Development Consent issued by the Local Consent Authority.

1.6 Design Documentation

This report has been based on the Design plans and Specifications listed in Annexure A of this Report.

1.7 Building Regulations

From investigations and review of available documentation, the original construction date of the building was in circa 1851, with alterations and additions occurring in 1858-1861, 1882-1887, 1895, 1915, 1958 and most recently 1970. The subject building has undergone internal alterations and additions since these original Construction periods extending primarily to general maintenance and internal tenancy fit outs. At this stage as advised by the client and documented in the proposed architectural design documentation that will form the basis of the Development Application Submission, the new works proposed to the development include the refurbishment of the entire development to change from the current four separate tenancies to 12 -16 retail restaurant tenancies.

An important point of note in the assessment for compliance of existing buildings is a change to the Building Regulatory Provisions. On 1 July 1997, The Building Code of Australia 1996 (BCA96) was introduced (now known as BCA2015), which is a performance based document.

This document is divided into two (2) sections, being a performance solution and a deemed-to-satisfy solution (Prescriptive requirements).

A building owner/applicant for new and/or existing buildings can choose either method in evidencing that the subject existing/proposed building provides for an adequate level of fire and life safety for the building occupants.

Accordingly, although an existing building may not meet the prescriptive deemed-to-satisfy provisions of BCA2015, it does not necessarily conclude that the building is unsafe, or warrants any fire safety upgrading works. The building may in fact still satisfy the performance provisions of BCA2015 as an alternative solution.

For the purposes though of carrying out a BCA Assessment and report of the existing building, the assessment contained within this report has been made against the current prescriptive deemed-to-satisfy provisions of the Building Code of Australia 2015 with such assessment identifying areas where further detailed Fire Engineered Alternate Solution reports will be required.

If any deficiencies are noted, it will then require addressing each deficiency, its level of non-compliance, and its impact on the fire and life safety of the building occupants to determine if such a deficiency will require future upgrading.

From a Building Owners point of view provided the building is being maintained fully in accordance with the standards at the time of original construction / occupation and then as per further approvals, then the Owners obligations are considered to be met.

It is only when the buildings become extremely aged, the use changes or major refurbishment works (that exceed 50% of the volume of the building over a three year period) are carried out that additional fire safety measures and or fire safety upgrade works need to be further investigated.

Further comment on these fire safety upgrade obligations of the building owner will be made in Part 4.0 of this report. As the subject works are proposed throughout the entire development, there will be an expectation and requirement by the approval authority for the existing development to be upgraded to meet the current performance / deemed to satisfy provisions of BCA2015.

1.8 Fire Safety Upgrade works

The primary objective of any fire upgrading works is to achieve a means of fire and occupant safety within the context of the objectives of the Building Regulations (i.e.; Building Code of Australia 2015) namely:-

- (a) the safety of persons in the event of a fire;
- (b) the prevention of fire; and
- (c) the suppression of fire.

The items referred to within the following pages clearly identify the existing deficiencies when the deemed-to-satisfy provisions of BCA2015 are applied prescriptively to the existing building. However, as outlined in Part 1.7 of this Report, BCA2015 is now a fully performance based document with the prescriptive deemed-to-satisfy provisions being only one of the two methods of satisfying these performance provisions.

With existing buildings strict compliance with the prescriptive deemed-to-satisfy provisions of BCA2015 is often unlikely and impractical without carrying out massive reconfiguration of the existing building due to the age, use or existing architectural design of the building.

Accordingly, where a deficiency within an existing building has been identified it may not necessarily result in that deficiency being required to be upgraded to strictly meet the deemed-to-satisfy provisions of BCA2015. If, due to specific site circumstances, it can be shown that the deficiency still satisfies the performance provisions of BCA2015 as an alternative solution then this deficiency would not require upgrading.

Notwithstanding the above, under S93 and 94 of the Environmental Planning & Assessment Regulations 2000 the local consent authority (Minister for Planning) have a discretion on the level of upgrading deemed necessary, being either a total upgrade to satisfy the provisions of the BCA or partial upgrading depending on the design, construction extent of alterations and additions and circumstances of the particular building.

When determining the extent of BCA upgrading that may be necessary when undertaking alterations and additions to an existing building, the requirements of S93 and 94 of the Environmental Planning & Assessment Regulations 2000 should be considered.

The relevant requirement of Clause 93 and 94 of the EP & A Regulation 2000 does not require that an existing building be upgraded to comply with the BCA rather it gives the Consent Authority (Minister for Planning) during the Development Approval assessment process the power to require upgrading where it sees fit to do so.

Clause 93 and 94 of the EP & A Regulation 2000 states:

93 Fire safety considerations

- (1) *This clause applies to a development application for a change of building use for an existing building, where the applicant does not seek the rebuilding, alteration, enlargement or extension of a building.*
- (2) *In determining the development application, the consent authority is to take into consideration whether the fire protection and structural capacity of the building will be appropriate to the building's proposed new use.*
- (3) *Consent to the change of building use sought by a development application to which this clause applies must not be granted unless the consent authority is satisfied that the building complies (or will, when completed, comply) with such of the Category 1 fire safety provisions as are applicable to the building's proposed new use.*

Note. The obligation to comply with the Category 1 fire safety provisions may require building work to be carried out even though none is proposed or required in relation to the relevant development consent.

- (4) Subclause (3) does not apply to the extent to which an exemption is in force under clause 187 or 188, subject to the terms of any condition or requirement referred to in clause 187 (6) or 188 (4).
- (5) The matters prescribed by this clause are prescribed for the purposes of section 79C (1) (a) (iv) of the Act.

94 Consent authority may require buildings to be upgraded

- (1) This clause applies to a development application for development comprising the rebuilding, alteration, enlargement or extension of an existing building where:
 - (a) the proposed building work, together with any other building work completed or authorised within the previous 3 years, represents more than half the total volume of the building, as it was before any such work was commenced, measured over its roof and external walls, or
 - (b) the measures contained in the building are inadequate:
 - (i) to protect persons using the building, and to facilitate their egress from the building, in the event of fire, or
 - (ii) to restrict the spread of fire from the building to other buildings nearby.
- (2) In determining a development application to which this clause applies, a consent authority is to take into consideration whether it would be appropriate to require the existing building to be brought into total or partial conformity with the Building Code of Australia.
- (3) The matters prescribed by this clause are prescribed for the purposes of section 79C (1) (a) (iv) of the Act.

As the proposed works are refurbishment of the entire development (exceeding 50%) upgrade works the subject of S93 and S94 as referred to above would be considered likely with the proposed refurbishment works program. As such the recommended fire safety upgrade works detailed in Part 4.4 below take this into consideration.

It should be noted that under Clauses 93 and 94 above, the primary concern with existing buildings is that of structural adequacy and fire safety.

There is also a further requirement under Clause 98 of the Regulations that states:

98 Compliance with Building Code of Australia and insurance requirements under the Home Building Act 1989

- (1) For the purposes of [section 80A](#) (11) of [the Act](#), the following conditions are prescribed in relation to a development consent for development that involves any building work:
 - (a) that the work must be carried out in accordance with the requirements of the Building Code of Australia,
 - (b) in the case of residential building work for which the [Home Building Act 1989](#) requires there to be a contract of insurance in force in accordance with Part 6 of that Act, that such a contract of insurance is in force before any building work authorised to be carried out by the consent commences.
- (2) This [clause](#) does not apply:
 - (a) to the extent to which an exemption is in force under [clause](#) 187 or 188, subject to the terms of any condition or requirement referred to in [clause](#) 187 (6) or 188 (4), or
 - (b) to the erection of a temporary building.
- (3) In this [clause](#), a reference to the Building Code of Australia is a reference to that Code as in force on the date the [application](#) for the relevant construction certificate is made.

Thus any “new works” must be undertaken in accordance with the current BCA2015 provisions.

At the Construction Certificate stage, the relevant provisions of S143 of the EP & A Regulations 2000 also state:

Fire protection and structural capacity

- (1) A certifying authority must not issue a construction certificate for building work under a development consent that authorises a change of building use unless:
 - (a) the fire protection and structural capacity of the building will be appropriate to its new use, and

(b) the building will comply with such of the Category 1 fire safety provisions as are applicable to the new use,

assuming that the building work is carried out in accordance with the plans and specifications to which the construction certificate relates and any conditions to which the construction certificate is subject.

(2) Subclause (1) (b) does not apply to the extent to which an exemption is in force under [clause 187](#) or [188](#), subject to the terms of any condition or requirement referred to in [clause 187](#) (6) or [188](#) (4).

(3) In the case of building work that involves the alteration, enlargement or extension of an existing building in circumstances in which no change of building use is proposed, a certifying authority must not issue a construction certificate for the work unless, on completion of the building work, the fire protection and structural capacity of the building will not be reduced, assuming that the building work is carried out in accordance with the plans and specifications to which the construction certificate relates and any conditions to which the construction certificate is subject.

(4) This [clause](#) does not apply to building work required by a consent authority as a condition of a development consent that authorises a change of building use.

The Category 1 Fire Safety provisions in this development are considered to include:

- Sprinklers – current standard AS2118.1-1999
- Fire Hydrants – current standard AS2419.1-2005
- Smoke Hazard Management – Table E2.2a of BCA2015.

The issue is that the sprinklers and for that matter the Street hydrant system that serve the building should comply with the current BCA provisions which is AS2118.1-1999 for the sprinklers and AS2419.1-2005 for the Hydrant system.

Based on the proposed refurbishment works, upgrade works will need to be carried out on site to ensure that the completed and reconfigured Hydrant and Sprinkler System satisfies the current provisions of AS2419.1-2005 and AS2118.1-1999 respectively. Further detailed input from the Services Consultants will be required to ensure these existing systems can achieve full current compliance.

1.9 Organisational Responsibilities – Disability Discrimination Act 1992 (DDA)

All organisations have a responsibility, under the Federal Disability Discrimination Act (DDA), to provide equitable, dignified access to goods and services and to premises used by the public. Premises are broadly defined and would include all areas included within the subject development.

The DDA provides uniform protection against unfair and unfavourable treatment for people with a disability in Australia. It also makes it unlawful to discriminate against a person who is an “associate” (such as a friend, carer or family member).

Disability is broadly defined and includes disabilities which are:

- physical;
- intellectual;
- psychiatric;
- neurological;
- cognitive or sensory (a hearing or vision impairment);
- learning difficulties;
- physical disfigurement; and
- the presence in the body of disease causing organisms.

This broad definition means that everyone with a disability is protected. The Act supports the principle that people with a disability have the same fundamental rights as the rest of the community. Provisions apply to a wide range of life activities including:

- access to premises used by the public;
- education;
- provision of goods and services;
- employment;
- administration of Commonwealth laws and programs.

When a person with a disability wants to utilise premises including all buildings, outdoor spaces, car parking areas, pathways and facilities, then equitable, dignified access must be provided. The DDA requires that appropriate changes be made to provide access. A complaint can be made under the DDA if appropriate access is not provided.

On 15 March 2010 the Disability (Access to Premises - Buildings) Standards 2010, was tabled in Federal Parliament. These Standards have been under development for many years and significant public consultation has occurred during their development. The Premises standard has now been introduced on 1st May 2011 in line with the updated National Construction Code which incorporates the Building Code of Australia and the National Plumbing Code.

The aim of the Standards is to provide the building and design industry with detailed information regarding the required access provisions associated with the design and construction of new buildings and upgrade to existing buildings. They do not apply to existing buildings that are not undergoing upgrade.

They only apply to elements addressed within the Standards. All other elements related to premises will still be subject to the existing provisions of the DDA.

The Standards generally align with the BCA (see below) and reference a range of Australian Standards relating to access and other associated matters. The Disability (Access to Premises - Buildings) Standards 2010 aim to provide certainty for the building industry in relation to meeting the requirements for access in new and upgraded buildings.

The Access Assessment to be prepared under separate cover will need to incorporate the key elements of the Standards as well as additional access requirements to assist in achieving best practice in the provision of access for all to buildings.

