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Building Code of Australia Capability and Fire Safety Upgrade Report

Anytime Manly
3-5 Pittwater Road, Manly

10 August 2024

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Building Code of Australia Capability and Fire Safety Upgrade Report

1. Executive Summary

1.1. General

(a) This report presents the findings of an assessment of the:

(i) Development consisting of use of remaining adjoining tenancy as a gym and building work consisting of internal alterations (the **development**), assessed against the Deemed-to-Satisfy (**DTS**) provisions of Volume 1 of the Building Code of Australia, Edition 2022 (the **BCA**); and

(ii) Parts of the building not currently subject to building work (the **existing building**), assessed against Section 64 of the Environmental Planning and Assessment Regulation 2021 in relation to the ensuring the measures in the existing building part are adequate:

i. To protect persons using the building, if there is a fire;

ii. To facilitate the safe egress of persons using the building from the building, if there is a fire, or

iii. To restrict the spread of fire from the building to other buildings nearby.

(b) In addition to the requirements outlined in Parts 4 and 5, the assessment of the development identified the following variations with the DTS provisions of the BCA:

(i) C2D14 – Ancillary elements, namely proposed illuminated signage that is typically combustible.

(ii) F4D4 – Facilities in Class 3 to 9 buildings, namely proposed unisex sanitary facilities.

(c) The assessment of the existing building determined the measures in the existing building are inadequate:

(i) To protect persons using the building, if there is a fire;

(ii) To facilitate the safe egress of persons using the building from the building, if there is a fire, or

(iii) To restrict the spread of fire from the building to other buildings nearby,

and hence the following upgrades are recommended:

(i) Rectification of the northern and western elevations of the storeroom with fire-resisting external walls having an FRL of not less than 120/120/120 or -/120/120 (both ways) that are non-combustible.

(ii) Protection of openings in the western elevation less than 3m from the allotment boundary as follows:

i. Doorways

(A) External wall-wetting sprinklers used with doors that are self-closing or automatic closing.

ii. Windows

(A) External wall-wetting sprinklers used with windows that are automatic closing or permanently fixed in the closed position.

iii. Other openings

(A) Excluding voids — internal or external wall-wetting sprinklers, as appropriate; or

(B) Construction having an FRL not less than -/60/-.

(iii) Enclosing the electrical services in an enclosure that is suitably sealed against smoke spreading from the enclosure and be:

i. Non-combustible construction; or

ii. A fire-protective covering (i.e. 1 layer of 13mm fire-protective grade plasterboard).

(iv) Installation of permanent signage to the top and bottom of the stairways stating “CAUTION USE HANDRAIL” or similar in letters not less than 20mm high in a colour contrasting with the background.

(v) Installation of contrasting nosing strips having a slip-resistance classification of not less than P5 when tested in accordance with AS4586-2013 to the treads of the stairways.

(vi) Installation of automatic artificial lighting having a maintained illuminance of not less than 80 lux to the stairways.

(vii) Installation of permanent signage to either side of the door to the subject thresholds stating “CAUTION WATCH YOUR STEP” or similar in letters not less than 20mm high in a colour contrasting with the background.

(viii) Installation of automatic artificial lighting having a maintained illuminance of not less than 80 lux to either side of the subject thresholds.

(ix) Installation of a handrail along one side of the stairway to the entry.

(x) Installation of a lock which will automatically lock the doors in exits at the front in the open position

(xi) Rectification of the gates leading to the Raglan Street so that latch is readily openable without a key from the side that faces a person seeking egress, by a single hand downward or pushing action on a single device.

(xii) Installation of a fire hose reel within 4m of an exit to the ground floor.

(xiii) Installation of additional emergency lighting throughout (including to the external stairway).

(xiv) Installation of illuminated exit signs above or adjacent to all doors in required exits.

(xv) Installation of additional illuminated direction signs throughout.

(d) In summary, the assessment found that compliance is capable, subject to compliance with Parts 4-6. Hence, no impediment to the issuing of a development consent from a BCA and fire safety upgrading perspective.

2. Introduction

2.1. General

This report presents the findings of an assessment of the:

(a) Development, assessed against the DTS provisions of the BCA; and

(b) Existing building, assessed against Section 64 of the Environmental Planning and Assessment Regulation 2021 in relation to the measures typically requried under the DTS provisions of Sections C, D & E of the BCA.

2.2. Report Basis, Limitations & Assumptions

(a) The purpose of this is report is to provide an assessment of the:

(i) Development, assessed against the DTS provisions of the BCA; and

(ii) Existing building, assessed against Section 64 of the Environmental Planning and Assessment Regulation 2021 in relation to the ensuring the measures in the existing building part are adequate:

i. To protect persons using the building, if there is a fire;

ii. To facilitate the safe egress of persons using the building from the building, if there is a fire, or

iii. To restrict the spread of fire from the building to other buildings nearby.

(b) It is conveyed that this report should not be construed to infer that an assessment for compliance with the following has been undertaken:

(i) The existing building, except as noted otherwise;

(ii) Work Health and Safety Act 2011 and regulations made under that Act;

(iii) SafeWork NSW requirements;

(iv) The individual requirements of service authorities (i.e. telecommunication carriers, Sydney Water, energy providers);

(v) Standard of performance and/or operation of any existing fire safety measures;

(vi) The Disability Discrimination Act 1992;

(vii) The requirements of the Australian Standards (**AS**) and Australian/New Zealand Standards (**AS/NZS**);

(viii) Determining full compliance with the DTS provisions of the BCA;

(ix) Consideration of Council's local planning policies;

(x) Consideration of State planning policies;

(xi) Assessment of any development applications or the approval of any local authority requirements;

(xii) Energy efficiency, including NAThers requirements; and

(xiii) Any performance solutions relating to the development and/or existing building.

