The National Construction Code 2016 Volume One

Montefiore Aged Care Facility Block D

Revision 0

28 September 2016

Project No.: 160376

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REPORT STATUS				
DATE	**REVISION**	**STATUS**	**AUTHOR**	**REVIEWED**
28/09/2016	0	Preliminary BCA Report	AR	DB

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A. INTRODUCTION

A.1 BACKGROUND / PROPOSAL

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Equity Development Management to undertake a Building Code of Australia (BCA) 2016 assessment for the proposed new aged care development at Sir Moses Montefiore Jewish Home, located at 100-120 King Street and 30-36 Danger Street, Randwick. The proposed development consistent of a new building with the existing site, to be known as Block D. Block D will be a five (5) storey building will car parking on Level 3 (basement), retail, office and RACF on Level 3 (Ground) and RACF on Levels 4-6.

It is noted Block C and D share a common carpark therefore are technically considered the same building, however Block C shall be fire separated from Block D

A.2 AIM

The aim of this report is to:

+ Undertake an assessment of the proposed RACF development against the Deemed-to-Satisfy (DtS) Provisions of the BCA 2016.
+ Identify any BCA compliance issues that require resolution/attention for the proposed development.

A.3 PROJECT TEAM

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

+ Aaron Redfern – Report Preparation (Building Surveyor)
+ David Blackett – Peer Review (Director)

A.4 DOCUMENTATION

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

+ BCA 2016
+ Guide to the BCA 2015
+ Access to Premises Standard 2010
+ Architectural plans prepared by Jackson Teece

Plan No.	Rev	Date
Level 2		
D-A-02-01	1	12 July 2016
Level 3		
D-A-03-01	1	12 July 2016
Level 4		
D-A-04-01	1	12 July 2016
Level 5		
D-A-05-01	1	12 July 2016
Level 6		
D-A-06-01	1	12 July 2016
Roof Plan		
D-A-07-01	1	12 July 2016

A.5 REGULATORY FRAMEWORK

Pursuant to clause 145 of the Environmental Planning and Assessment (EPA) Regulation 2000 all new building work must comply with the current BCA however the existing features of an existing building need not comply with the BCA unless upgrade is required by other clauses of the legislation.

Clause 143(3) of the EPA Regulation 2000 prevents a certifying authority from issuing a construction certificate if the proposed new work will result in a reduction to the fire protection and structural capacity of the building.

A.6 LIMITATIONS & EXCLUSIONS

The limitations and exclusions of this report are as follows:

+ The following assessment is based upon a review of the architectural documentation.
+ No assessment has been undertaken with respect to the Disability Discrimination Act (DDA) 1992. The building owner should be satisfied that their obligations under the DDA have been addressed.

  Please note that whilst the BCA specifies a minimum standard of compliance with AS1428 (Parts 1-3) and Part D3 of the BCA for access and facilities for people with disabilities, compliance with such requirements may not necessarily preclude the possibility of a future complaint made under the DDA 1992. The DDA is a complaint based legislation and is presently not identified by the State Building Codes and Regulations. In this regard the building owner should be satisfied that their obligations under the DDA have been addressed.
+ The Report does not address matters in relation to the following:

  i. Local Government Act and Regulations.

  ii. NSW Public Health Act 1991 and Regulations.

  iii. Occupational Health and Safety (OH&S) Act and Regulations.

  iv. Work Cover Authority requirements.

  v. Water, drainage, gas, telecommunications and electricity supply authority requirements.

  vi. DDA 1992.
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A.7 TERMINOLOGY

Alternative Solution

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

Building Code of Australia (BCA)

Document published on behalf of the Australian Building Codes Board. The BCA is a uniform set of technical provisions for the design and construction of buildings and other structures throughout Australia and is adopted in New South Wales (NSW) under the provisions of the EPA Act and Regulation. Building regulatory legislation stipulates that compliance with the BCA Performance Requirements must be attained and hence this reveals BCA's performance based format.

Construction Certificate

Building Approval issued by the Certifying Authority pursuant to Part 4A of the EP&A Act 1979.

Construction Type

The construction type is a measure of a buildings ability to resist a fire. The minimum type of fire-resisting construction of a building must be that specified in Table C1.1 and Specification C1.1, except as allowed for—

(i) certain Class 2, 3 or 9c buildings in C1.5; and

(ii) a Class 4 part of a building located on the top storey in C1.3(b); and

(iii) open spectator stands and indoor sports stadiums in C1.7.

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

Climatic Zone

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

Deemed to Satisfy Provisions (DtS)

Provisions which are deemed to satisfy the Performance Requirements.