The Building Code of Australia 2015, in conjunction with the DDA, applies to all new buildings; new building works to existing buildings and buildings undergoing significant refurbishment or alteration.

Provision of access for a person using a wheelchair or mobility aid is often considered to be an indication of effective design to the built environment. However the majority of users of car parks, buildings and outdoor areas are pedestrians who also benefit greatly from wheelchair accessible design. Conversely, they can also be denied appropriate access if barriers are incorporated into designs.

In addition, older persons and people with disabilities within the community have a wide range of access needs that are not necessarily satisfied by just providing access for a person using a wheelchair. People also experience the effects of disability through impairment to:

- Sight;
- Hearing;
- Motor ability;
- Dexterity;
- Balance;
- Mental functioning etc.

Examples of a range of access challenges include:

- People who use wheelchairs face difficulties such as abrupt changes in levels (e.g. steps and steep slopes/gradients) and limited access under basins, benches and tables. They also need an increased circulation area, particularly at doorways and changes in direction.
- People who experience difficulty walking may have stiff hips, balance problems or uncoordinated movements which require attention to stairs and handrails, seating in waiting areas, slip resistant floor finishes and ramps with a gentle slope/gradient.
- People with manipulatory difficulties (finger or hand control) require appropriately selected handles, switches, buttons (in lifts) and taps to enable usage
- People with sensory disabilities, which affect either their hearing or vision, require clear, easy to understand signage and tactile indicators. This requires attention to a variety of factors including colour, contrast, print size, levels of illumination and the provision of appropriate communication systems in public areas.
- People with intellectual disabilities may have difficulty finding their way in new environments. Therefore, direct access routes and clear directional signage with graphics are important.

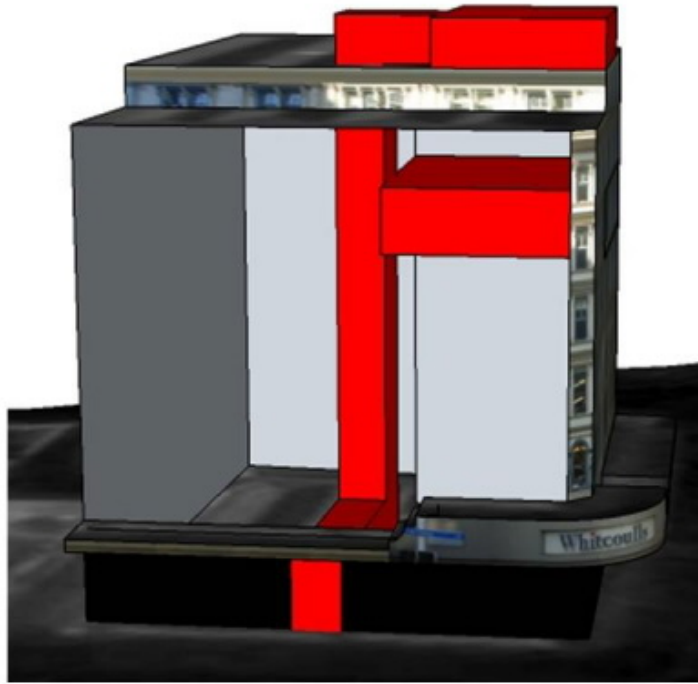
As a wide range of physical issues impact on the provision of access for people with disabilities, responsive design, incorporating a continuous accessible path of travel, needs to be equitable and therefore inclusive of the needs of all of the community.

Access should cater for both pedestrians and users of wheelchairs and other mobility aids. In addition consideration must be given to the needs of users who may require assistance from other people as well as assistance animals.

When new building work takes place in an existing building and a building approval is required for that the new work (Construction Certificate or Complying Development Certificate in NSW or in case of Crown Developments – a S109R Crown Certification), the requirements for upgrading access are limited to the area of new work and the 'affected part'. Access requirements are not imposed outside the area of the new work.

For example, a building owner undertakes renovations on one level of their building. The application for building approval triggers the application of the Disability (Access to Premises – Building) Standards 2010 (known as the "Premises Standards"). While the Premises Standards will apply to the area of new work and the 'affected part' of the building they will not apply to the other levels not being upgraded.

These areas of the building outside the area of the new work will continue to be subject to the existing DDA complaints provisions. The "Affected Part" in existing buildings relates to providing an accessible path of travel from the principal public entrance to the new or modified part of an existing building. An example of this is shown in the sketch below. This shows works to two upper floors only within an existing building – the result is the upgrade of the Affected Part being the entrance and lift to access the floors being refurbished.



The upgrade only occurs if the applicant for the works is the “Building owner” or the building is leased to one entity. If the applicant is a tenant / lessee in a multi tenanted / leased premises, no upgrade to the based building is required.

In this instance as building works are proposed for and on behalf of the owner and the works are proposed throughout the entire development, there will be an expectation that the entire development is upgraded to be fully Accessible Compliant in accordance with the Disability (Access to Premises – Buildings) Standards 2010 – separate Access Consultant to provide detailed input to the extent and scope of such works.

2 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia (BCA) the development may be described as follows.

2.1 Rise in Storeys (Clause C1.2)

The building, as existing and proposed, has a rise in storeys of four (4).

2.2 Classification (Clause A3.2)

The building has been classified as follows as a result of the proposed refurbishment works.

Class	Level	Description
6		Retail Restaurants
7b	Part Level 01	Loading Dock (used in part as storage)
10a / 10b	Level 01	Awnings over external seating areas

2.3 Effective Height (Clause A1.1)

The building has an effective height of less than 12 metres.

2.4 Type of Construction Required (Table C1.1)

If designed/constructed today, the base building would be required to be of Type B construction for a three storey class 6 development – other than Bay 11. However the Type of Construction is proposed to be assessed as Type A with the proposed development due to the existing / proposed overall fire compartment size – to be further discussed in Part 4.2 of this report.

2.5 Floor Area and Volume Limitations (Table C2.2)

The building is subject to maximum floor area and volume limits of:-

Class 6 & 7	Maximum Floor Area	5,000 m ²
	Maximum Volume	30,000 m ³

2.6 Fire Compartments

The following fire compartments have been assumed:

1. Due to the existing base building timber construction, Bays 1 to 12 and the service corridor will form a single fire compartment.
2. The Loading Dock area is to be treated as a separate fire compartment.

2.7 Exits

The following points in the building have been considered as the exits: assumed:

- Ground floor Tenancies – egress direct to open space
- Loading dock – the proposed doorway opening to the external of the building
- Level 02 Tenancies – egress direct to open space to Hickson Road
- Level 03 Tenancies – egress via the non-fire isolated stairs to either level 02 where access to Hickson road is available or to level 01 where egress to the Promenade is available.
- Bay 12 – the point at which an occupant reaches open space open to the sky.

2.8 Climate Zone (Clause A1.1)

The building is located within Climate Zone 5.

3 ESSENTIAL FIRE SAFETY MEASURES

Following assessment of the documentation available, the 2013 version of the Annual Fire Safety Statement was located and assessed with such AFSS located adjacent to the current Main Fire Indicator Panel dated 26 February 2013.

In accordance with the provisions of Section 177 of the EP & A Regulations 2000, Essential Services / Fire Safety measures installed within a building are required to be annually certified by competent persons that they have been suitably installed and are being maintained in accordance with the relevant original installation standards.

Detailed below is a Fire Safety Schedule of the current fire safety measures contained within the development assessed during our site inspection. This schedule should be used for the ongoing current maintenance and inspection certification of the fire safety measures currently installed throughout the entire building.

Existing Fire Safety Schedule

Item	Existing Essential Fire Safety Measure	Minimum standard of performance, i.e. BCA clause and/or Australian Standard to be achieved
1.	Automatic fire detection and alarm system (+ building occupant warning system)	BCA Table E2.2a, Clause 4 of Specification E2.2a & AS 1670.1-2004
2.	Automatic fire suppression system (sprinklers)	AS2118.1-1982
3.	Emergency lighting	AS/NZS 2293.1-1987
4.	Exit signs	AS/NZS 2293.1-1987
5.	Fire alarm monitoring & communication Link	BCA Clause 6 of Specification E2.2a & AS4428.6
6.	Fire doors	AS CA57.1-1972 & AS1905.1-1984
7.	Fire hose reel system	AS 2441-1988
8.	Portable Fire Extinguishers	AS2444-1995
9.	Paths of travel, stairways, passageways and exits.	Division 7, EP & A Regulations 2000

N.B. All items in the table above are those essential services that need to be certified annually within the subject building portion as currently exists on site. As previously confirmed the items above need to be included within the Annual Fire Safety Statement to be submitted to Council and the NSW Fire & Rescue.

Combined Fire Safety Schedule to entire Building with Upgrade Recommendations of this Report

Outlined in the Table below is a schedule of the proposed fire safety measures required by the recommendations of this report for the building to be upgraded.

Item	Proposed Essential Fire Safety Measure	Minimum standard of performance, i.e. BCA clause and/or Australian Standard to be achieved
1.	Automatic fail-safe devices (to power-operated sliding exit doors)	BCA2015 Clause D2.19
2.	Automatic fire detection and alarm system (Including building occupant warning system)	BCA2015 Table E2.2a & AS 1670.1-2004
3.	Automatic fire suppression system	BCA2015 Clause E1.5 & AS 2118.1-1999 and Alternate Solution Report to be Prepared by Core Engineering Pty Ltd
4.	Emergency lighting	BCA2015 Clauses E4.2, E4.4 & AS/NZS 2293.1-2005
5.	Exit Signs	BCA2015 Clauses E4.5, E4.6, E4.8 & AS/NZS 2293.1-2005
6.	Fire dampers	BCA 2015 C3.15 and AS/NZS 1668.1-1998, AS1682.1 & 2
7.	Fire doors	BCA2015 Specification C3.4 and AS1905.1-2005
8.	Fire hydrant system (Street Based Hydrant Upgrade throughout entire building Including Hydrant Booster Assembly)	BCA2015 Clause E1.3 and AS2419.1-2005
9.	Fire seals protecting openings in fire resisting components of the building – Entire Building	BCA2015 Clause C3.15, Specification C3.15 & Manufacturer's Specification & AS1530.4-2005
10.	Fire hose reel system	BCA2015 Clause E1.4 and AS2441-2005
11.	Paths of travel, stairways, passageways and exits.	BCA2015 Parts D1 & D2, S183 - Division 7 of EP & A Regulations 2000 and Alternate Solution Report to be Prepared by Core Engineering Pty Ltd
12.	Portable fire extinguishers – Entire Building	BCA2015 Clause E1.6, Table E1.6 & AS 2444-2001
13.	Recommendations of Fire Engineered Assessment Report to be Prepared to address the following issues: • Lack of FRL to existing and proposed structural elements and floors (C1.1) • Lack of Smoke Exhaust System to retail portions (E2.2a) • Stair widths less than 1000mm – i.e. 800mm, 850mm and 850mm for Bays 3, 6 and 9 Respectively (D1.6 and D2.9) • Non fire isolated Stair to Bay 11 indirectly connects 4 storeys (D1.3) • Use of black background Exit Signage throughout the development. • Egress travel distances along ground floor rear corridor exceed 40m being circa 60m and the distances between alternate exits along this rear corridor exceeds 60m. • Lack of protection to Louvers to existing Loading dock area.	Alternate Solution Report to be Prepared by Core Engineering Pty Ltd

Item	Proposed Essential Fire Safety Measure	Minimum standard of performance, i.e. BCA clause and/or Australian Standard to be achieved
	• Location of Fire Hose Reels greater than 4.0m to a required exit • Location of main FIP not being located at what is considered to be the main entrance • Egress from loading dock area to be across an adjoin allotment of land as well as width of loading dock egress to be 950mm in lieu of required 1000mm.	

4 MATTERS FOR FURTHER CONSIDERATION

4.1 General

Assessment of the Architectural design documentation against the Deemed-to Satisfy Provisions of the Building Code of Australia, 2015 (BCA) has revealed the following areas where compliance with the BCA may require further consideration and/or may involve assessment as Performance Based (Fire Engineered) Alternative Solutions. Any Alternative Solutions will be required to clearly indicate methodologies for achieving compliance with the relevant Performance Requirements.