(c) The following assumptions have been used as part of the assessment:

(i) The development contains not more than 2 employees;

(ii) The development contains not more than 30 participants (being 15 males and 15 females);

(iii) The existing accessible unisex sanitary facility is the required sanitary facility for employees; and

(iv) All external doorways on the ground floor are exits; and

(v) The subject allotment is benefited by a right of way leading to the Raglan Street for the path of travel to the road from the rear exits.

2.3. Regulatory Framework

The following legislation has been considered in the formulation of this report:

(a) Environmental Planning and Assessment Act 1979;

(b) Environmental Planning and Assessment Regulation 2021; and

(c) Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

2.4. Information Sources

The following information has been used in the formulation of this report:

(a) Site inspection on 16 July 2024; and

(b) Architectural drawings prepared by Archispectrum as listed in Table 1 below:

Title	Drawing No.	Revision	Date

Existing Ground Floor Plan	DA01.01	n/a	n/a
Existing First Floor Plan	DA01.02	n/a	n/a
Proposed Ground Floor Plan	DA02.01	n/a	n/a
Proposed First Floor Plan	DA02.02	n/a	n/a
Elevations	DA03.01	n/a	n/a

Table 1 – Architectural drawings

3. Development Description

3.1. General

In accordance with the BCA, the assessment undertaken relates to the development and existing building.

Figure 1 – Existing floor plans

Figure 2 – Proposed floor plans with building work shown in red

3.2. Description

Table 2 below outlines key criteria for the existing building and /or development in accordance with the BCA.

BCA clause		
Schedule 1	Effective Height	3.5m
A6	Classification	Class 9b (gym)
C2D2	Type of Construction	Type B Construction

C2D3	Rise in Storeys	Rise in storeys of 2

Table 2 – Key criteria

4. Assessment Summary

4.1. General

(a) The following table summarises the compliance status in terms of each applicable BCA clause and indicates a capability for compliance.

(b) For those instances of where compliance is not demonstrated, commentary and resolutions are provided within Parts 5 and 6.

4.2. Section B – Structure

BCA clause		Status
B1D2	Resistance to actions	Refer to Part 5
B1D3	Determination of individual actions	Refer to Part 5
B1D4	Determination of structural resistance of materials and forms of construction	Refer to Part 5

4.3. Section C – Fire Resistance

BCA clause		Status
C2D2	Type of construction required	Refer to Part 5
C2D9	Lightweight construction	Refer to Parts 5 and 6
C2D10	Non-combustible building elements	Refer to Part 5
C2D11	Fire hazard properties	Refer to Part 5
C2D14	Ancillary elements	Refer to Part 5
C3D3	General floor area and volume limitations	Complies
C4D3	Protection of openings in external walls	Refer to Parts 5 and 6
C4D5	Acceptable methods of protection	Refer to Parts 5 and 6
C4D13	Openings in floors and ceilings for services	Refer to Part 5
C4D15	Openings for service installations	Refer to Parts 5 and 6
C4D16	Construction joints	Refer to Parts 5 and 6
C4D17	Columns protected with lightweight construction to achieve an FRL	Refer to Parts 5 and 6

4.4. Section D – Access and Egress

BCA clause		Status
D2D3	Number of exits required	Complies
D2D5	Exit travel distances	Complies
D2D6	Distance between alternative exits	Complies
D2D7	Heights of exits, paths of travel to exits and doorways	Refer to Part 5
D2D8	Width of exits and paths of travel to exits	Refer to Part 5
D2D9	Width of doorways in exits or paths of travel to exits	Refer to Part 5
D2D14	Travel by non-fire-isolated stairways or ramps	Complies
D2D15	Discharge from exits	Refer to Part 5
D3D8	Installations in exits and paths of travel	Refer to Part 5
D3D14	Goings and risers	Refer to Part 5
D3D15	Landings	Complies
D3D16	Thresholds	Refer to Part 5

D3D17	Barrier to prevent falls	Refer to Part 5
D3D18	Height of barriers	Refer to Part 5
D3D19	Openings in barriers	Refer to Part 5
D3D22	Handrails	Refer to Part 5
D3D24	Doorways and doors	Complies
D3D25	Swinging doors	Refer to Part 5
D3D26	Operation of latch	Refer to Part 5

4.5. Section E – Services and Equipment

BCA clause		Status
E1D2	Fire hydrants	Refer to Part 5
E1D3	Fire hose reels	Refer to Part 5
E1D14	Portable fire extinguishers	Refer to Parts 5 and 6
E2D16	Class 9b – assembly buildings: all	Refer to Parts 5 and 6
E4D2	Emergency lighting requirements	Refer to Parts 5 and 6
E4D3	Measurement of distance	Refer to Part 6
E4D4	Design and operation of emergency lighting	Refer to Part 6
E4D5	Exit signs	Refer to Part 6
E4D6	Direction signs	Refer to Parts 5 and 6
E4D8	Design and operation of exit signs	Refer to Part 6

4.6. Section F – Health and Amenity

BCA clause		Status
F2D2	Wet area construction	Refer to Part 5
F2D4	Floor wastes	Refer to Part 5
F4D4	Facilities in Class 3 to 9 buildings	Refer to Part 5
F4D8	Construction of sanitary compartments	Refer to Part 5
F5D2	Height of rooms and other spaces	Refer to Part 5
F6D5	Artificial lighting	Refer to Part 5
F6D6	Ventilation of rooms	Refer to Part 5
F6D7	Natural ventilation	Refer to Part 5
F6D9	Restriction on location of sanitary compartments	Complies

5. Commentary and Resolutions

5.1. General

(a) With reference to the ‘Assessment Summary’ contained within Part 4, the following commentary and resolutions are provided.