Effective Height

The height to the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units) from the floor of the lowest storey providing direct egress to a road or open space.

Fire Resistance Level (FRL)

The grading periods in minutes for the following criteria-

(a) structural adequacy; and

(b) integrity; and

(c) insulation,

and expressed in that order.

Fire Source Feature (FSF)

The far boundary of a road which adjoins the allotment; or a side or rear boundary of the allotment; or an external wall of another building on the allotment which is not a Class 10 building.

National Construction Code Series (NCC)

The NCC was introduced 01 May 2011 by the Council of Australian Governments. The BCA Volume One (Class 2 to 9 Buildings) is now referenced as the National Construction Code Series Volume One — BCA.

Occupation Certificate

Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 4A of the EPA Act 1979.

Open Space

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

Performance Requirements of the BCA

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

Compliance with the Performance Requirements can only be achieved by-

(a) complying with the DtS Provisions; or

(b) formulating an Alternative Solution which-

(i) complies with the Performance Requirements; or

(ii) is shown to be at least equivalent to the DtS Provisions; or

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

Sole occupancy Unit (SOU)

A room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes a dwelling.

B. BUILDING CHARACTERISTICS

B.1 BUILDING CLASSIFICATION

The following table presents a summary of relevant building classification items of the proposed new aged care facility to accommodate a Class 9c RACF.

▪ **BCA Classification:**	Office - Class 5, Retail - Class 6, Carpark - Class 7a, RACF– Class 9c
▪ **Rise in Storeys:**	Building D has a rise in storeys of 5
▪ **Effective Height:**	Greater than 12m, Less than 25m
▪ **Type of Construction:**	Type A Construction
▪ **Climate Zone:**	Energy Efficiency Zone 5
▪ **Floor Area:**	Refer to table in part B.3 below
▪ **Volume Area:**	Refer to table in part B.3 below

B.2 FIRE SOURCE FEATURE

The distances from the nearest Fire Source Features to the buildings are:

Boundary	Distance to Fire Source Feature
North	>6m (TBC)
East	>6m
South	>6m
West	>6m

B.3 FLOOR AREA / VOLUME

The maximum proposed fire compartment areas are required to be as follows:

Classification		Type A
Class 5 (office), 9c(RACF)	Max. floor area	8,000m^2
	Max. volume	48,000m^3

Classification		Type A
Class 6 (Retail)	Max. floor area	5,000m^2
	Max. volume	30,000m^3

C.1 MATTERS REQUIRING FURTHER INFORMATION AND PLAN AMENDMENTS

	BCA CLAUSES	DESCRIPTION
1.	C2.5	*The laundry rooms located on each level must be smoke separated*
2.	D1.2, D2.21	*To confirm exit door location on Eastern side on Level 3. The sliding door hardware must be fitted with a devices that allows single handed downward action, or alternatively provide a hinged door in this location.*
3.	D1.7	*Discharge of the Southern fire stair involves passing within 6m of the retail shopfront. Openings shall be protected, or the matter addressed in the FER.*
4.	D1.10	*Further details are required regarding the path of travel from exits the Eastern side of the building to Dangar St. All paths of travel from an exit to the road are required to be detailed on the plans noting ramps (with gradients) or stairs. All paths to the road are required to be not less than 1200mm wide.*
5.	D3	*Additional comments will be provided from an Access Consultant to determine compliance. Affected part under the Access to premises standard will be assessed to determine the level of upgrade (if any) required from the building entry to the new work.*
6.	E1.3	*Final fire services details are requested for our review, including location of Fire Hydrant Booster. If Block D is proposed to be an extension of the existing FH system, adequacy and capacity of the system to be confirmed by hydraulic fire services consultant.*
7.	E1.5	*Final fire services details are requested for our review. If Block D is proposed to be an extension of the existing sprinkler system, adequacy and capacity of the system to be confirmed by hydraulic fire services consultant.*
8.	E2.2	*Details of the smoke hazard management systems are required to be provided at the Construction Certificate stage. Stair pressurisation required to both fire isolated exits serving the RACF.* *Note 1: The system will be requiring a fire indicator panel (FIP) located at the building main entry & same entry that the fire hydrant booster is located at. A building occupant warning system is required to be installed throughout all areas of all buildings. Noting the relationship between the buildings, it will be necessary to ensure all fire safety systems installed within new-build Block D are interconnected to the existing (and future) buildings. Fire Services Consultant is to confirm the existing fire panel infrastructure is of suitable capacity and compatibility to enable integration and extension to the proposed Block D and also future Block E & F.*
9.	F2.2/F2.3	*Compliance readily achievable, further details are required on the proposed staff numbers. It is noted only 1 unisex accessible toilet is provided on Level 3 which contains Class 5 admin area. Additional facilities may be required or confirmation further sanitary facilities for staff use are available in Block C. Sanity facilities are provided for retail areas.*