Annexure B to this report provides a detailed assessment of the proposal against ALL relevant Deemed-to-Satisfy Provisions of the BCA.

Note: It is important that Annexure B is read in conjunction with the items below, as some matters may not have had sufficient information provided to allow a detailed assessment to be undertaken.

4.2 Dimensions and Tolerances

The BCA contains the minimum standards for building construction and safety, and therefore generally stipulates minimum dimensions which must be met. BCA Logic's assessment of the plans and specifications has been undertaken to ensure the minimal dimensions have been met.

The designer and builder should ensure that the minimum dimensions are met onsite and consideration needs to be given to construction tolerances for wall set outs, applied finishes and skirtings to corridors and bathrooms for example, tiling bed thicknesses and the like which can adversely impact on critical matters such as access for people with disabilities, stair and corridor widths and balustrade heights.

4.3 Performance Based Design – Alternative Solutions

There are specific areas throughout the development where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the design and existing site constraints. These matters will need to be addressed in a detailed Fire Safety Engineering Report to be prepared by Core Engineering Pty Ltd for the development as part of the Crown Certificate Stage of the development. The issues to be addressed in such report will need to include (but not be limited to - as there may be others that arise with ongoing design development):

Item	Description of Alternative Solution	DTS Provision	Performance Requirement
1.	The base building structure for Bays 01 to 11 comprise timber floors, columns and beams that do not possess the required 180/180/180 and 180/- FRLs for a Building of Type A Construction.	Clause / Spec C1.1 of BCA2015	CP1
2.	The louvres of the loading dock are located within 3 m of the side allotment boundary and will not be protected in accordance with Clauses C3.2 & C3.4.	Clauses C3.2 and C3.4 of BCA20125	CP2
3.	The internal stairway of Bay 11 connects four consecutive storeys in a sprinkler protected building and is proposed to be a non-fire isolated stairway with the top floor being a plant area only.	Clause D1.3 of BCA2015	DP5
4.	Maximum exit travel distances within ground floor service corridor exceed 40 m to an exit and 60 m between alternative exits, being 50 m and 100 m respectively.	Clauses D1.4 & D1.5 of BCA2015	DP4 and EP2.2
5.	As existing and proposed, there are stair widths less than 1000 mm – i.e. 800 mm, 850 mm and 850 mm for Bays 3, 6 and 9 Respectively	Clause D1.6 and D2.9 of BCA2015	DP2, DP4, DP6 and EP2.2
6.	The building is served by existing street hydrants, some of which are within 10 m of the building on the Circular Quay frontage (minimum 1.4 m).	Clause E1.3 of BCA2015	EP1.3

Item	Description of Alternative Solution	DTS Provision	Performance Requirement
7.	In Bay 6, the fire hose reel is located approximately 10 m from the exit on Level 2 and Level 3.	Clause E1.4 of BCA2015	EP1.1
8.	Even though the retail portions exceed 2,000 m ² , no Smoke Exhaust System is proposed to be installed.	Clause / Table E2.2a and E2.2b of BCA2015	EP2.2
9.	The fire indicator panel is not located at the main entrance to the building as per AS 1670.1-2004.	Table E2.2b of BCA2015	EP1.6
10.	It is proposed to use black background Exit Signage throughout the development which is not a theatre or cinema.	Clause E4.5 and E4.8 and AS2293.1-2005	EP4.2
11.	Ceiling heights to rear service corridor at ground level in parts is less than 2.1 m and the corridor will have projections below the ceiling line, as low as 1960 mm in parts.	Clauses D1.6 & F3.1 of BCA2015	FP3.1 & DP6
12.	Egress via the door on the southern side of the loading dock requires travel over the adjoining allotment.	Clause D1.2 of BCA2015	DP4
13.	Width of path of travel from loading dock exit will be 950 mm in lieu of 1m.	Clause D1.10 of BCA2015	DP4
14.	Internal threshold steps or ramps are present at the following doorways: - Each of the doors to the service corridor from Bays 1 to Bay 10 (Bays 3, 9 & 10 contain new openings). - At the sliding doors and swing doors located between the bays on levels 02 & 03.	Clause D2.15 of BCA2015	DP2

4.4 BCA Fire Safety Upgrade Items

The following items are considered necessary within the subject refurbishment works to the existing development to achieve an adequate level of occupant fire and life safety – Note that this schedule does not include the Accessibility issues that would be the result of the Affected Part Upgrade Works under the Disability (Access to Premises – Buildings) Standards 2010. The below items will be assessed and incorporated in the ongoing design documentation:

Item	BCA Deficiency	Comment / Upgrade Works
1.	Currently the building appears to rely on the nearby Street Hydrant system to afford coverage as per AS2419.1-2005.	Detailed investigations into the suitability or otherwise of the street hydrant is to be undertaken to assess if this street hydrant affords complete coverage, flow and pressure to the subject development in accordance with E1.3 of BCA2015 and AS2419.1-2005.
2.	Currently the fire hose reels that are located throughout the building in some instances do not possess the required 100mm clearance around the Hose Reel Drum or the hose cock located up to 1100mm above floor level or the hose reels are located greater than 4.0m from a required exit as per the current provisions of E1.4 of BCA2014 and AS2441.1-2005.	Upgrade the existing fire hose reels throughout building so that the hose reel drums possess the required 100mm clearance the hose cock is no higher than 1100mm above floor level and the Fire Hose reels are located within 4.0m of a required exit (other than where addressed by the FER) in accordance with E1.4 of BCA2014 and AS2441-2005.
3.	Currently the building is protected with a smoke detection and alarm system.	This smoke detection and alarm system is to be suitably upgraded throughout the entire new refurbished building in accordance with AS1670.1-2004 and the Fire Engineers Recommendations.

4.	Currently the Loading dock store area at the eastern end of the building is not fire separated from the remaining ground floor portion as required by C2.8 of BCA2015.	The eastern loading dock / store area is to be fire separated from the rest of the ground floor area with a fire wall possessing a 240/240/240 FRL and self-closing or auto closing -/240/30 fire doors.
5.	The electrical system throughout the development is to be inspected, tested and certified to AS3000	Such audit of the electrical system is also to include the provision of RCD's on all circuits.
6.	Currently the standard of sprinkler protection throughout the building is an older AS2118.1-1982 version and not the current AS2118.1-1999 version called up by the current BCA2015.	The sprinkler system including all supporting infrastructure and pump sets and booster is to be upgraded as per E1.5 of BCA2014 and AS2118.1-1999. This upgrade includes the Building Occupant Warning System as per Clause 6 of Specification E2.2a of BCA2015 and the relocation of the sprinkler valve room / booster to be accessed direct from open space and not the current sprinkler valve room enclosure.
7.	The proposed required exit doors currently do not swing in the direction of egress and in some instances are not openable as required by D2.21 of BCA2015.	All required exit doors at all levels are to swing outwards in the direction of egress and be openable by a single handed lever action device without a key from the inside face in accordance with D2.19 and D2.21 of BCA2015 – noting this may warrant Heritage input regarding existing heritage style doors.
8.	The existing exit and emergency lighting would not satisfy the current provisions of Part E4 of BCA2015 and AS2293.1-2005.	Upgraded exit and emergency lighting is to be installed in accordance with Part E4 of BCA2014 and AS2293.1-2005.
9.	The main switch room currently has gaps around the services that penetrate the bounding walls that would not achieve the 120/120/120 FRL required by C2.13 of BCA2015.	All services that penetrate the bounding walls of the main switch room are to be suitably sealed in accordance with C3.15 and C2.13 of BCA2015.
10.	The entire building is constructed to form the one single fire compartment extending over three levels.	To achieve a fire compartment size of less than 5,000m ² in floor area and 30,000m ³ in volume, the loading dock will be separated from the remainder of the building by fire wall construction possessing a 240/240/240 FRL and self-closing or auto closing -/240/30 fire doors.
11.	All new works proposed as part of any building refurbishment works are to be undertaken in accordance with the relevant provisions of BCA2015 along with the above upgrade works to the existing building.	Noted – After each floor is stripped out a further detailed inspection needs to be undertaken to assess any other BCA Compliance implications that may arise once the complete floor plate can be viewed and assessed.
12.	The proposed kitchen exhaust system is to be designed in accordance with AS1668.2-2012.	Care needs to be taken with the kitchen exhaust design including the proposed discharge location to ensure compliance with AS1668.2-2012 is achieved.
13.	The base building structure would not currently achieve compliance with the relevant Section J provisions.	Upgrade of the base building walls, floors and roof are not required as part of the refurbishment works under any statutory criteria (unless conditioned in a Development Consent Approval by the Consent Authority – which is unlikely). However, all new services including electrical, hydraulic and mechanical must be installed in accordance with the current BCA2015 Section J criteria.
14.	Currently there are differences in floor levels between bays where compliant handrails have not been provided as per D2.17 and AS1428.1-2009.	As the design progresses it will be necessary to ensure that all different floor levels are suitably connected with stair flights / ramps if required with compliant handrails as per AS1428.1-2009 and D2.17 of BCA2015.
15.	Currently a number of the EDB enclosures to the building have not been enclosed as per D2.7 of BCA2015.	With the proposed refurbishment works all EDB enclosures are to be enclosed in non-combustible or fire protective linings with smoke seals to the doors as per D2.7 of BCA2015.

4.5 Separation of classifications in the same storey – BCA Clause C2.8

Where a storey has different classifications located alongside one another:

- each building element in that storey must have the higher FRL prescribed in Specification C1.1 for that element for the classifications concerned; or
- the parts must be separated in that storey by a fire wall having the higher FRL prescribed in Table 3.

The loading dock/storage area at Level 01 is to be separated from the adjacent Class 6 parts by a fire wall achieving an FRL of 240/240/240.

4.6 Dimensions of exits and paths of travel to exits – BCA Clause D1.6 / F3.1

The height throughout the service corridor is less than 2.1m in parts (plans indicate 1960 mm below ductwork near Bay 2). It is recommended that either a minimum 2.1m height clearance be provided, or BCA compliance achieved via an alternative solution.

4.7 Thresholds – BCA Clause D2.15

The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless the doorway is in a building required to be accessible by Part D3, and in which case the doorway opens to a road or open space and is provided with a threshold ramp or step ramp in accordance with AS 1428.1.

Internal threshold steps or ramps are present at the following doorways:

- Each of the doors to the service corridor from Bays 1 to Bay 10 (Bays 3, 9 & 10 contain new openings).
- At the sliding doors and swing doors located between the bays on levels 02 & 03.

It is recommended that BCA compliance be achieved via an alternative solution. This non-compliance will also impact access for people with disabilities and as such should be discussed with the Access consultant.

4.8 Barriers to prevent falls – BCA Clause D2.16

A balustrade is required at the side of the new stairway to the Bay 12 seating area and between the seating area and the hedge where the fall below exceeds 1m.

4.9 Handrails – BCA Clause D2.17

Handrails are to be provided to at least one side of all stairways (2 or more risers) and ramps. The plans are to be updated to indicate compliant handrails.

Under the access requirements of Part D3 of the BCA, handrails are required to *both* sides of stairways and ramp in accessible parts of the building. Refer to Access Consultant for further details regarding compliance.

4.10 Operation of latch – BCA Clause D2.21

All doors in a required exit or forming part of a required exit AND doors in a path of travel to a required exit are required to be readily openable without a key from the side that faces a person seeking egress, by–

- (i) a single hand downward action or pushing action on a single device which is located between 900mm and 1.1 m from the floor and if serving an area required to be accessible by Part D3 –
 - A. be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and
 - B. have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm; or
- (ii) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor.

The above requirements do not apply to a door that –

- (i) serves a space which is otherwise inaccessible to persons at all times when the door is locked; or
- (ii) is fitted with a fail-safe device which automatically unlocks the door upon the activation of an AS 1670.1 detection system installed throughout the building.

All door hardware on required exit doors and doors in the path of travel to an exit is to comply with D2.21, noting this may warrant Heritage input regarding existing heritage style doors.