(b) This commentary and resolutions are formulated for demonstrating compliance.

5.2. Section B – Structure

B1D2

For the development

The resistance of a building or structure must be greater than the most critical action effect resulting from different combinations of actions, where:

(a) The most critical action effect on a building or structure is determined in accordance with B1D3 and the general design procedures contained in AS/NZS1170.0-2002; and

(b) The resistance of a building or structure is determined in accordance with B1D4.

B1D3

For the development

The magnitude of individual actions must be determined in accordance with this clause.

B1D4

For the development

The structural resistance of materials and forms of construction must be determined in accordance with the following, as appropriate:

(a) Steel construction – AS4100-2020 or AS/NZS4600-2018.

(b) Aluminium construction – AS/NZS1664.1-1997 or AS/NZS1684.2-1997.

(c) Timber construction – AS1720.1-2010.

(d) Glazed assemblies not in an external wall - AS1288-2021.

(e) Termite risk management (where a primary building element is subject to attack by subterranean termites) – AS3660.1-2014.

5.3. Section C – Fire Resistance

C2D2

For the development

(a) Fire protection for a support of another part

(i) 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 requried by other provisions of Specification 5 and be non-combustible.

(ii) Lintels

i. A lintel must have the FRL required for the part of the building in which it is situated.

ii. A lintel need not comply with (i.) if it does not contribute to the support of a fire door, fire window or fire shutter, and

(A) It spans an opening in masonry which is not more than 150 mm thick and:

- Not more than 3m wide if the masonry is non-loadbearing; or
- Not more than 1.8 m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall.

(iii) Method of attachment not to reduce the fire-resistance of building elements

i. The method of attaching or installing a finish, lining, ancillary element or service installation to the building element must

not reduce the fire-resistance of that element to below that required.

(iv) A loadbearing internal wall must be constructed from:

i. Concrete;

ii. Masonry; or

iii. Any combination of the above.

(v) A floor separating storeys must:

i. Be constructed so that it is at least of the standard achieved by a floor/ceiling system incorporating a ceiling which has a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes;

ii. Have an FRL of at least 30/30/30; or

iii. Have a fire-protective covering on the underside of the floor, including beams incorporated in it, if the floor is combustible or of metal.

(vi) Loadbearing internal walls and columns

i. FRL of not less than 120/-/- (excluding in the storey immediately below the roof as internal columns and internal walls excluding shaft walls need not comply)

For the existing building

(a) It is noted that the:

(i) External walls are primarily masonry.

(ii) Loadbearing internal walls and columns are masonry.

(iii) Intermediate floor is concrete with steel beams.

(iv) The northern and western elevations of the storeroom do not appear to contain fire-resisting external walls.

Figure 3-View of northern and western elevations of the storeroom

(b) The Type of Construction required for the building is now Type B Construction.

(c) The Type of Construction establishes the minimum fire-resisting construction required for Class 2–9 buildings. Type A Construction is the most fire-resistant Type of Construction, Type C Construction is the least fire-resistant and Type B Construction falls between these 2.

(d) For Type B Construction, the FRL's for required building elements would are generally 120mins, and the FRL's would have to apply to loadbearing building elements located from fire-source features, whereas the same building elements in a building of Type C Construction would not require a FRL.

(e) Therefore, if it can be demonstrated that the risk levels with regard to fire severity has not increased in the existing building due to the change of building classification to part of the existing building, it can then be considered acceptable in terms of reducing the risk of fire severity.

(f) The International Fire Engineering Guidelines 2005 (the **IFEG**) states that that the fire load within a room or compartment will influence the duration and severity of a fire. Fire load data are therefore required in order to evaluate the potential for structural failure and fire spread beyond the compartment of origin.

(g) In summary, in relation to floor area, a floor area with a higher fire load, will have a greater fire severity when compared to an equivalent floor area with a lower fire load.

(h) Several methods may be used to establish the effective fire load in a room or compartment:

  (i) Direct measurement or estimate

  (ii) Statistical survey

  (iii) Use of characteristic fire load density

(i) A review of the statistics provided in the literature has shown that gyms provided with exposed woodwork and flooring have been measured to have fire load density of 670MJ/m^2. This is a conservative fire load density, but accounting for robustness this will be the fire load density that will be used in the analysis.

(j) The benchmark design being a Class 7b occupancy, and depending on the type of warehouse use, the fire load density can also vary. On this basis, below are listed possible uses of the benchmark design with the likely fire load densities for these uses, tabulated under Table 3.4.1a of the IFEG:

  (i) Carboard box storage - 2500MJ/m^2/m

  (ii) Carboard products storage - 2500MJ/m^2/m

  (iii) Carpet storage - 1700MJ/m^2/m

  (iv) Manufactured doors storage - 1800MJ/m^2/m

  (v) Floor covering storage - 6000MJ/m^2/m

  (vi) Foamed plastic storage - 2500MJ/m^2/m

  (vii) Book storage - 2000MJ/m^2/m

  (viii) Parquetry flooring storage - 1200MJ/m^2/m

  (ix) Timber plywood storage - 2900MJ/m^2/m

  (x) Rubber goods storage - 5000MJ/m^2/m

(k) The above fire load densities would be multiplied by the height of storage in metres to give the realistic fire load densities. For example, if a warehouse use having carboard box storage, where the storage has an average height of 3m, the actual fire load density for the tenancy would be 7500MJ/m^2. For the purposes of this analysis, a storage height of 1m across the whole floor area of the benchmark design will be considered.