C.2 MATTERS REQUIRING FIRE SAFETY ENGINEERED ALTERNATIVE SOLUTIONS

	BCA CLAUSES	DESCRIPTION
10.	C3.3	There are numerous locations at the interface between Building C and D where openings between different fire compartments are exposed to each other. Refer below. These are to be addressed in the FER:-
11.	Spec C3.4	Justification of reasonable smoke leakage of two-way swing smoke doors and/or justification of one-way swing fire or smoke doors where they swing against egress.
12.	D1.4	The following extended travel distances will need to be addressed in the FER; **Level 2 (Carpark) –** Distance to nearest exit up to 47m in lieu of 40m. **Level 3 (Ground), Level 5 and 6 –** Distance to point of choice up to 23m in lieu of 20m from SOU's
13.	D1.5	The following extended travel distances will need to be addressed in the FER; **Level 2 (Carpark) –** Distance between exits up to 67m in lieu of 60m. **Level 4-6** - Distance between exits up to 73m in lieu of 60m.
14.	E2.2	Location of the mimic panels can be rationalised with the FER to require one panel at each staff station. The addressable fire system will be connected to the mobile staff devices

C.3 MATTERS REQUIRING NON FIRE RELATED ALTERNATIVE SOLUTIONS

	BCA CLAUSES	DESCRIPTION
15.	D2.17	It is noted handrails are provided on one side only to various corridors throughout the resident use areas, provision of one handrail on one side will need to be addressed as an alternative solution.

D. BCA ASSESSMENT

D.1 BCA DEEMED-TO-SATISFY COMPLIANCE ISSUES:

The following comments have been made in relation to the relevant BCA provisions relating to the compliance issues associated with the proposed 9c RACF.

Note: The following is a precise of the provisions and should be read in conjunction with the BCA.

SECTION A – CLASSIFICATION OF BUILDINGS & STRUCTURES

1. Clause A3.3 – Multiple Classification

Each part of a building must be classified separately and where these parts have different purposes – If not more than 10% of the floor area of a storey – being the minor use, is used for a purpose which is a different classification applying to the major use, may apply to the whole storey.

Note 1: This provision does not apply to certain minor uses as set out in this clause, such as class 2, 3 or a laboratory.

Note 2: a plant room, lift room, boiler room or the like must take the classification of the part of the building in which it is situated.

Comments: *The building results in a mixed classification as indicated in the table above, i.e. class 5,6,7a and 9c. All areas are sufficient in size to adopt an individual classification. See below for relevant fire resistance levels.*

SECTION B - STRUCTURE

2. Part B1 – Structural Provisions

Structural engineering details prepared by an appropriately qualified structural engineer to be provided to demonstrate compliance with Part B1 in relation to the new structural elements of the building.

Comment: *Structural engineering details prepared by an appropriately qualified structural engineer for all new works will be provided at Construction Certificate stage to demonstrate compliance with Part B1. This will include the following Australian Standards (where relevant):*

+ AS 1170.0 – 2002 General Principles
+ AS 1170.1 – 2002, including certification for balustrading (dead and live loads)
+ AS 1170.2 – 2002, Wind loads
+ AS 1170.4 – 2007, Earthquake loads
+ AS 3700 – 2001, Masonry code
+ AS 3600 – 2009, Concrete code
+ AS 4100 – 1998, Steel Structures and/or
+ AS 4600 – 2005, Cold formed steel
+ AS 2047 – 1999, Windows in buildings
+ AS 1288 – 2006, Glass in buildings

SECTION C – FIRE RESISTANCE

PART C1 FIRE RESISTANCE AND STABILITY

1. Clause C1.2 – Calculation of Rise in Storeys

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

Comments: *Building D has a rise of storeys of 5.*

2. Clause C1.3 – Buildings of Multiple Classification

In a building of multiple classifications, the type of construction required for the building is the most fire-resisting type resulting from the application of Table C1.1 on the basis that the classification applying to the top storey applies to all storeys. This clause also contains exceptions in relation to Class 4 parts.

Comments: *Type A construction applies to the building.*

3. Clause C1.8 – Lightweight Construction

Lightweight construction must comply with Specification C1.8 if used in a wall system that is required to have an FRL.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

4. Clause C1.10 – Fire Hazard Properties

Floor, wall & ceiling linings, sarking, and any other combustible fixtures are required to comply with the requirements under Specification C1.10.