4.11 Fire hydrants – BCA Clause E1.3

As the building has a floor area greater than 500 m², a fire hydrant system complying with AS 2419.1-2005 must be provided to serve the building. As advised, coverage is proposed from the existing street hydrants. To ensure this is compliant, detailed investigations into the suitability or otherwise of the street hydrants is to be undertaken to assess if this street hydrant affords complete coverage, and compliant flows and pressures in accordance with E1.3 of BCA2015 and AS2419.1-2005.

4.12 Fire hose reels – BCA Clause E1.4

A fire hose reel system complying with BCA clause E1.4 and AS 2441-2005 must be provided to the building. The existing fire hose reel system is to be upgraded to comply with the above.

4.13 Sprinklers - BCA Clause E1.5

The building must be provided with a sprinkler system complying with Specification E1.5 installed throughout. The sprinkler system including all supporting infrastructure and pump sets and booster is to be upgraded as per E1.5 of BCA 2015 and AS2118.1-1999. This upgrade includes the Building Occupant Warning System as per Clause 6 of Specification E2.2a of BCA2015.

ANNEXURE A - DESIGN DOCUMENTATION

This report has been based on the following design documentation.

Architectural Plans Prepared by Johnson Pilton Walker Pty Ltd		
Drawing Number	Revision	Title
EA-A-1001	C	GROUND FLOOR
EA-A-1002	C	HICKSON ROAD LEVEL 01 PLAN
EA-A-1003	C	LEVEL 02 PLAN
EA-A-3012	C	SECTION – BAY 12 NORTH
EA-A-3012-2	B	SECTION – BAY 12 SOUTH
EA-A-3013	C	LONGITUDINAL SECTION
EA-A-4012	B	DETAIL SECTION 01- BAY 12
EA-A-4013	B	DETAIL SECTION 02- BAY 12
EA-A-4015	B	BAY 12 DETAILED PLANS
EA-A-4016	B	BAY 12 DETAILED ELEVATIONS

ANNEXURE B - DETAILED BCA 2015 ASSESSMENT

Outlined below is a detailed assessment of the design under the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) including the State variations where applicable.

All Deemed-to-Satisfy clauses that are applicable to the subject building have been referred to below, including a comment adjacent to each clause of the proposal's ability to satisfy each respective clause. The abbreviations outlined below have been used in the following table.

N/A	Not Applicable. The Deemed-to-Satisfy clause is not applicable to the proposed design.
Complies	The relevant provisions of the Deemed-to-Satisfy clause have been satisfied by the proposed design.
CRA	'COMPLIANCE READILY ACHIEVABLE'. It is considered that there was not enough information included in the documentation to accurately determine strict compliance with the individual clause requirements. However, subject to noting the requirements of each clause, compliance can be readily achieved.
FI	Further Information is necessary to determine the compliance potential of the building design.
AS	Alternative Solution with respect to this Deemed-to-Satisfy Provision is necessary to satisfy the relevant Performance Requirements.
DNC	Does Not Comply.
Noted	BCA Clause simply provides a statement not requiring specific design comment or confirmation.

DEEMED TO SATISFY CLAUSE ASSESSMENT

Clause	Comment	Status
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SECTION B: STRUCTURE

PART B1 – STRUCTURAL PROVISIONS

B1.0: Deemed-to-Satisfy Provisions	Informational	Noted
B1.1: Resistance to actions	Structural Engineer to certify compliance with this clause.	CRA – Refer Annexure C
B1.2: Determination of individual actions	Structural Engineer to certify compliance with this clause.	CRA – Refer Annexure C
B1.4: Determination of structural resistance of materials and forms of construction	Structural Engineer, Architect and Manufacturers to certify.	CRA – Refer Annexure C
B1.5 Structural software	Structural Engineer to certify compliance with this clause.	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE

PART C1 – STRUCTURAL PROVISIONS

C1.1: Type of construction required	The building is required to be of Type A Construction. The following non-compliances are noted in relation to Type A Construction requirements: The base building structure for Bays 1 to 11 comprise of timber beams and columns, none of which possess a prescriptive FRL.	Alternative Solution Refer to Part 4 of Report
C1.2: Calculation of rise in storeys	The building has a rise in storeys of four (4)	Noted
C1.3: Buildings of multiple classification	Informational	Noted
C1.4: Mixed Types of construction	Informational	Noted
C1.8: Lightweight construction	Lightweight construction used in a fire-rated application is to comply with Specification C1.8.	CRA – Refer Annexure C
C1.10: Fire hazard properties	Fire hazard properties must comply with C1.10 of the BCA and Specification C1.10 for floor, wall and ceiling linings, air-handling ductwork, lift cars, insulation, sarking-type materials and attachments, or be considered non-combustible.	CRA – Refer Annexure C
C1.12: Non-combustible materials	The following materials, though <i>combustible</i> or containing <i>combustible</i> fibres, may be used wherever a <i>non-combustible</i> material is <i>required</i>: (a) Plasterboard. (b) Perforated gypsum lath with a normal paper finish. (c) Fibrous-plaster sheet. (d) Fibre-reinforced cement sheeting. (e) Pre-finished metal sheeting having a <i>combustible</i> surface finish not exceeding 1 mm thickness and where the <i>Spread-of-Flame Index</i> of the product is not greater than 0. (f) Bonded laminated materials where— (i) each laminate is <i>non-combustible</i>; and	Noted

SECTION C: FIRE RESISTANCE		
	(ii) each adhesive layer does not exceed 1 mm in thickness; and (iii) the total thickness of the adhesive layers does not exceed 2 mm; and (iv) the <i>Spread-of-Flame Index</i> and the <i>Smoke-Developed Index</i> of the laminated material as a whole does not exceed 0 and 3 respectively.	
PART C2 – COMPARTMENT AND SEPARATION		
C2.2: General floor area and volume limitations	BCA Table C2.2 specifies a maximum fire compartment size of 5,000 m² floor area and 30,000 m³ volume for Class 6 & 7 fire compartments in Type A Construction. The fire compartment size of Bay 1 to Bay 12 (including the service corridor) is approximately 4,973 m² (Refer to fire compartment size calculation plan for Bays 1 to 11 in Appendix E. The new Bay 12 design adds approximately 157 m² to the existing 4,816 m²).	Complies
C2.6: Vertical separation of openings in external walls	Not applicable as building will be sprinkler protected.	NA
C2.7: Separation by fire walls	- Construction - A fire wall must be constructed in accordance with the following: - Any openings in a fire wall must not reduce the FRL required by Specification C1.1 for the fire wall, except where permitted by the Deemed-to-Satisfy Provisions of Part C3. - Building elements, other than roof battens with dimensions of 75 mm x 50 mm or less or sarking-type material, must not pass through or cross the fire wall unless the required fire resisting performance of the fire wall is maintained. - Separation of fire compartments – A part of a building separated from the remainder of the building by a fire wall may be treated as a separate fire compartment if it is constructed in accordance with this clause and the fire wall extends to the underside of – - a floor having an FRL required for a fire wall; or - the roof covering.	CRA – Refer Annexure C
C2.8: Separation of classifications in the same storey	Where a storey has different classifications located alongside one another: - each building element in that storey must have the higher FRL prescribed in Specification C1.1 for that element for the classifications concerned; or - the parts must be separated in that storey by a fire wall having the higher FRL prescribed in Table 3. The loading dock/storage area at Level 01 is not separated from the adjacent Class 6 parts by a compliant fire wall. It is recommended that the loading dock, Bay X and service corridor be separated from the adjoining Class 6 parts by a fire wall achieving an FRL of 240/240/240, or BCA compliance achieved via an alternative solution.	FI Refer to Part 4 of report

SECTION C: FIRE RESISTANCE		
C2.9: Separation of classifications in different storeys	Not applicable	NA
C2.10: Separation of lift shafts	Not applicable – the passenger lifts are not required to be in fire-rated shafts.	NA
C2.11: Stairways and lifts in one shaft	Not applicable – the stairways and lifts are not required to be in fire-rated shafts.	NA
C2.12: Separation of equipment	Not applicable	NA
C2.13: Electricity supply system	- A main switchboard which sustains emergency equipment operating in the emergency mode must be fire separated from any other part of the building by construction having an FRL of not less than 120/120/120 and have the doorway fitted with self-closing fire door having an FRL of not less than – /120/30. - Any electrical conductors located within the building that supply a substation or main switchboard for emergency equipment must comply with BCA clause C2.13. - Emergency equipment switchgear must be separated from non-emergency equipment switchgear by metal partitions designed to minimize the spread of a fault from the non-emergency equipment switchgear. Emergency equipment includes but is not limited to the following: – fire hydrant booster pumps; – sprinkler pumps; and – control and indicating equipment.	CRA – Refer Annexure C
PART C3 – PROTECTION OF OPENINGS		
C3.1: Application of Part	Informational	Noted
C3.2: Protection of openings in external walls	Openings in an external wall that is required to have an FRL must be protected in accordance with C3.4 if the distance between the opening and the fire-source feature is: - less than 3 m from a side or rear boundary; or - less than 6 m from the far boundary of a road, river, lake or the like adjoining the allotment, if not located in a storey at or near ground level; or - less than 6 m from another building on the allotment that is not Class 10; and if required to be protected under (a), not occupy more than 1/3 of the area of the external wall of the storey in which it is located. Where wall-wetting sprinklers are used, they must be located externally. The unprotected louvre openings of the loading dock are within 3 m of the side allotment boundary and are proposed to be addressed by the fire engineered solution.	Alternative Solution Refer to Part 4 of Report
C3.3: Separation of external walls and associated openings in different fire compartments	Not applicable	NA

SECTION C: FIRE RESISTANCE		
C3.4: Acceptable methods of protection	Where protection is required, openings must be protected as follows: <u>Doorways:</u> (i) external wall-wetting sprinklers used with doors that are self-closing; or (ii) –/60/30 fire doors that are self-closing. <u>Windows:</u> (i) external wall-wetting sprinklers used with windows that are automatic closing or permanently fixed in the closed position; or (ii) –60/– fire windows that are automatically closing or permanently fixed in the closed position; or (iii) –/60/– automatic closing fire shutters. <u>Other openings:</u> (i) Excluding voids – external wall-wetting sprinklers; or (ii) Construction having an FRL not less than –/60/– Fire doors must comply with BCA Specification C3.4.	CRA – Refer Annexure C
C3.5: Doorways in fire walls	Doorways in the fire walls must be protected by a self-closing or automatic closing fire door that achieves an FRL of not less than that required by Specification C1.1 for the fire wall except that each door must have an insulation level of at least 30. Where automatic closing, the closing operation must be initiated by the activation of a smoke detector located on each side of the fire wall not more than 1.5 m horizontal distance from the opening. Activation of the sprinkler system must also initiate the automatic closing operation.	CRA – Refer Annexure C
C3.8: Openings in fire-isolated exits	Not applicable	NA
C3.9: Service penetrations in fire-isolated exits	Not applicable	NA
C3.10: Openings in fire-isolated lift shafts	Not applicable	NA
C3.12: Openings in floors and ceilings for services	Not applicable – no fire-rated floors or ceilings are proposed.	NA
C3.13: Openings in shafts	Not applicable – no fire-rated shafts are proposed.	NA
C3.15: Openings for service installations	Where services pass through an element which is required to achieve a FRL the service must be fire protected in accordance with BCA Clause C3.15.	CRA – Refer Annexure C
C3.16: Construction joints	Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation must be protected in a manner identical with a prototype tested in accordance with AS 1530.4 to achieve the required FRL.	CRA – Refer Annexure C
C3.17: Columns protected with lightweight construction to achieve an FRL	Any column protected by lightweight construction to achieve an FRL which passes through a building element that is required to have an FRL or a resistance to the	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE		
	incipient spread of fire, must be installed using a method and materials identical with a prototype assembly of the construction which has achieved the required FRL or resistance to the incipient spread of fire.	
SPECIFICATION C.1.1 – FIRE-RESISTING CONSTRUCTION		
2.1: Exposure to fire-source features	A building element is exposed to a <i>fire-source feature</i> if any of the horizontal straight lines between that part and the fire-source feature, or vertical projection of the feature, is not obstructed by another part of the building that– (i) has an FRL of not less than 30/–/–; and (ii) is neither transparent nor translucent.	Noted
2.2: Fire protection for a support of another part	Where a part of a building required to have an FRL depends upon direct vertical or lateral support from another part to maintain its FRL, that supporting part must have an FRL not less than that required by other provisions of this Specification; and if located within the same fire compartment as the part it supports have an FRL in respect of structural adequacy the greater of that required for the supporting part itself and for the part it supports.	CRA – Refer Annexure C
2.3: Lintels	A lintel must have the FRL required for the part of the building in which it is situated unless it does not contribute to the support of a fire door, fire window or fire shutter and meets the requirements of Spec C1.1 clause 2.3 (a) & (b).	CRA – Refer Annexure C
2.4: Attachments not to impair fire-resistance	Where a combustible material is used as a finish or lining to a wall or roof, or sunscreen, or awning, to a building element required to have an FRL– • the material must be exempted under C1.10 or comply with the fire hazard properties prescribed under C1.10; and • the material must not be located near or directly above a required exit so as to make the exit unusable in a fire; and • the material must not otherwise constitute an undue risk of fire spread via the façade of the building or compromise egress from the building.	CRA – Refer Annexure C
2.7: Enclosure of shafts	Not applicable	NA
3.1: Fire-resistance of building elements	The following Type A construction requirements apply, other than where addressed by the alternative solution: • The FRL's of all elements are to be in accordance with the FRL's detailed in the Table contained within Part 4.0 of this report. • External walls, common walls and the flooring and floor framing of lift pits must be non-combustible; and • Internal walls required to be fire rated must extend to– (i) to the underside of the floor next above; or (ii) the underside of a roof complying with Table 3.	CRA – Refer Annexure C