(l) The total fire load for a building is calculated using the following equation:

$$Total\ fire\ load = Fire\ load\ density \times Floor\ Area$$

(m) If it can be shown that the total fire load of the existing building is no greater than what could be permitted in a DTS compliant design, it is considered that the performance of the existing building when compared to a DTS compliant design against the risk of structural failure or fire spread is acceptable.

(n) The total fire load for the existing building having a fire load density of 670MJ/m^2, and a floor area of 828m^2, is 554,760MJ.

(o) The total fire load for a DTS compliant design having a fire load density as listed above, each having a floor area of 828m^2 are listed below:

(i) Carboard box storage – 2,070,000MJ

(ii) Carboard products storage – 2,070,000MJ

(iii) Carpet storage – 1,407,600MJ

(iv) Manufactured doors storage – 1,490,400MJ

(v) Floor covering storage – 4,968,000MJ

(vi) Foamed plastic storage – 2,070,000MJ

(vii) Book storage – 1,656,000MJ

(viii) Parquetry flooring storage – 993,600MJ

(ix) Timber plywood storage – 2,401,200MJ

(x) Rubber goods storage – 4,140,000MJ

(p) In addition, the Guidelines for Achieving Fire Safety When Recycling a Building (the **Guidelines**), state in Class 9b buildings with a rise in storeys of 2, floors are permitted to achieve nil FRL.[1]

(q) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA other than upgrading the northern and western elevations of the storeroom to contain fire-resisting external walls.

C2D9

For the development

(a) Any lightweight construction must comply with Specification 6 if it is used in a wall system:

(i) That is required to have an FRL; or

(ii) For a lift shaft, stair shaft, service shaft or an external wall bounding a public corridor.

(b) If lightweight construction is used to achieve an FRL for steel columns or the like, and if:

(i) The covering is not in continuous contact with the column, then the void must be filled solid, to a height of not less than 1.2m above the floor to prevent indenting; and

[1] Australian Uniform Building Regulations Co-ordinating Council, The Guidelines for Achieving Fire Safety When Recycling a Building, 1992

(ii) The column is liable to be damaged from the movement of vehicles, materials or equipment, then the covering must be protected by steel or other suitable material.

C2D10

For the development

(a) The following building elements and their components must be non-combustible:

(i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation.

(ii) The flooring and floor framing of lift pits.

(iii) Non-loadbearing internal walls having an FRL.

(b) A shaft, being a lift, ventilating, pipe, garbage, or similar shaft that is not for the discharge of hot products of combustion, that is non-loadbearing, must be of non-combustible construction.

(c) A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft, must comply with Specification 5.

(d) The requirements of (a) and (b) do not apply to:

(i) Gaskets.

(ii) Caulking.

(iii) Sealants.

(iv) Termite management systems.

(v) Glass (including laminated glass) and associated adhesives, including tapes.

(vi) Thermal breaks associated with glazing systems or external wall systems, where the thermal breaks are no larger than necessary to achieve thermal objectives; and do not extend beyond one storey; and do not extend beyond one fire compartment.

(vii) Damp-proof courses.

(viii) Compressible fillers and backing materials, including those associated with articulation joints, closing gaps not wider than 50mm.

(ix) Isolated:

i. Construction packers and shims;

ii. Blocking for fixing fixtures;

iii. Fixings, including fixing accessories; or

iv. Acoustic mounts.

(x) Waterproofing materials applied to the external face, used below ground level and up to 250mm above ground level.

(xi) Joint trims and joint reinforcing tape and mesh of a width not greater than 50mm.

(xii) Weather sealing materials, applied to gaps not wider than 50mm, used within and between concrete elements.

(xiii) Wall ties and other masonry components complying with AS2699.1-2020 and AS2699.2-2020 as appropriate and associated with masonry wall construction.

(xiv) Reinforcing bars and associated minor elements that are wholly or predominantly encased in concrete or grout.

(xv) A paint, lacquer or a similar finish or coating.

(xvi) Adhesives, including tapes, associated with stiffeners for cladding systems.

(xvii) Fire-protective materials and components required for the protection of penetrations.

(e) The following materials when entirely composed of itself, are combustible and may be used wherever a non-combustible material is required:

(i) Concrete.

(ii) Steel, including metallic coated steel.

(iii) Masonry, including mortar.

(iv) Aluminium, including aluminium alloy.

(v) Autoclaved aerated concrete, including mortar.

(vi) Iron.

(vii) Terracotta.

(viii) Porcelain.

(ix) Ceramic.

(x) Natural stone.

(xi) Copper.

(xii) Zinc.

(xiii) Lead.

(xiv) Bronze.

(xv) Brass.

(f) The following materials maybe used where a non-combustible material is required:

(i) Plasterboard.

(ii) Perforated gypsum lath with a normal paper finish.

(iii) Fibrous-plaster sheet.

(iv) Fibre-reinforced cement sheeting.

(v) Prefinished metal sheeting with a combustible surface finish not exceeding 1mm thickness and where the Spread-of-Flame Index of the product is not greater than 1.

(vi) Sarking-type materials that do not exceed 1mm in thickness and have a Flammability Index is not greater than 5.