Comment: *That reflective foil such as sarking/insulations also need to achieve compliance and have a flammability index of not greater than 5. Insulation in all fire rated walls is to be non-combustible and comply with AS1530.1.*

Certification of design will be required with Construction Certificate application and test certificates of the materials and linings will be required to be submitted prior to issue of the Occupation Certificate stage.

PART C2 COMPARTMENTATION AND SEPARATION

5. Clause C2.2 – General Floor Area and Volume Limitations

This clause sets out the requirements for maximum size limitations of fire compartments.

Comment: *The proposed floor area and volume of the building complies with the maximum size limitations for Type A construction.*

6. Clause C2.5 – Class 9c Buildings

A Class 9c building is required to be divided into areas of not more than 500m^2 by smoke-proof walls and comply with the provisions of sub-clause (b).

Ancillary use areas, containing equipment or materials that are a high potential fire hazard, must be separated for the sole-occupancy units by smoke-proof walls.

Comment: *All class 9c parts of the building are required to be smoke compartmentised. All smoke compartments are noted as being less than 500m^2. The laundry rooms located on each level must be smoke separated.*

7. Clause C2.12 – Separation of Equipment

Equipment as listed below must be separated from the remainder of the building with construction that achieves an FRL of 120/120/120 and doorways being self-closing -/120/30 fire doors:

- Emergency generators used to sustain emergency equipment operating in the emergency mode; or
- Central smoke control plant; or
- Boilers; or
- A battery or batteries installed in the building that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours.

Separation of on-site fire pumps must comply with the requirements of AS 2419.1.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

8. Clause C2.13 – Electricity Supply System

The following areas are to be fire separated from the remainder of the building by construction that achieves an FRL of 120/120/120:

- An electricity substation located within a building.
- A main switchboard which sustains emergency equipment operating in the emergency mode.
- If electrical conductors located within a building supply a substation (located within the building) which also supplies the main switchboard; or they supply the main switchboard itself must be fire separated by a construction that achieves 120/120/120 or alternatively:
  - Have a classification in accordance with AS/NZS 3013 of not less than –
  - If located in a position that could be straight to damage by motor vehicles – WS53W; or
  - Otherwise – WS52W.
- Where emergency equipment is required in a building, all switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment switchgear is separated from the non-emergency equipment switchgear by metal partitions designed to minimise the spread of fault from the non-emergency equipment switchgear, eg:
  - Fire hydrant booster pumps.
  - Pumps for automatic sprinkler systems, water spray, chemical fluid suppression systems or the like.
  - Pumps for fire hose reels where such pumps and fire hose reels form the sole means of fire protection in the building.
  - Air handling systems designed to exhaust and control the spread of fire and smoke.
  - Emergency lifts.
  - Control and indicating equipment.
  - Sound systems and intercom systems for emergency purposes

Comments: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

PART C3 PROTECTION OF OPENINGS

9. Clause C3.2 – Protection of Openings in External Walls

Openings in an external wall that is required to have an FRL must –

- If the distance between the opening and the fire-source feature to which it is exposed is less than –
  - 3 m from a side or rear boundary of the allotment; or
  - 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
  - 6 m from another building on the allotment that is not a Class 10, be protected in accordance with C3.4 and if wall-wetting sprinklers are used, they are located externally; and
- If required to be protected they must not occupy more than 1/3 of the area of the external wall of the storey in which it is located unless they are in a Class 9b building used as an open spectator stand.

Comment: *It is understood the building is situated more than 3m from side boundaries and greater than 6m from far side of road. Survey plan required to confirm.*