SECTION C: FIRE RESISTANCE			
		- Load bearing internal walls and fire walls must be of concrete or masonry. - Non-loadbearing internal walls required to be fire rated, as well as non-load bearing lift, ventilating, pipe, garbage or similar shaft wall must be of non-combustible construction.	
3.5:	Roof: Concession	A roof need not comply with Table 3 if its covering is non-combustible and the building has a sprinkler system complying with Specification E1.5 installed throughout.	CRA – Refer Annexure C
3.7:	Internal columns and walls: Concession	For a building with an <i>effective height</i> of not more than 25 m and having a roof without an FRL in accordance with Clause 3.5, in the <i>storey</i> immediately below that roof, internal columns other than those referred to in Clause 3.1(f) and <i>internal walls</i> other than <i>fire walls</i> and <i>shaft walls</i> may have an FRL of 60/60/60.	CRA – Refer Annexure C
SPECIFICATION C1.10 – FIRE HAZARD PROPERTIES			
3.	Floor linings and floor coverings	A floor lining or floor covering must have a critical radiant flux not less than that listed in Table 2.	CRA – Refer Annexure C
4.	Wall and ceiling linings	a) A wall or ceiling lining system must comply with the group number specified in Table 3. b) A group number of a wall or ceiling lining and the smoke growth rate index or average specific extinction area must be determined in accordance with AS 5637.1.	CRA – Refer Annexure C
5.	Air-handling ductwork	Rigid and flexible ductwork must comply with the <i>fire hazard properties</i> set out in AS 4254 Parts 1 and 2.	CRA – Refer Annexure C
6.	Lift cars	Materials used as— a) floor linings and floor coverings must have a <i>critical radiant flux</i> not less than 2.2; and b) wall and ceiling linings must be a Group 1 material or a Group 2 material in accordance with AS 5637.1.	CRA – Refer Annexure C
7.	Other materials	Materials and assemblies not included in Clauses 3, 4, 5 or 6 must not exceed the indices set out in Table 4.	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
PART D1 – PROVISION FOR ESCAPE		
D1.2:	Number of exits required	Not less than 1 exit is required from each storey.
D1.3:	When fire-isolated stairways and ramps are required	In a sprinkler protected building, stairways connecting, passing through or passing by more than 3 storeys must be fire-isolated. The exit stair within Bay 11 will connect 4 storeys, however will not be fire-isolated under the alternative solution proposed.
		Complies
		Alternative Solution Refer to Part 4 of Report

SECTION D: ACCESS AND EGRESS		
D1.4: Exit travel distances	Clause D1.4 requires exit travel distances to comply with the following: - No point on a floor must be more than 20 m from an exit, or a point from which travel in different directions to 2 exits is available, in which case the maximum distance to one of those exits must not exceed 40 m; and - the distance to a single exit serving a storey at the level of access to a road or open space may be increased to 30 m. Travel distance within the service corridor will be up to 50 m to an exit under the fire-engineered solution.	Alternative Solution Refer to Part 4 of Report
D1.5: Distance between alternative exits	Exits that are required as alternative means of egress must be— (a) distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 exits is readily available from all points on the floor including lift lobby areas; and (b) not less than 9 m apart; and (c) not more than 60 m apart. Note: the distance between exits must be measured through the point at which travel two exits is available. Travel distance between alternative of up to 100 m will be permitted between exits from the service corridor as part of the fire-engineered solution.	Alternative Solution Refer to Part 4 of Report
D1.6: Dimensions of exits and paths of travel to exits	- The unobstructed height throughout exits and paths of travel to exits must not be less than 2 m, except the unobstructed height of any doorway may be reduced to not less than 1980 mm; and - The unobstructed width of each exit or path of travel to an exit, except for doorways must be not less than 1m; - the unobstructed width of doorways must be not less than 750 mm, unless providing access for people with disabilities in which case the unobstructed width must be not less than 850 mm. - the required width of a stairway or ramp must be measured clear of all obstructions such as handrails. The following non-compliances are noted in relation to Clause D1.6: - The exit stairs of Bays 3, 6 & 9 will have a clear width of less than 1m (800 mm, 850 mm and 850 mm respectively) and will be addressed by an alternative solution. - The height throughout the service corridor is less than 2 m in parts (plans indicate 1960 mm below ductwork near Bay 2). It is recommended that either all projections below the minimum 2.1 m ceiling height be above 2 m, or BCA compliance achieved via an alternative solution.	CRA – Refer Annexure C & Alternative Solution Refer to Part 4 of Report
D1.7: Travel via fire-isolated exits	Not applicable	NA

SECTION D: ACCESS AND EGRESS		
D1.9: Travel by non-fire-isolated stairways or ramps	- A non-fire-isolated stairway serving as a required exit must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided. - The distance from any point on a floor to a point of egress to a road or open space by way of a required non-fire-isolated stairway or non-fire-isolated ramp must not exceed 80m. - A required non-fire-isolated stairway or non-fire-isolated ramp must discharge at a point not more than – (i) 20 m from a doorway providing egress to a road or open space or from a fire-isolated passageway leading to a road or open space; or (ii) 40 m from one of 2 such doorways or passageways if travel to each of them from the non-fire-isolated stairway or non-fire-isolated ramp is in opposite or approximately opposite directions.	Complies
D1.10: Discharge from exits	- Exits must not be blocked at the point of discharge and where necessary, suitable barriers must be provided to prevent vehicles from blocking the exit. - If a required exit leads to open space, the path of travel to the road must have an unobstructed width of not less than 1m. It is understood that the exit path of travel from the loading dock exit door will be 950 mm in lieu of 1m wide. - If an exit discharges to open space that is at a different level that the public road to which it is connected, the path of travel to the road must be by a ramp or other incline not steeper than 1:8, or a BCA compliant stairway. - The discharge points of alternative exits must be as far apart as practical	Alternative Solution Refer to Part 4 of Report
D1.13: Number of persons accommodated	Population numbers have been calculated based on the following: 75% of the floor area dedicated to patron seating – thus calculated at 1m² per person, and 25% of the area treated as back of house (kitchen etc.) – thus calculated at 30m² per person. - The external seating areas at Ground Level have been based on counting the current seating in the design documentation. The population numbers calculated are as follows: Overall Population: 2100 + staff (240) – Total 2340 Level 1 (Ground): 1213 + staff (138) – Total 1351 Level 2 (Hickson Road): 445 + staff (51) – Total 496	Noted

SECTION D: ACCESS AND EGRESS		
	Level 3 (Upper Storey): 441 + staff (51) – Total 492 The reduced scope of the new Bay 12 design would further reduce the above population numbers, however for the purposes of this assessment, the accepted overall population of 2340 has been carried through within this report.	
D1.14: Measurement of distances	Informational – The nearest part of an exit means in the case of— (a) a fire-isolated stairway, fire-isolated passageway, or fire-isolated ramp, the nearest part of the doorway providing access to them; and (b) a non-fire-isolated stairway, the nearest part of the nearest riser; and (c) a non-fire-isolated ramp, the nearest part of the junction of the floor of the ramp and the floor of the storey; and (d) a doorway opening to a road or open space, the nearest part of the doorway; and (e) a horizontal exit, the nearest part of the doorway.	Noted
D1.15: Method of Measurement	Informational	Noted
D1.16: Plant rooms, lift motor rooms and electricity network substations: concession	Informational – (a) A ladder may be used in lieu of a stairway to provide egress from— (i) a plant room with a floor area of not more than 100 m²; or (ii) all but one point of egress from a plant room, a lift machine room or a Class 8 electricity network substation with a floor area of not more than 200 m². (b) A ladder permitted under (a)— (i) may form part of an exit provided that in the case of a fire-isolated stairway it is contained within the shaft; or (ii) may discharge within a storey in which case it must be considered as forming part of the path of travel; and (iii) for a plant room or a Class 8 electricity network substation, must comply with AS 1657.	Noted
D1.17: Access to lift pits	Access to the lift pit is assumed to be through the bottom landing doors as the pit is assumed to be less than 3m deep.	CRA – Refer Annexure C
PART D2 – CONSTRUCTION OF EXITS		
D2.2: Fire-isolated stairways and ramps	Not applicable	NA
D2.3: Non-fire-isolated stairways and ramps	Non-fire isolated stairways must be constructed according to D2.2, or only of— (a) reinforced or prestressed concrete; or (b) steel in no part less than 6 mm thick; or (c) timber that— (i) has a finished thickness of not less than 44 mm; and	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
	(ii) has an average density of not less than 800 kg/m³ at a moisture content of 12%; and (iii) has not been joined by means of glue unless it has been laminated and glued with resorcinol formaldehyde or resorcinol phenol formaldehyde glue".	
D2.7: Installations in exits and paths of travel	- Access to service shafts and services other than to fire-fighting or detection equipment must not be provided from a fire-isolated stairway or fire-isolated passageway. - Gas or other fuel services must not be installed in a required exit. - Any electricity meters, distribution boards or ducts, or telecommunications distribution boards or equipment installed in corridors/hallways/lobbies or the like must be enclosed with non-combustible construction or a fire protective covering with doorways suitably sealed against smoke spread.	CRA – Refer Annexure C
D2.8: Enclosure of space under stairs and ramps	The space below stairways (including an external stairways) must not be enclosed to form a cupboard or other enclosed space unless the enclosing walls and ceilings have an FRL of not less than 60/60/60 and the doorway is fitted with a self-closing –/60/30 fire door.	CRA – Refer Annexure C
D2.9: Width of stairways and ramps	Informational	Noted
D2.10: Pedestrian ramps	The floor surface of a ramp must have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586.	CRA – Refer Annexure C
D2.11: Fire-isolated passageways	Not applicable	NA
D2.13: Goings and risers	Stairways must comply with the following: - stairways must have not more than 18 and not less than 2 risers in each flight; - goings must be between 250 mm and 355 mm; - risers must be between 115 mm high and 190 mm high; - the slope relationship (2 x riser dimension + going dimension) must be within the range of 550-700; - the goings and risers must be constant (uniform) throughout each flight and the dimensions of goings (G) and risers (R) are considered constant if the variation between– (A) adjacent risers, or between adjacent goings, is no greater than 5 mm; and (B) the largest and smallest riser within a flight, or the largest and smallest going within a flight, does not exceed 10 mm. - Risers must not contain any openings that would permit a 125 mm sphere to pass through. - each tread must have a non-slip finish or an adequate non-skid strip near the edge of the nosings;	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS																			
	- treads must be of solid construction (not mesh or perforated) if the stairway is more than 10 m high or connects more than 3 storeys. - Treads must have a surface or nosing strip with a slip-resistant classification not less than that listed in Table D2.14 when tested in accordance with AS 4586-2013 <i>Slip resistance classification of new pedestrian surface materials</i>.																		
D2.14: Landings	Landings must be not less than 750 mm long and have either a surface with a slip-resistance classification complying with Table D2.14 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS 4586. <table border="1"> <thead> <tr> <th rowspan="2">Application</th><th colspan="2">Surface Condition</th></tr> <tr> <th>Dry</th><th>Wet</th></tr> </thead> <tbody> <tr> <td>Ramp steeper than 1:14</td><td>P4 or R11</td><td>P5 or R12</td></tr> <tr> <td>Ramp steeper than 1:20 but not steeper than 1:14</td><td>P3 or R10</td><td>P4 or R11</td></tr> <tr> <td>Tread or landing surface</td><td>P3 or R10</td><td>P4 or R11</td></tr> <tr> <td>Nosing or landing edge strip</td><td>P3</td><td>P4</td></tr> </tbody> </table>	Application	Surface Condition		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	P3	P4	CRA – Refer Annexure C
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D2.15: Thresholds	The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless the doorway is in a building required to be accessible by Part D3, and in which case the doorway opens to a road or open space and is provided with a threshold ramp or step ramp in accordance with AS 1428.1. Internal threshold steps or ramps are present at the following doorways: - Each of the doors to the service corridor from Bays 1 to Bay 10. - At the sliding doors and swing doors located between the bays on levels 02 & 03. It is recommended that BCA compliance be achieved via an alternative solution. This non-compliance will also impact access for people with disabilities and as such should be discussed with the access consultant.	Alternative Solution Refer to Part 4 of Report																	
D2.16: Barriers to prevent falls	Balustrades must be provided to stairs and balconies, driveway ramps etc where there is a fall of more than 1m. Balustrades must comply with the following: <u>Balustrade minimum heights</u> 865 mm above stair nosings; 865 mm above landings to a stair where the barrier is provided along the inside edge of the landing and does not exceed 500 mm in length; and 1 m in all other locations.	FI Refer to Part 4 of Report																	