(vii) Bonded laminated materials where:

i. Each lamina, including any core, is non-combustible;

ii. Each advise layer does not exceed 1mm in thickness and the total thickness of adhesive layers does not exceed 2mm;

iii. The Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectfully; and

iv. When located externally, are fixed in accordance with C2D15.

C2D11

For the development

(a) The fire hazard properties for materials must be as follows:

(i) Floor linings and floor coverings

i. A critical radiant flux not less than 2.2kW/m^2;

ii. A maximum smoke development rate of 750 percent-minutes; and

iii. A Group 1 or Group 2 material for any portion of the floor covering that continues more than 150mm up a wall.

(ii) Wall linings and ceiling linings

i. Be a Group 1, 2 or 3 material; and

ii. A smoke growth rate index of not more than 100 or an average specific extinction area less than 250m^2/kg.

(iii) Air-handling ductwork

i. Rigid and flexible ductwork complying with the fire hazard properties set out in AS4254-2012.

(iv) Other materials

i. Other materials and insulation materials having a Spread-of-Flame Index of not more than 9 and a Smoke-Developed Index of not more than 8 if the Spread-of- Flame Index is more than 5.

Notes:

- A material may be covered on all faces by concrete or masonry not less than 50mm thick, as an alternative to meeting the specified indices.
- In the case of a composite member or assembly, the member of assembly must be constructed so that when assembled as proposed in a building:
  - Any material which does not comply with the above is protected on all sides and edges from exposure to the air;
  - The member or assembly, when tested to Schedule 6 has a Spread-of-Flame Index and a Smoke-Developed-Index not exceeding this presented above; and
  - The member of assembly retains the protection in position so that it prevents ignition of the material and continues to screen it from access to free air for a period of not less than 10 minutes.

For the existing building

(a) It is noted that the fire hazard properties for materials is unknown.

(b) The Guidelines state materials in fire-isolated stairways, ramps and passageway should conform (these do not occur in this instance). Elsewhere, existing materials may generally remain.[2]

(c) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA.

C2D14

For the development

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

(a) An ancillary element that is non-combustible.

(b) A gutter, downpipe or other plumbing fixture or fitting.

(c) A flashing.

(d) A grate or grille not more than $2m^2$ in area associated with a building service.

(e) An electrical switch, socket-outlet, cover plate or the like.

(f) A light fitting.

(g) A required sign.

(h) A sign other than one provided under (a) or (g) that:

  (i) Achieves a group number of 1 or 2;

  (ii) Does not extend beyond one storey;

  (iii) Does not extend beyond one fire compartment; and

  (iv) Is separated vertically from other signs permitted under (h) by at least 2 storeys.

(i) An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that:

  (i) Meets the requirements of Table S7C7 as for an internal element; and

  (ii) Serves a storey:

    i. At ground level; or

    ii. Immediately above a storey at ground level; and

  (iii) Does not serve an exit, where it would render the exit unusable in a fire.

(j) A part of a security, intercom or announcement system.

(k) Wiring.

(l) Waterproofing material installed in accordance with AS4654.2-2012 and applied to an adjacent floor surface, including vertical upturn, or a roof surface.

[2] Australian Uniform Building Regulations Co-ordinating Council, The Guidelines for Achieving Fire Safety When Recycling a Building, 1992

(m) Collars, sleeves and insulation associated with services installations.

(n) Screens applied to vents, weepholes and gaps complying with AS3959-2018.

(o) Wiper and brush seals associated with doors, windows or other openings.

(p) A gasket, caulking, sealant or adhesive directly associated with (a) to (o).

Limitations

(a) The above does not apply to ancillary elements fixed, installed or attached to the internal face or lining of an external wall.

Limitations

(a) C2D14 does not prevent the mounting of domestic air-conditioning condenser units on external walls.

Explanatory information

(a) Ancillary elements fixed, installed or attached to the internal face or lining of an external wall may be subject to other provisions such as C2D11.

Attention is directed but not limited to the proposed illuminated signage that maybe not be able to comply with the above.

For the existing building

(a) It is noted that the:

(i) Eastern elevation contains an illuminated sign that is combustible in part;

(ii) Eastern elevation contains a lightbox sign attached to it that is combustible in part; and

(iii) Western elevation contains plastic sheeting attached to it that is combustible.

Figure 4 – Subject illuminated sign

Figure 5 – Subject lightbox sign

Figure 6 – Subject plastic sheeting

(b) The existing building is akin to a building of Type C Construction in terms of risk levels with regard to fire severity as outlined under C2D2.

(c) Buildings of Type C Construction need not comply with C2D14.

(d) In terms of the subject signage, occupants are provided with an alternative exit at the rear should the exits at the front be unusable in a fire.

(e) In terms of the subject plastic sheeting, occupants are provided with an alterative exit at the front should the exit at the rear be unusable in a fire.

(f) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA.

C4D3

For the existing building

(a) It is noted that the:

(i) Southern elevation contains 3 windows less than 3m from the allotment boundary which all contain external wall-wetting sprinklers.

Figure 7 -Subject windows along the western southern elevation

(ii) Western elevation contains a number of openings less than 3m from the allotment boundary some of which contain external wall-wetting sprinklers.

Figure 8 -Various openings along the western elevation

(b) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA, other than the openings to the western elevation as per C4D5.

C4D5

For the existing building

Where protection is required, doorways, windows and other openings must be protected as follows:

(a) Doorways

  (i) External wall-wetting sprinklers used with doors that are self-closing or automatic closing.