10. Clause C3.3 – Exposure Between Fire Compartments

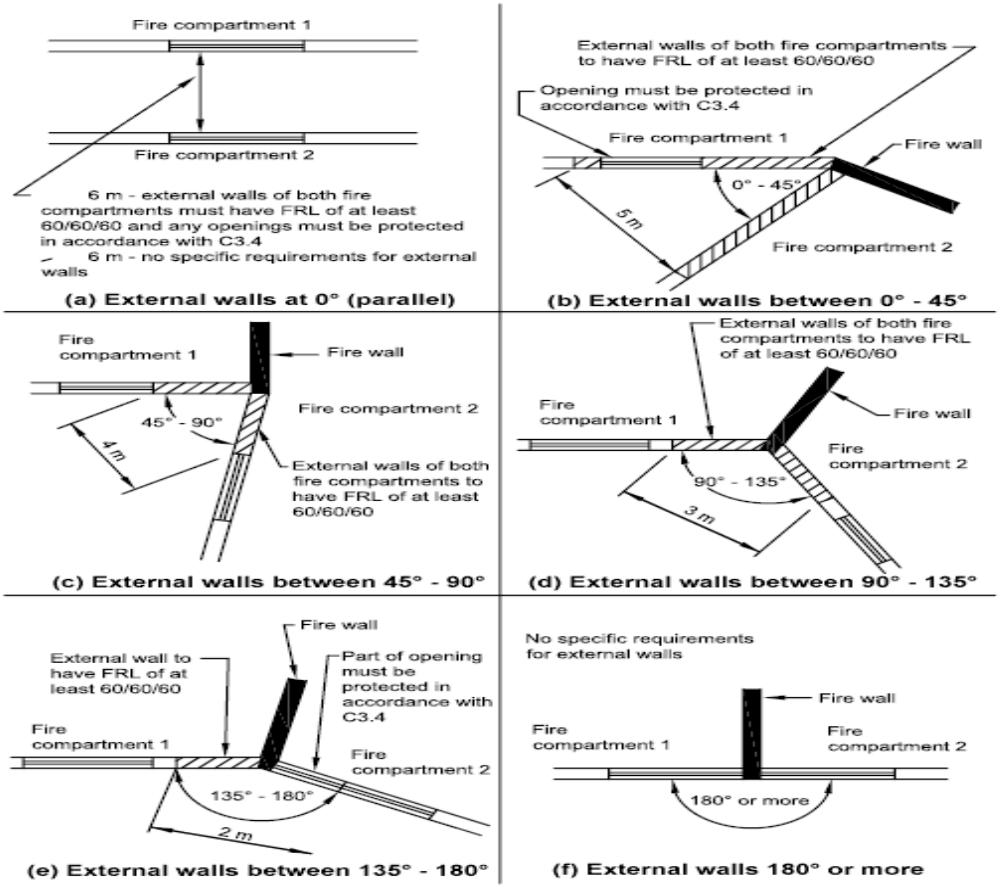
Where protection is required, doorways, windows and other openings must be protected as follows:

The distance between parts of external walls and any openings within them in different fire compartments separated by a fire wall must be not less than that set out in Table C3.3 unless-

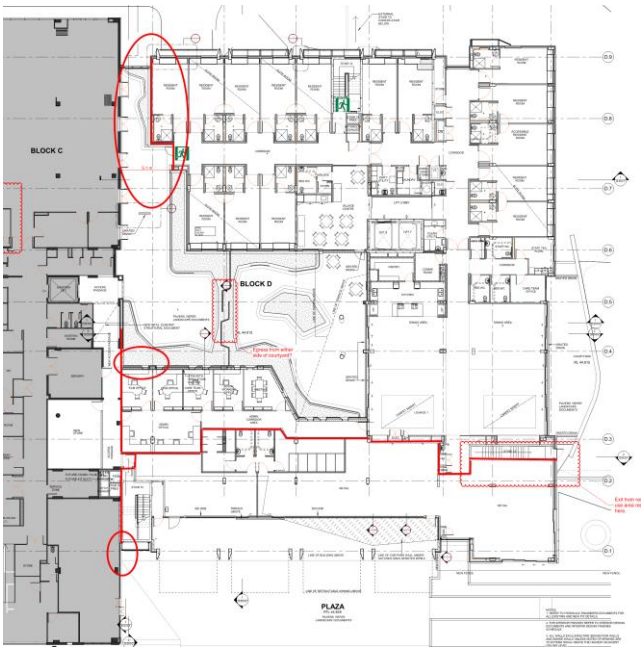
(a) Those parts of each wall have an FRL not less than 60/60/60; and

(b) Any openings protected in accordance with C3.4.