SECTION D: ACCESS AND EGRESS		
	<u>Balustrade openings</u> A 125 mm sphere must not be able to pass through any opening and for stairways, the 125 mm is measured above the nosing line of the stair treads. <u>Climbability</u> For floors more than 4 m above the surface beneath, the balustrade must not incorporate any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that could facilitate climbing. A balustrade is required at the side of the new stairway to the Bay 12 seating area and between the seating area and the hedge where the fall below exceeds 1m.	
D2.17: Handrails	Handrails to stairways must: - be located along at least one side of the flight (a flight being 2 or more risers); and - located along each side if the total width of the stairway is 2 m or more; and - be fixed at a height of not less than 865 mm above the nosings of the stair treads; and - be continuous between stair flight landings and have no obstruction that will break a hand-hold. - be constructed to comply with clause 12 of AS 1428.1 (including handrails to the fire stairs). Handrails are to be provided to both sides of all new external stairways. Refer to Access Consultant for further details regarding clause D3.3 compliance.	DNC Refer to Part 5 of Report
D2.18: Fixed platforms, walkways stairways and ladders	Plant rooms may be accessed via stairs and ladders compliant with AS 1657-2013.	Noted
D2.19: Doorways and doors	- A doorway serving as a required exit or forming part of a required exit, must not be fitted with a sliding door unless it leads directly to a road or open space. - Sliding doors serving as exit doors must be openable manually under a force of not more than 110N. - Exit doors that are power operated must be able to be opened manually under a force of not more than 110 N if there is a malfunction or failure of the power source and if leading to road or open space, open automatically if there is a power failure or on the activation of a fire or smoke alarm anywhere in the fire compartment served by the door. - A power operated door in a path of travel to a required exit must be able to be opened manually under a force of not more than 110 N if there is a malfunction of the power source.	CRA – Refer Annexure C
D2.20: Swinging doors	A swinging door in a required exit must swing in the direction of egress unless–	CRA – Refer Annexure C

SECTION D: ACCESS AND EGRESS		
	- it serves a building or part with a floor area not more than 200 m², it is the only required exit from the building or part and it is fitted with a device for holding it in the open position; or - it serves a sanitary compartment or airlock (in which case it may swing in either direction).	
D2.21: Operation of latch	All doors in a required exit or forming part of a required exit AND doors in a path of travel to a required exit are required to be readily openable without a key from the side that faces a person seeking egress, by– (iii) a single hand downward action or pushing action on a single device which is located between 900mm and 1.1 m from the floor and if serving an area required to be accessible by Part D3 – C. be such that the hand of a person who cannot grip will not slip from the handle during the operation of the latch; and D. have a clearance between the handle and the back plate or door face at the centre grip section of the handle of not less than 35mm and not more than 45mm; or (iv) a single hand pushing action on a single device which is located between 900mm and 1.2m from the floor. The above requirements do not apply to a door that – (iii) serves a space which is otherwise inaccessible to persons at all times when the door is locked; or (iv) is fitted with a fail-safe device which automatically unlocks the door upon the activation of an AS 1670.1 detection system installed throughout the building. All door hardware on required exit doors and doors in the path of travel to an exit is to comply with D2.21, noting this may warrant Heritage input regarding existing heritage style doors.	CRA – Refer Annexure C
D2.23: Signs on doors	Signage in accordance with this clause is to be located on all fire doors stating “Fire Safety Door, Do Not Obstruct, Do Not Keep Open” in capital letters not less than 20 mm in height.	CRA – Refer Annexure C
PART D3 - ACCESS FOR PEOPLE WITH A DISABILITY		
Assessment against the requirements of BCA Part D3 does not form part of the scope of this report.		

SECTION E: SERVICES AND EQUIPMENT		
PART E1 – FIRE FIGHTING EQUIPMENT		
E1.3: Fire hydrants	As the building has a floor area greater than 500 m ² , a fire hydrant system complying with AS 2419.1-2005 must be provided to serve the building. Where coverage is proposed from existing street hydrants, detailed investigations into the suitability or otherwise of the street hydrants is to be undertaken to assess if this street hydrant affords complete coverage to the subject	Alternative Solution Refer to Part 4 of Report

SECTION E: SERVICES AND EQUIPMENT		
	development in accordance with E1.3 of BCA2015 and AS2419.1-2005.	
E1.4: Fire hose reels	A fire hose reel system complying with BCA clause E1.4 and AS 2441-2005 must be provided to the building. All points on a floor shall be within reach of a 4 m hose stream issuing from a nozzle at the end of the hose laid on floor. The hose length shall not exceed 36 m. Fire hose reels must be located adjacent to internal fire hydrants (where installed) and within 4 m of an exit. The existing fire hose reel system is to be upgraded to comply with the above. In Bay 6, the fire hose reel is located approximately 10 m from the exit on Level 2 and Level 3 which will be addressed by the alternative solution to be prepared under separate cover.	Alternative Solution Refer to Part 4 of Report
E1.5: Sprinklers	The building must be provided with a sprinkler system complying with Specification E1.5 installed throughout. The sprinkler system including all supporting infrastructure and pump sets and booster is to be upgraded as per E1.5 of BCA 2015 and AS2118.1-1999. This upgrade includes the Building Occupant Warning System as per Clause 6 of Specification E2.2a of BCA2015.	CRA – Refer Annexure C
E1.6: Portable fire extinguishers	Portable fire extinguishers must be provided in accordance with clause E1.6 & Table E1.6 of the BCA and must be selected, located and distributed in accordance with Sections 1, 2, 3 and 4 of AS 2444-2001.	CRA – Refer Annexure C
E1.9: Fire precautions during construction	Informational– During construction, not less than one portable fire extinguisher to suit Class A, B and C fires and electrical fires must be provided at all times on each storey adjacent to each required / temporary exit.	Noted
PART E2 – SMOKE HAZARD MANAGEMENT		
E2.2: General requirements (including Tables E2.2a and E2.2b)	<u>General smoke hazard management requirements</u> An air-handling system which does not form part of a smoke hazard management system in accordance with Table E2.2a or Table E2.2b and which recycles air from one fire compartment to another fire compartment or operates in a manner that may unduly contribute to the spread of smoke from one fire compartment to another fire compartment must— (i) be designed and installed to operate as a smoke control system in accordance with AS/NZS 1668.1; or (ii) (A) incorporate smoke dampers where the air-handling ducts penetrate any elements separating the fire compartments served; and (B) be arranged such that the air-handling system is shut down and the smoke dampers are activated to close automatically by smoke detectors complying with clause 4.10 of AS/NZS 1668.1. Miscellaneous air-handling systems covered by Sections 5 and 11 of AS/NZS 1668.1 serving more than one fire compartment and not forming part of a smoke hazard	Alternative Solution Refer to Part 4 of Report

SECTION E: SERVICES AND EQUIPMENT		
	management system must comply with that Section of the Standard. <u>Class 6</u> Class 6 fire compartments exceeding 2000 m² are required to be provided with an automatic smoke exhaust system complying with Specification E2.2b. No smoke exhaust will be provided under the proposed alternative solution, however the existing smoke detection system installed throughout the entire building will be upgraded to comply with AS 1670.1-2004. <u>Class 7a buildings</u> A Class 7a building provided with a mechanical ventilation system in accordance with AS 1668.2-2012 must comply with clause 5.5 of AS/NZS 1668.1 except that fans with metal blades for operation at normal temperatures may be used, and the electrical power and control cabling need not be fire rated.	
PART E3 – LIFT INSTALLATIONS		
E3.1: Lift installations	An electric passenger lift installation and an electrohydraulic passenger lift installation must comply with Specification E3.1	CRA – Refer Annexure C
E3.2: Stretcher facility in lifts	Not applicable	NA
E3.3: Warning against use of lifts in fire	Warning signs indicating “DO NOT USE LIFTS IF THERE IS A FIRE” shall be displayed near every call button for a passenger lift or group of lifts throughout a building as per E3.3.	CRA – Refer Annexure C
E3.4: Emergency lifts	Not applicable	NA
E3.5: Landings	Access and egress to and from lift-well landings must comply with the Deemed-to-Satisfy Provisions of Section D.	CRA – Refer Annexure C
E3.6: Passenger lifts	In an accessible building, every passenger lift must be one of the types specified in Table E3.6a, have accessible features in accordance with Table E3.6b, and not rely on a constant pressure device for its operation if the lift car is fully enclosed.	CRA – Refer Annexure C
E3.7: Fire service controls	Not applicable	NA
E3.9: Fire service recall switch	Not applicable	NA
E3.10: Lift car service drive control switch	Not applicable	NA
PART E4 – VISIBILITY IN AN EMERGENCY, EXIT SIGNS AND WARNING SYSTEMS		
E4.2: Emergency lighting requirements	An emergency lighting system must be installed throughout the building in accordance with Clause E4.2 of the BCA and AS 2293.1-2005.	CRA – Refer Annexure C
E4.3: Measurement of distance	Informational	Noted
E4.4: Design and operation of emergency lighting	The emergency lighting system must comply with AS 2293.1-2005.	CRA – Refer Annexure C
E4.5: Exit signs	Exit signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary.	CRA – Refer Annexure C
E4.6: Direction signs	Where an exit is not readily apparent, directional signage is to be installed indicating the direction of egress.	CRA – Refer Annexure C

SECTION E: SERVICES AND EQUIPMENT			
E4.8:	Design and operation of exit signs	Exit signs must comply with AS 2293.1-2005 and be clearly visible at all times when the building is occupied. As advised the type of exit signs are to be black background which is ordinarily only permitted for cinemas and theatres thus will need to be addressed as an alternate solution.	Alternative Solution Refer to Part 4 of Report
E4.9:	Sound systems and intercom systems for emergency purposes	Not applicable to this development	NA