(b) Windows

  (i) External wall-wetting sprinklers used with windows that are automatic closing or permanently fixed in the closed position.

(c) Other openings

  (i) Excluding voids — internal or external wall-wetting sprinklers, as appropriate; or

  (ii) Construction having an FRL not less than -/60/-.

On this basis, it is not necessary for the existing building to be brought into conformity with the BCA, other than the openings to the western elevation.

C4D13

For the development

(a) Where a service passes through a floor that is required to have an FRL with respect to integrity and insulation the service must be installed in accordance with (b).

(b) A service must be protected:

  (i) In a building of Type B or C construction, by a shaft that will not reduce the fire performance of the building elements it penetrates (FRL of not less than -/30/30); or

  (ii) In accordance with C4D15.

For the existing building

(a) It is noted that plumbing pipes pass through the floor.

Figure 9 – Subject pipes

(b) The Guidelines state in Class 9b buildings with a rise in storeys of 2, floors are permitted to achieve nil FRL.[3]

(c) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA.

C4D15

For the development

Where an electrical, electronic, plumbing, mechanical ventilation, air-conditioning or other service penetrates a building element (other than an external wall or roof) that is required to have an FRL with respect to integrity or insulation the installation must comply with this clause.

For the existing building

(a) It is noted that plumbing pipes pass through the floor.

Figure 10 – Subject pipes

(b) The Guidelines state in Class 9b buildings with a rise in storeys of 2, floors are permitted to achieve nil FRL.[4]

[3] Australian Uniform Building Regulations Co-ordinating Council, The Guidelines for Achieving Fire Safety When Recycling a Building, 1992

[4] Australian Uniform Building Regulations Co-ordinating Council, The Guidelines for Achieving Fire Safety When Recycling a Building, 1992

(c) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA.

C4D16

For the development

Construction joints, spaces and the like in and between building elements required to have an FRL with respect to integrity and insulation must be protected in a manner:

(a) Identical with a prototype tested in accordance with AS4072.1-2005 and AS1530.4-2014 to achieve the required FRL; or

(b) That differs from a prototype in accordance with Section 4 of AS4072.1-2005 and achieves the required FRL.

Application of part

The above does not apply to control joints, weep holes and the like in external walls of masonry construction and joints between panels in external walls of pre-cast concrete panel construction if, in all cases they are not larger than necessary for the purpose.

C4D17

For the development

A 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 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.

5.4. Section D – Access and Egress

D2D7

For the development

In a required exit or path of travel to an exit the unobstructed height throughout must be not less than 2m, except the unobstructed height of any doorway may be reduced to not less than 1980mm.

For the existing building

(a) It is noted that the:

(i) Unobstructed height of the front exit serving the first floor is less than 2m (being 1990mm below camera);

(ii) Unobstructed height of the doorway to the accessible sanitary facility is less than 1980mm (being 1925mm; and

(iii) Unobstructed height of the doorway to the PT office is less than 1980mm (being 1945mm).

Figure 10 – Subject exit

Figure 11 – Subject doorways

(b) The 99th percentile height of an Australian male is 1880mm.[5]

(c) The 99th percentile height of British adults aged 19 to 65 is 1930mm for males and 1762mm for females.[6]

(d) To account for occupants wearing shoes, a shoe height of 25mm for men and 45mm for women is suggested.[7]

(e) Therefore, a height of not less than 1955mm for males and 1807mm for females should be anticipated in designing heights for doorways.

(f) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA.

D2D8

For the development

The unobstructed width of each required exit or path of travel to an exit, except for doorways, must be not less than 1m.

For the existing building

(a) It is noted that the:

5 AS/NZS2890.1-2004
6 Buxton, P., Metric Handbook Planning and Design Data, 2018
7 Buxton, P., Metric Handbook Planning and Design Data, 2018

(i) Unobstructed width of the exits serving the first floor are less than 1m (being 900mm to the bottom flight of the internal stairway and 850mm to the external stairway); and

(ii) Unobstructed width of the paths of travel to an exit on the first floor are less than 1m (being 980mm to the top of the ramp and 935mm to the top of the stairway opposite the utility cupboard).

Figure 12 – Subject exits

Figure 13 – One of the subject paths of travel

(b) The Guidelines state the 1m dimension maybe reduced to 800mm for an existing exit as one of the dispensations which are normally appropriate.[8]

(c) For non-standard corridor widths, the Figures below give some indication of what can be used[9]:

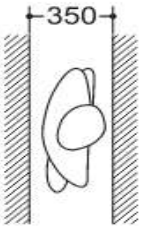

Figure 14 - Edging width: suitable for short distances or occasional use

[8] Australian Uniform Building Regulations Co-ordinating Council, The Guidelines for Achieving Fire Safety When Recycling a Building, 1992

[9] Buxton, P., Metric Handbook Planning and Design Data, 2018

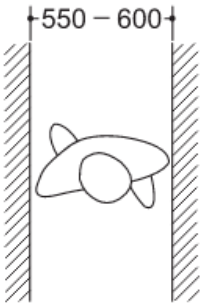

Figure 15 – One person width

(d) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA.

D2D9

For the development

In a required exit or path of travel to an exit, the unobstructed width of a doorway, except where it opens to a sanitary compartment, must be not less than 750mm.

D2D15

For the existing building

(a) It is noted that the path of travel to the road from the rear exits have an unobstructed width of less than 1m (being 790mm for the gate at the southern allotment boundary and 880mm for the gate at Raglan Street).