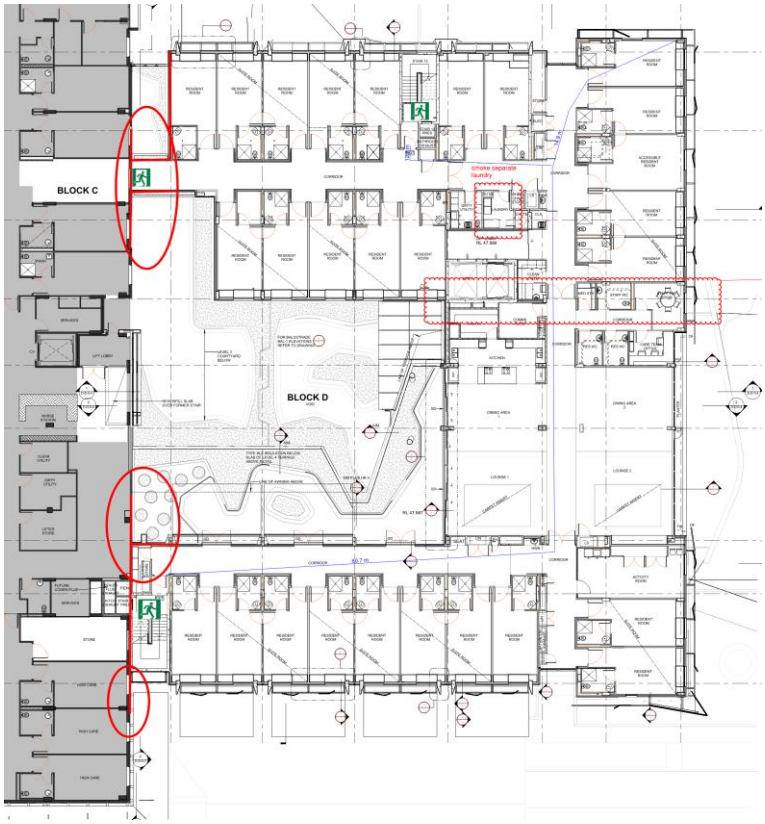
Exposure occurs between separate compartments as follows:-



Comments: *There are numerous locations at the interface between Building C and D where openings between different fire compartments are exposed to each other. Refer below. These are to be addressed in the FER:-*



Level 3 (Ground)



Level 4

Level 5

11. Clause C3.4 – Acceptable Methods of Protection

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

- Doorways –
  - Internal or external wall- wetting sprinklers as appropriate used with doors that are self-closing or automatic closing; or
  - -/60/30 fire doors that are self-closing or automatic closing.
- Windows –
  - Internal or external wall-wetting sprinklers as appropriate used with windows that are automatic closing or permanently fixed in the closed position; or
  - -/60/- automatic closing fire shutters.
- Other openings –
  - Excluding voids – internal or external wall-wetting sprinklers, as appropriate; or
  - Construction having FRL not less than -/60/-.

Comment: *Compliance readily achievable. Exposure between compartments as outlined above will be subject to an FER.*

12. Clause C3.5 – Doorways in Fire Walls

Any fire doors through the fire wall are required to comply with this part and are to have an FRL of not less than that required for a fire wall as specified in Specification C1.1.

Comment: *The doorways through the proposed fire walls are required to have an FRL of not less than -/120/30.*

13. Clause C3.15 – Openings for Service Installations

The clause details the requirements for protection of service openings in building elements that have an FRL, to prevent the spread of fire. C3.15 only applies only to an element required to have an FRL with respect to integrity or insulation.

Specification C3.15 prescribes materials and methods of installation for services that penetrate walls, floors and ceilings required to have an FRL.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

Note 1: All services that pass through fire rated walls are to be protected against the spread of fire and smoke.

Note 2: Any and all mechanical penetrations through smoke walls are to incorporate smoke dampers.

Note 3: Any mechanical penetrations through the fire walls are to include combined fire/smoke dampers.

SPECIFICATIONS

14. Specification C1.1 – Fire Resisting Construction

The building is of Type A Construction and as such the following FRL requirements of Table 3 are applicable to the proposed new building. In this regard the proposed building elements are required to comply with the following:

Deemed-to-Satisfy Provisions

Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

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

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Spec C1.1 – 3.

FIRE RESISTANCE

Deemed-to-Satisfy Provisions

Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS — continued

Building element	Class of building — FRL: (in minutes) *Structural adequacy/Integrity/Insulation*			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES and COLUMNS—	90/–/–	120/–/–	180/–/–	240/–/–
FLOORS	90/ 90/ 90	120/120/120	180/180/180	240/240/240
ROOFS	90/ 60/ 30	120/ 60/ 30	180/ 60/ 30	240/ 90/ 60

15. Specification C2.5 – Smoke-Proof Walls in Aged Care Buildings

This specification sets out requirements for the construction of smoke-proof walls in Class 9c aged care buildings. Smoke-proof walls required to have an FRL are to be in accordance with Clause A2.3.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided at the Construction Certificate stage.*

Note 1: Minimum 400mm deep smoke reservoir is to be provided above each smoke door located in a smoke wall to prevent the passage of smoke.

As an alternative to the required 400mm smoke reservoir which may not be able to be achieved, it is possible to 'locally' provide perforated ceiling system on each side of the doorway for the width of the door opening.