SECTION F: HEALTH AND AMENITY			
PART F1 – DAMP AND WEATHERPROOFING			
F1.0:	Deemed-to-Satisfy Provisions	Informational	Noted
F1.1:	Stormwater drainage	Stormwater drainage to comply with AS3500.3-2003.	CRA – Refer Annexure C
F1.4:	External above ground membranes	Waterproofing membranes for external above ground use to comply with AS4654 Parts 1 and 2-2012.	CRA – Refer Annexure C
F1.5:	Roof coverings	Roof coverings are to comply with BCA Clause F1.5.	CRA – Refer Annexure C
F1.6:	Sarking	Sarking-type materials used for weatherproofing must comply with AS/NZS 4200 Part 1 and 2-1994.	CRA – Refer Annexure C
F1.7:	Water proofing of wet areas in buildings	Wet areas must be constructed in accordance with AS 3740-2010 and F1.7 of the BCA.	CRA – Refer Annexure C
F1.9:	Damp-proofing	Moisture is to be prevented from reaching the walls above a damp-proof course, and the underside of the suspended floors.	CRA – Refer Annexure C
F1.10:	Damp-proofing of floors on the ground	If a floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870-2011 (N/A to areas that do not require weatherproofing – refer specific clause exemptions).	CRA – Refer Annexure C
F1.13:	Glazed Assemblies	Glazed assemblies are to comply with AS2047 and AS1288.	CRA – Refer Annexure C
PART F2 – SANITARY AND OTHER FACILITIES			
F2.2:	Calculation of number of occupants and facilities	Informational – Sanitary facilities must be provided on the basis of equal numbers of males and females. In calculating the number of sanitary facilities to be provided, a unisex facility required for people with a disability may be counted once for each sex.	Noted
F2.3:	Facilities in Class 3 to 9 buildings (including Table F2.3)	Sanitary facilities must be provided in accordance with BCA Clause F2.3 and Table F2.3. Employees and the public may share the same facilities in a Class 6 building provided the number of facilities provided is not less than the total number of facilities required for employees plus those required for the public. The number of sanitary facilities required for 240 staff is as follows:	Complies

SECTION F: HEALTH AND AMENITY		
	Males: 6 closet pans, 4 urinals & 4 wash basins Females: 8 closet pans & 4 wash basins. The remaining facilities can be counted for patron use as follows: Male facilities: 8 urinals, 2 closet pans & 2 wash basins; Female facilities: 3 closet pans & 2 wash basins; Unisex toilets: 24 (12 male & 12 female) Accessible unisex toilets: 6 With reference to Table F2.3, and noting that the accessible unisex toilets can be counted once for each sex, the above facilities can cater for up to 3,300 patrons. Sufficient sanitary facilities are provided.	
F2.4:	Accessible sanitary facilities (including Table F2.4) Accessible sanitary facilities are provided in the numbers required. Refer to access consultant's report for further details.	CRA – Refer Annexure C
F2.5:	Construction of sanitary compartments 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 between the closet pan within the sanitary compartment and the doorway.	CRA – Refer Annexure C
F2.6:	Interpretation: urinals and washbasins Informational— (a) A urinal may be— (i) an individual stall or wall-hung urinal; or (ii) each 600 mm length of a continuous urinal trough; or (iii) a closet pan used in place of a urinal. (b) A washbasin may be— (i) an individual basin; or (ii) a part of a hand washing trough served by a single water tap.	Noted
PART F3 – ROOM SIZES		
F3.1:	Height of rooms and other spaces Ceiling heights are required to be not less than 2.4 m generally and not less than 2.1 m in corridor, passageways, sanitary compartments and not less than 2m above the nosing line of stairways and landings. Rear service corridor at ground level is in parts less than 2.1m	Alternative Solution Refer to Part 4 of Report
PART F4 – LIGHT AND VENTILATION		
F4.4:	Artificial Lighting Lighting to the all areas is to comply with AS 1680.0.	CRA – Refer Annexure C
F4.5:	Ventilation of rooms All rooms to be provided with Clause F4.6 compliant natural ventilation OR a mechanical ventilation or air-conditioning system complying with AS 1668.2-2012.	CRA – Refer Annexure C
F4.6:	Natural ventilation (a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, windows, doors or other devices which can be opened— (i) with an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and (ii) open to—	CRA – Refer Annexure C

SECTION F: HEALTH AND AMENITY			
		(A) a suitably sized court, or space open to the sky; or (B) an open verandah, carport, or the like; or (C) an adjoining room in accordance with F4.7.	
F4.7:	Ventilation borrowed from adjoining room	Ventilation may be borrowed from an adjoining room in accordance with this clause.	CRA – Refer Annexure C
F4.8:	Restriction on position of water closets and urinals	A room containing a closet pan or urinal must not open directly into a kitchen, pantry or a workplace normally occupied by more than one person.	Complies
F4.12:	Kitchen local exhaust ventilation	Any commercial kitchen must be provided with a kitchen exhaust hood complying with AS/NZS 1668.1 and AS 1668.2 where: - any cooking apparatus has: - a total maximum electrical power input exceeding 8 kW; or - a total gas power input exceeding 29 MJ/h; or - the total maximum power input to more than one apparatus exceeds: 0.5 kW electrical power; or 1.8 MJ gas, Per m ² of floor area of the room or enclosure.	CRA – Refer Annexure C
PART F5 – SOUND TRANSMISSION AND INSULATION			
Part F5 is not applicable			

SECTION G: ANCILLARY PROVISIONS			
PART G1 – MINOR STRUCTURES AND COMPONENTS			
G1.2:	Refrigerated chambers, strong-rooms and vaults	Cool rooms large enough for a person to enter must comply with BCA Clause G1.2.	CRA – Refer Annexure C
NSW G1.101:	Provision for cleaning windows	A safe manner for cleaning of windows located 3 or more storeys above ground level must be provided, and compliance is achieved where: - the windows can be cleaned wholly from within the building; or - via a method complying with the Work Health and Safety Act 2011 and regulations made under that Act.	CRA – Refer Annexure C
PART G3 – ATRIUM CONSTRUCTION			
G3.1:	Atriums Affected by the Part	This part does not apply to an atrium which connects only 3 storeys in a sprinkler protected building and one of those storeys is situated at the level at which there is direct egress to a road or open space.	Noted

SECTION J: ENERGY EFFICIENCY			
PART J1 – BUILDING FABRIC			
J1.1:	Application of Part	The provisions of Part J1 apply to building elements forming part of the <i>envelope</i> of the building.	CRA – Refer Annexure C
J1.2:	Thermal construction general	Where required insulation is to comply with AS4859.1 and be installed in accordance with this clause.	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY		
J1.3: Roof and ceiling construction	a) Roof and ceiling construction must achieve the Total R-Value specified in BCA Table J1.3a for the direction of heat flow. b) For compliance with Table J1.3a, roof and ceiling construction is deemed to have the thermal properties listed in Specification J1.3. c) Where, for operational or safety reasons associated with exhaust fans, flues or recessed down lights, the area of required ceiling insulation is reduced, the loss of insulation must be compensated for by increasing the R-Value of the insulation in the remainder of the ceiling in accordance with Table J1.3b. d) A roof that: (i) is required to achieve a minimum Total R-Value; and (ii) has metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and (iii) does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens (see Specification J1.3 Figure 2(c) and (f)), must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens. Such R Value upgrade to the existing roof is only required if a new roof is proposed – otherwise insulation upgrade is at the clients discretion	CRA – Refer Annexure C
J1.4: Roof lights	Any roof lights, including any associated shaft and diffuser, must comply with the requirements of BCA Clause J1.4. No roof lights proposed at this stage	N/A
J1.5: Walls	a) Each part of an external wall that is part of the <i>envelope</i> must satisfy one of the options in Table J1.5a except for: (i) opaque non-glazed openings in external walls such as doors, vents, penetrations, shutters and the like; and (ii) glazing. b) Any wall other than an external wall that is part of the <i>envelope</i> must achieve the Total R-Value in Table J1.5b. c) A wall that: (i) is required to achieve a minimum Total R-Value; and (ii) has lightweight external cladding such as weatherboards, fibre cement or metal sheeting fixed to a metal frame; and (iii) does not have a wall lining or has a wall lining fixed directly to the same metal frame,	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY		
	must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed between the external cladding and the metal frame. d) For compliance with Table J1.5a and Table J1.5b, wall construction is deemed to have the thermal properties listed in Specification J1.5. Such R Value upgrade to the existing walls is only required if new walls are proposed – otherwise insulation upgrade is at the clients discretion	
J1.6: Floors	a) A floor that is part of the <i>envelope</i> of a building, including a floor above or below a carpark or plant room: (i) must achieve the Total R-Value specified in Table J1.6; and (ii) with an in-slab heating or cooling system, must be insulated around the vertical edge of its perimeter with insulation having an R-Value of not less than 1.0. b) The minimum Total R-Value required in (a) may be reduced by R0.5 provided R0.75 is added to the Total R-Value required for the roof and ceiling construction. c) A concrete slab-on-ground with an in-slab heating or cooling system must have insulation installed around the vertical edge of its perimeter. d) Insulation required by (c) must– (i) have an R-Value of not less than 1.0; and (ii) be water resistant; and (iii) be continuous from the adjacent finished ground level– A. to a depth of not less than 300 mm; or B. for the full depth of the vertical edge of the concrete slab-on-ground. e) Floor construction is deemed to have the thermal properties listed in Specification J1.6.	CRA – Refer Annexure C
PART J2 – GLAZING		
J2.1: Application of Part	This part applies to all glazing located in the <i>envelope</i> of the building.	Noted
J2.4: Glazing	New glazing to comply with this clause, it is noted that this assessment does not include an assessment with the glazing calculator.	CRA – Refer Annexure C
J2.5: Shading	Shading where required by Clause J2.4, must comply with BCA Clause J2.5.	CRA – Refer Annexure C
PART J3 – BUILDING SEALING		
J3.1: Application of Part	The requirements of this Part apply to elements forming the <i>envelope</i> of the building other than: - a building in a climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler; - a permanent building opening necessary for the safe operation of a gas appliance;	Noted

SECTION J: ENERGY EFFICIENCY		
	- a building or part where mechanical ventilation required by part f4 provides sufficient pressurization to prevent infiltration; - parts of buildings that cannot be fully enclosed.	
J3.2: Chimneys and flues	The chimney or flue of an open solid-fuel burning appliance must be provided with a damper or flap that can be closed to seal the chimney or flue.	CRA – Refer Annexure C
J3.3: Roof lights	Roof lights must be sealed or be capable of being sealed and must be constructed with— (i) an imperforate ceiling diffuser or the like installed at the ceiling or lining level; or (ii) a weatherproof seal; or (iii) a shutter system readily operated either manually, mechanically or electronically by the occupant.	CRA – Refer Annexure C
J3.4: External windows and doors	- A seal to restrict air infiltration must be fitted to each edge of a door, openable window or the like forming part of: - the <i>envelope</i> of a conditioned space; or - the external fabric of a public area. - The above does not apply to: - a window complying with AS 2047; or - a fire door or smoke door; or - a roller shutter door, roller shutter grille or other security device. - For the bottom edge of external swing doors, the seal must be a draft protection device and may otherwise be a foam or rubber compression strip, fibrous seal or the like. - An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, revolving door or the like.	CRA – Refer Annexure C
J3.5: Exhaust fans	The exhaust fans to the sanitary facilities and any other miscellaneous exhaust fans to conditioned spaces, are to be pre-fitted with a sealing device, such as a self-closing damper of the like.	CRA – Refer Annexure C
J3.6: Construction of roofs, walls and floors	The roof, walls, floors and any other openings, such as window or doors, are to be constructed to minimise air leakage by being enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions or are sealed by caulking, skirting, architraves, cornices or the like.	CRA – Refer Annexure C
J3.7: Evaporative Coolers	Where provided an evaporative cooler is to be fitted with a self-closing damper in accordance with this clause.	CRA – Refer Annexure C
PART J5 – AIR CONDITIONING AND VENTILATION SYSTEMS		
J5.2: Air-conditioning systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
J5.3: Mechanical ventilation systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C