Figure 16 – Subject path of travel

(b) The Guidelines state the 1m dimension maybe reduced to 800mm for an existing exit as one of the dispensations which are normally appropriate.[10]

(c) For non-standard corridor widths, the Figures below give some indication of what can be used[11]:

[10] Australian Uniform Building Regulations Co-ordinating Council, The Guidelines for Achieving Fire Safety When Recycling a Building, 1992

[11] Buxton, P., Metric Handbook Planning and Design Data, 2018

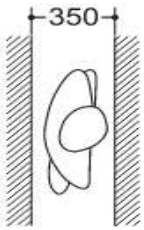

Figure 17 - Edging width: suitable for short distances or occasional use

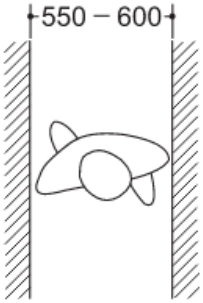

Figure 18 – One person width

(d) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA.

D3D8

For the development

(a) Gas or other fuel services must not be installed in an exit.

(b) Services or equipment enclosed in accordance with (b) may be installed in an exit, or in any corridor, hallway, lobby or the like leading to an exit, where that service or equipment comprises:

(i) Electricity meters, distribution boards or ducts;

(ii) Central telecommunications distribution boards or equipment; or

(iii) Electrical motors or other motors serving equipment in the building.

(c) An enclosure for the purposes of (c) must be suitably sealed against smoke spreading from the enclosure and be:

(i) Non-combustible construction; or

(ii) A fire-protective covering (i.e. 1 layer of 13mm fire-protective grade plasterboard).

For the existing building

(a) It is noted that the electrical services on the ground and first floors are suitably not enclosed.

Figure 19 – Subject board on first floor.

(b) On this basis, it is necessary for the existing building to be brought into conformity with the BCA.

D3D14

For the existing building

(a) It is noted that the stairways contain:

(i) Non-constant goings and risers; and

(ii) Treads which have a surface or nosing strip not having the required slip-resistance classification when tested in accordance with AS4586-2013.

(b) The Guidelines state generally existing treads and risers may remain as one of the dispensations which are normally appropriate.[12]

(c) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA. Notwithstanding, it is recommended:

(i) Installation of permanent signage to the top and bottom of the stairway stating “CAUTION USE HANDRAIL” or similar in letters not less than 20mm high in a colour contrasting with the background.

(ii) Installation of automatic artificial lighting having a maintained illuminance of not less than 80 lux to the stairway.

(iii) Installation of contrasting nosing strips having a slip-resistance classification of not less than P5 when tested in accordance with AS4586-2013 to the treads of the stairways.

D3D16

For the development

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:

(a) In a building required to be accessible by D4, the doorway:

(i) Opens to a road or open space; and

(ii) Is provided with a threshold or step ramp in accordance with AS1428.1-2009; or

(b) In other cases:

(i) The doorway opens to a road or open space, external stair landing or external balcony; and

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

For the existing building

(a) It is noted that the:

(i) Threshold of various doorways incorporate a step or ramp at any point closer to the doorway than the width of the door leaf; and

(ii) The door sill of the doorway leading to the external stairway is more than 190mm above the finished surface of the balcony (being 200mm).

(b) The Guidelines state generally, existing thresholds may remain one of the dispensations which are normally appropriate.[13]

(c) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA. Notwithanding, it is recommended:

(i) Installation of permanent signage to either side of the subject doors stating “CAUTION WATCH YOUR STEP” or similar in letters not less than 20mm high in a colour contrasting with the background.

[12] Australian Uniform Building Regulations Co-ordinating Council, The Guidelines for Achieving Fire Safety When Recycling a Building, 1992

[13] Australian Uniform Building Regulations Co-ordinating Council, The Guidelines for Achieving Fire Safety When Recycling a Building, 199

(ii) Installation of automatic artificial lighting having a maintained illuminance of not less than 80 lux to either side of the subject thresholds.

D3D17-D3D19

For the existing building

(d) The Guidelines state generally existing balustrades may remain if their height is not less than 750mm above the nosings of the stair treads or 800mm above the floor surface of the ramp, landing or corridor, hallway, external balconies, bridges of the like.

(e) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA

D3D22

For the existing building

(a) It is noted that the stairway to the entry does not contain a handrail.

Figure 20 – Subject stairway

(b) The Guidelines state generally existing handrails may remain if their height is not less than 750mm above the nosings of the stair treads or 800mm above the floor surface of the ramp, landing or corridor, hallway, external balconies, bridges of the like.

(c) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA other than the installation of a handrail to the subject stairway.

D3D25

For the existing building

(a) It is noted that the doorway in exits at the front on the ground floor swing against the direction of egress.

(b) The Guidelines state in part, generally, existing swinging doors which lead to a road or open space may remain provided they are fitted with a lock which will automatically lock them in the open position as one of the dispensations which are normally appropriate.[14]

(c) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA. Notwithstanding, it is recommended to fit the

[14] Australian Uniform Building Regulations Co-ordinating Council, The Guidelines for Achieving Fire Safety When Recycling a Building, 199

subject doors with a lock which will automatically lock them in the open position.

D3D26

For the development

(a) Any door in a required exit, forming part of a required exit or in the path of travel to a required exit must be readily openable without a key from the side that faces a person seeking egress, by:

(i) A single hand downward action on a single device which is located between 900mm and 1100mm from the floor; or

(ii) A single hand pushing action on a single device which is located between 900mm and 1.2m above the floor.