The smoke reservoir needs to extend for the full width of the corridor.

Note 2: If plasterboard is used in the lining on the smoke walls, it will be a minimum of 13mm standard grade plasterboard.

Note 3: Where the smoke walls bound a wet area room (i.e. ensuite), it will be necessary to provide appropriate lining material (or equivalent) such as listed in BCA:

- *12 mm cellulose cement flat sheeting complying with AS/NZS 2908.2 or ISO 8336; or*
- *12 mm fibrous plaster reinforced with 13 mm x 13 mm x 0.7 mm galvanised steel wire mesh located not more than 6 mm from the exposed face; or*
- *Other material not less fire-protective than 13 mm fire-protective grade plasterboard.*

Note 4: Any and all mechanical penetrations through smoke walls in the Class 9c are to incorporate smoke dampers. Any mechanical penetrations through the fire walls are to include combined fire/smoke dampers.

Note 5: Every smoke compartment in the Class 9c will necessitate a mimic panel or otherwise any proposed ceiling mounted annunciator panels are to be capable of being used as mimic panels (i.e. alpha numeric display) in accordance with BCA DTS specification E2.2a. This includes each small area room that is effectively smoke separated including serveries (>30m^2), records, plant room, etc. However, in this instance it is understood an alternative solution will be proposed to rationalise the number of mimic panels.

Note 6: The non-loadbearing internal lightweight walls between and bounding sole-occupancy-units and bounding a public corridor (where not fire or smoke walls) in the Class 9c resident use areas are to be:-

(A) be lined on each side with standard grade plasterboard not less than 13 mm thick or a material with at least an equivalent level of fire protection; and

(B) provided with cavity insulation which is non-combustible (product details to be provided to BM+G for review); and

(C) extend to the underside of—

- *the floor next above; or*
- *a ceiling lined with standard grade plasterboard not less than 13mm thick or an equivalent non-combustible material; or*
- *a non-combustible roof covering.*

16. Specification C3.4 – Fire Doors, Smoke Doors

This Specification sets out the requirements for the construction of fire doors, smoke doors, fire windows and fire shutters.

Comment: *Smoke doors must swing in the direction of egress. Smoke doors in the corridors of each level are understood to be subject to a fire engineered* ***alternative solution*** *(FER) to justify either one-way swing, including swing against the direction of egress, or justify*

reasonable leakage around the seals to the doors in accordance with AS6906-2007. This also includes laundry room door to swing against the direction of egress.

Note 1: All fire and smoke doors should generally be required to swing in both directions as the direction of egress is in both directions. These doors are to have appropriate smoke seals to maintain smoke compartmentation.

Note 2: Smoke doors must be constructed as follows:

- *The leaves are side hung to swing in the direction of egress or in both directions as required, and*
- *The leaves are capable of resisting smoke at 200°C for 30 minutes, and*
- *The leaves are fitted with smoke seals, and*
- *The leaves are either self-closing or automatic closing and return to the fully closed position after each manual opening, and*
- *Any glazing incorporated in the door complies with AS1288.*

Note 4: All smoke doors are to be provided statutory signage in accordance with BCA.