SECTION J: ENERGY EFFICIENCY			
J5.4:	Miscellaneous exhaust systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA – Refer Annexure C
PART J6 – ARTIFICIAL LIGHTING AND POWER			
J6.1:	Application of Part	Applies to all buildings except a Class 8 electricity network substation.	Noted
J6.2:	Artificial lighting	Artificial lighting must comply with J6.2(b) and J6.2(c), relevant to maximum permitted illumination power loads. Design certification to be provided by the electrical designer.	CRA – Refer Annexure C
J6.3:	Interior artificial lighting and power control	Lighting switches and control devices must comply with BCA Clause J6.3. Design certification to be provided by the electrical designer.	CRA – Refer Annexure C
J6.4:	Interior decorative and display lighting	Lighting falling under this clause is to be separately switched from other lighting, be under a manual switch and controlled with a time switch. Design certification to be provided by the electrical designer.	CRA – Refer Annexure C
J6.5:	Artificial lighting around the perimeter of a building	Artificial lighting around the perimeter of a building must be controlled by sensors or time switches in accordance with the specific requirements of this clause. Design certification to be provided by the electrical designer.	CRA – Refer Annexure C
J6.6:	Boiling water and chilled water storage units	The power supply to a fixed boiling water or chilled water storage unit must be controlled by a time switch in accordance with BCA Specification J6. Design certification to be provided by the electrical designer.	CRA – Refer Annexure C
PART J7 – HEATED WATER SUPPLY			
J7.2:	Heated water supply	The hot water supply systems must be designed and installed in accordance with Part B2 of NCC Volume Three — Plumbing Code of Australia.	CRA – Refer Annexure C
PART J8 – FACILITIES FOR ENERGY MONITORING			
J8.1	Application of Part	Informational	Noted
J8.3	Facilities for energy monitoring	- The building must have an energy monitoring facility to record the consumption of gas and electricity. - The building must have the facility to record, individually the energy consumption of: - air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and - artificial lighting; and - appliance power; and - central hot water supply; and - internal transport devices including lifts, escalators and travelators where there is more than one serving the building; and - other ancillary plant.	CRA – Refer Annexure C

ANNEXURE C - BCA COMPLIANCE SPECIFICATION

The following BCA matters are to be addressed by specific BCA Design Certificate to be issued by the relevant architectural, services and engineering consultants at the Construction Certificate Stage. This schedule should be forwarded to all consultants to obtain verification that these items have and will be included in the design documentation / specifications:

Architectural Design Certification:

1. The FRL's of building elements for the proposed works have been designed in accordance with Table 3 of Specification C1.1 of BCA2015 for a building of Type A Construction, other where varied by the fire engineered alternative solution report.
2. Materials, floor and wall linings/coverings, surface finished and air-handling ductwork used in the works will comply with the fire hazard properties of Clause C1.10 and Specification C1.10 of BCA2015.
3. The building will be separated into separate fire compartments by a fire wall compliant with Clause C2.7 and Specification C1.1 of BCA2015.
4. The parts of different classifications located alongside one another in the same storey will be separated in accordance with Clause C2.8 and Specification C1.1 of BCA2015.
5. Equipment will be separated in accordance with Clause C2.12 of BCA2015.
6. Any main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having a FRL 120/120/120 and provided with self-closing -/120/130 fire doors in accordance with Clause C2.13 of BCA2015.
7. Openings in the external walls that are required to have an FRL will be in located in accordance with Clause C3.2 and C3.3 of BCA2015 or protected in accordance with Clause C3.4 of BCA2015, except where BCA compliance is achieved via an alternative solution.
8. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C3.5 of BCA2015.
9. Services penetrating elements required to possess a FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C3.15 and Specification C3.15 of BCA2015.
10. Construction joints, spaces and the like in and between building elements required to be fire-resisting with respect to integrity and insulation will be protected in accordance with BCA Clause C3.16.
11. All attachments to the external façade of the building will be of a non-combustible material, or a combustible material in accordance with Clause 2.4 of Specification C1.1 of BCA2015.
12. Fire doors will comply with AS1905.1 and Specification C3.4 of BCA2015.
13. Travel distances to exits will be in accordance with Clause D1.4 of BCA2015, other where varied by the fire engineered alternative solution report.
14. The alternative exits will be distributed uniformly around the storey and will not be less than 9m apart, and not more than 60 m apart, other than where varied by the fire engineered alternative solution report.
15. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6 of BCA2015, other than where varied by the fire engineered alternative solution report.
16. Access to the lift pit will be in accordance with Clause D1.17 of BCA2015.
17. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2015.
18. The construction of EDB's and telecommunications distribution boards will be in accordance with Clause D2.7 of BCA2015 with the enclosure bounded by non-combustible construction or fire protective covering and smoke seals provided around the perimeter of the non-combustible doors and any openings sealed with non-combustible mastic to prevent smoke spreading from the enclosure.
19. New pedestrian ramps will have a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586.

20. Stair geometry to the new stairways will be in accordance with Clause D2.13 of BCA2015. Stair treads are to have a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586.
21. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15 of BCA2015, except where BCA compliance is achieved via an alternative solution. Landings to have either a surface with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586 or a strip at the edge of the landing with a slip-resistance classification complying with Table D2.14 when tested in accordance with AS4586 where the edge ledge to a flight below.
22. The handrails and balustrades to all stairs and throughout the building will be in accordance with Clause D2.16, and D2.17 of BCA2015.
23. The doorways and doors will be in accordance with Clause D2.19 and D2.20 of BCA2015.
24. The door latching mechanisms to the proposed required exit doors will be in accordance with Clause D2.21 of BCA2015.
25. Fire precautions whilst the building is under construction fire precautions will be in accordance with Clause E1.9 of BCA2015.
26. The new roof covering will be in accordance with Clause F1.5 of BCA2015.
27. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2015.
28. Waterproofing of all wet areas to the building will be carried out in accordance with Clause F1.7 of BCA2015 and AS3740.
29. Damp proofing of the proposed structure will be carried out in accordance with Clause F1.9 and F1.10 of BCA2015.
30. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2015 and AS1288 / AS2047.
31. Sanitary facilities will be provided in the building in accordance with Clause F2.1, Table F2.1, Clause F2.3 and Table 52.3 of BCA2015.
32. Accessible sanitary facilities will be provided in the building in accordance with Clause F2.4, Table F2.4 (a) of BCA2015 and AS1428.1-2009.
33. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2015.
34. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2015, other than where varied by the fire engineered alternative solution report.
35. A means of cleaning of windows in accordance with the Work Health & Safety Act 2011 and regulations made under that Act in accordance with NSW G1.101 of BCA2015.
36. The cool rooms will be in accordance with Clause G1.2 of BCA2015.
37. Essential fire or other safety measures must be maintained and certified on an ongoing basis, in accordance with the provisions of the Environmental Planning and Assessment Regulation, 2000.
38. Building Fabric and Thermal Construction will be in accordance with Part J1 of BCA2015.
39. Glazing will be in accordance with Part J2 of BCA2015.
40. Building sealing will be in accordance with Part J3 of BCA2015.
41. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2015.

Electrical Services Design Certification:

42. An automatic fire detection and alarm system will be installed throughout the building in accordance with Clause 4 and 6 of Specification E2.2a and AS1670.1-2004.
43. Emergency lighting will be installed throughout the development in accordance with Clause E4.2, E4.4 of BCA2015 and AS2293.1.
44. Exit signage will be installed in accordance with Clause E4.5, E4.7, and E4.8 of BCA2015 and AS2293.1.

45. Artificial lighting will be installed throughout the development in accordance Clause F4.4 of BCA2015 and AS/NZS 1680.0.
46. Lighting power and controls will be installed in accordance with Part J6 of BCA2015.

Hydraulic Services Design Certification:

47. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2015 and ASNZS3500.3
48. Fire hydrants will be installed in accordance with Clause E1.3 of BCA2015 and AS2419.1 as required.
49. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2015 and AS2441.
50. A sprinkler system will be installed in accordance with Clause E1.5 of BCA2015, Specification E1.5 and AS2118.
51. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2015 and AS2444.
52. The heated water supply systems will be designed and installed to NCC Volume 3 – Plumbing code and Clause J7.2 of BCA2015.

Mechanical Services Design Certification:

53. An air-handling system which does not form part of a smoke hazard management system will be installed in accordance with Clause E2.2 of BCA2015, and AS/NZS 1668.1.
54. Where not naturally ventilated the building will be mechanically ventilated in accordance with Clause F4.5 of BCA2015 and AS1668.2.
55. The commercial kitchen(s) will be provided with a kitchen exhaust hood in accordance with Clause F4.12 of BCA2015, and AS/NZS 1668.1 and AS1668.2.
56. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA2015.

Structural Engineers Design Certification:

57. The material and forms of construction for the proposed works will be in accordance with Clause B1.2, B1.4 and B1.6 of BCA2015 as follows:
 - Dead and Live Loads – AS1170.1
 - Wind Loads – AS1170.2
 - Earthquake actions – AS1170.4
 - Masonry – AS3700
 - Concrete Construction – AS3600
 - Steel Construction AS4100
 - Aluminium Construction – AS/NZS1664.1 or 2
 - Timber Construction – AS 1720.1
 - ABCB Standard for Construction of Buildings in Flood Hazard Areas.
58. The FRL's of the structural elements for the proposed works have been designed in accordance with Table 3 for a building of Type A Construction, other than where varied by the fire engineered alternative solution report.
59. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2015.
60. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2015 to maintain the FRL integrity of the element concerned.

Lift Services Design Certification:

61. Warning signage in accordance with Clause E3.3 of BCA2015 will be provided to the lifts to advise not to use the lifts in a fire.
62. The type of lifts will also be suitable to accommodate persons with a disability in accordance with Clause E3.6, Table E3.6a, and will have accessible features in accordance with Table E3.6b of BCA2015.
63. The lifts will comply with AS1735.12 in accordance with Clause E3.6 of BCA2015.

ANNEXURE D – FIRE RESISTANCE LEVELS

The following fire resistance levels (FRL's) are required for the various structural elements of the building, with a fire source feature being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure.

Type A Construction

Item	Class 7a	Class 6	Class 7b
Loadbearing External Walls - Less than 1.5m to a fire source feature 1.5 – 3m from fire source feature; - More than 3m from a fire source feature	120/120/120 120/90/90 120/60/30	180/180/180 180/180/120 180/120/90	240/240/240 240/240/180 240/180/90
Non-Loadbearing External Walls - Less than 1.5m to a fire source feature 1.5 – 3m from fire source feature; - More than 3m from a fire source feature.	-/120/120 -/90/90 -/-/-	-/180/180 -/180/120 -/-/-	-/240/240 -/240/180 -/-/-
External Columns - Loadbearing - Non-loadbearing	120/-/- -/-/-	180/-/- -/-/-	240/-/- -/-/-
Common Walls & Fire Walls	120/120/120	180/180/180	240/240/240
Stair and Lift Shaft - Loadbearing - Non-loadbearing	120/120/120 -/120/120	180/120/120 -/120/120	240/120/120 -/120/120
Internal walls bounding sole occupancy units - Loadbearing - Non-loadbearing	120/-/- -/-/-	180/-/- -/-/-	240/-/- -/-/-
Internal walls bounding public corridors, public lobbies and the like: - Loadbearing - Non-loadbearing	120/-/- -/-/-	180/-/- -/-/-	240/-/- -/-/-
Ventilating, pipe, garbage and like shafts: - Loadbearing - Non-loadbearing	120/90/90 -/90/90	180/120/120 -/120/120	240/120/120 -/120/120
Other loadbearing internal walls, beams trusses and columns	120/-/-	180/-/-	240/-/-
Floors	120/120/120	180/180/180	240/240/240
Roofs ¹	120/60/30	180/60/30	240/90/60

¹ The roof need not comply with any FRL's due to the sprinkler protection of the entire building.

ANNEXURE E – FIRE COMPARTMENT SIZE CALCULATION PLAN (BAYS 1 TO 11 ONLY)