(b) The above requirements do not apply to a door that:

i. Serves a sanitary compartment or the like; and

ii. Serves a space which is otherwise inaccessible to persons at all times when the door is locked.

For the existing building

(a) It is noted that the path of travel to the road from the rear exits contain latches that do not comply.

(b) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA other than the subject gates.

5.5 Section E – Services and Equipment

E1D2

For the development and existing building

(a) It is noted that fire hydrant coverage is understood to be afforded by street hydrants.

(b) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA.

E1D3

For the development and existing building

(a) It is noted that fire hose reel coverage is afforded by the fire hose reel on the first floor.

(b) On this basis, it is not necessary for the existing building to be brought into conformity with the BCA other than the ground floor.

E1D14

For the development and existing building

Portable fire extinguishers complying with AS2444-2001 must be installed as follows:

(a) To cover Class F fire risks involving cooking fats and oils; and

(b) To cover Class B fire risks (if more than 50L excluding vehicle fuel tanks is stored).

E2D16

For the development and existing building

(a) The gym must be provided with automatic shutdown of any air-handling system (other than non-ducted individual room units with a capacity not more than 1000L/s and miscellaneous exhaust air systems installed in

accordance with Sections 5 and 6 of AS 1668.1-2015) which does not form part of the smoke hazard management system, on the activation of:

(i) Smoke detectors installed complying with S20C6; and

(ii) Any other installed fire detection and alarm system, including a sprinkler system (other than a FPAA101D or FPAA101H system) complying with Specification 17.

(b) The plans and specifications are to be endorsed by a suitably accredited practitioner (fire safety) at construction certificate stage as complying with the above.

E4D2

For the development and existing building

It is recommended that additional emergency lighting complying with AS/NZS2293.1-2018 be installed throughout (including external stairway).

E4D5

For the development and existing building

It is recommended that exit signs be installed above or adjacent to all doors in required exits.

E4D6

For the development and existing building

If an exit is not clear to persons occupying or visiting the building, it is recommended that exit signs complying with AS/NZS2293.1-2018 be installed in appropriate positions in corridors, hallways, lobbies and the like, indicating the direction to an exit.

5.6 Section F – Health and Amenity

F2D2

For the development

Building elements in bathrooms, shower rooms, a slop hopper or sink compartment, a laundry or sanitary compartment must be water-resistant or waterproof in accordance with Specification 26 and comply AS3740-2021.

F2D4

For the development

Where a floor waste is installed:

(a) The minimum continuous fall of a floor plane to the waste must be 1:80; and

(b) The maximum continuous fall of a floor plane to the waste must be 1:50.

F4D4

For the development

(a) Adequate means of disposal of sanitary products must be provided in sanitary facilities for use by females.

(b) Unisex sanitary facilities for male and female participants are proposed.

(c) Unisex shower facilities for male and female participants are proposed.

(d) Items (b) and (c) are variations and can be justified via a performance solution at construction certificate stage.

F4D8

For the development

Sanitary compartments must have doors and partitions that separate adjacent compartments and extend from floor level to the ceiling in the case of a unisex sanitary.

F5D2

For the development

The heights of rooms and other spaces must be not less than:

(a) Except as allowed below - 2.4m;

(b) For a corridor or the like – 2.1m; and

(c) For a bathroom, shower room, sanitary compartment, storeroom or the like – 2.1m.

F6D5

For the development

Artificial lighting complying with AS/NZS1680.0-2009 must be installed to all rooms that are frequently occupied, all spaces required to be accessible, all corridors, lobbies, internal stairways, other circulation spaces and paths of egress.

F6D6

For the development

A habitable room, office, sanitary compartment, bathroom, shower room, laundry and any other room occupied by a person for any purpose must have:

(a) Natural ventilation complying with F6D7 below; or

(b) Mechanical ventilation complying with AS1668.2-2012.

F6D7

For the development

Natural ventilation must consist of permanent openings, windows, doors or other devices which can be opened:

(a) With an aggregate opening or openable size not less than 5% of the floor area of the room required to be ventilated; and

(b) Open to:

(i) Suitably sized court, or space open to the sky; or

(ii) An open verandah, carport, or the like.

6. Fire Safety Measures

The fire safety measures listed below are to be installed within the development and/or existing building part to the commentary contained in Parts 4-5.

Fire Safety Measure	Minimum Standard of Performance
1. Emergency lighting	• E4D2, E4D3 and E4D4 of the BCA • AS/NZS2293.1-2018
2. Exit signs	• E4D5, E4D6 and E4D8 of the BCA • AS/NZS2293.1-2018
3. Fire hose reel system	TBA
4. Fire hydrant system (street hydrants)	TBA

5.	Fire seals protecting openings in fire-resisting components of building	• C4D5, C4D15 and C4D16 of the BCA • AS4072.1-2005 and AS1530.4-2014
6.	Lightweight construction (if installed)	• C2D9, C4D17 and Specification 6 of the BCA
7.	Mechanical air handling system (automatic shutdown)	NSW E2D16 of the BCA
8.	Portable fire extinguishers	• E1D14 of the BCA • AS2444-2001
9.	Wall-wetting sprinkler and drencher system	TBA

7. Conclusion

7.1. General

Having regard to the above, compliance is capable, subject to compliance with Parts 4-6. Hence, no impediment to the issuing of a development consent from a BCA and fire safety upgrading perspective.

If you require any further assistance or have any additional queries, please do not hesitate in contacting us directly.

Yours sincerely,

Nehme Moujalli
Director
InCode Solutions Pty Ltd