SECTION D – ACCESS & EGRESS

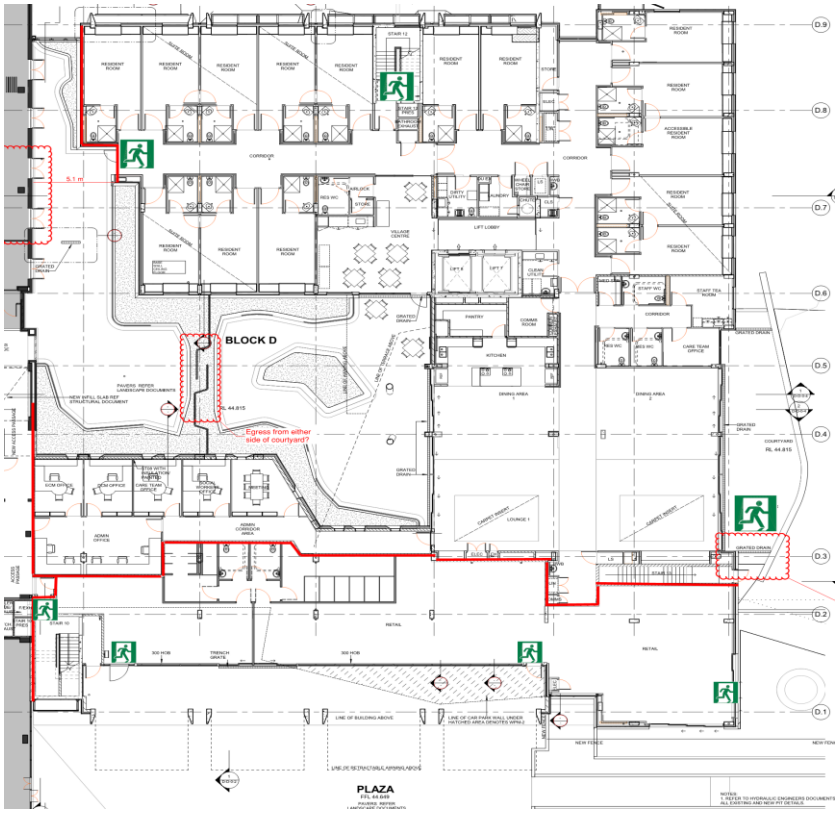
PART D1 PROVISION FOR ESCAPE

17. Clause D1.2 – Number of Exits Required

A minimum of two (2) exits (in addition to any horizontal exit) must be provided from any storey which contains sleeping areas in a class 9c aged care building.

The exits from the building are as detailed below. We have also noted a number of evident concerns/questions with the egress design:-

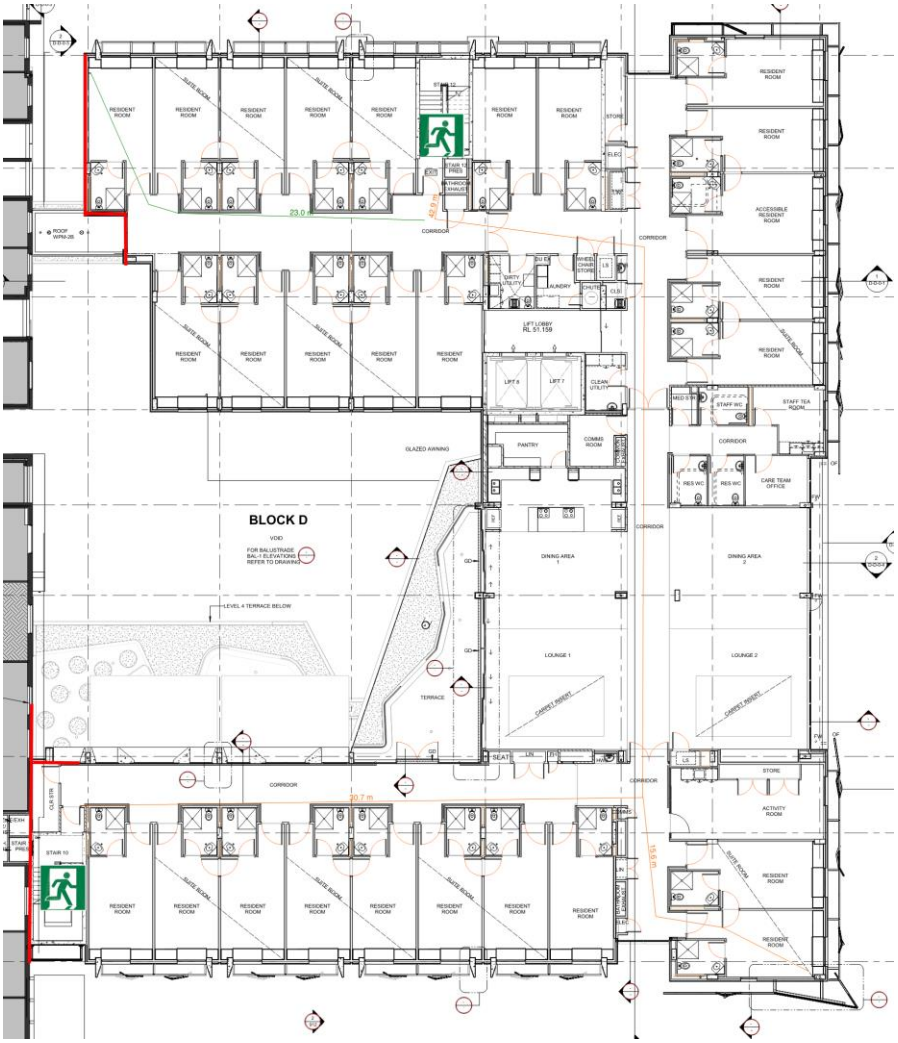
Level 2 (carpark)



Level 3 (Ground)

To confirm exit door location and access to Danger St from courtyard.

Level 4



Level 5

Level 6

Comment: *The final CC plans are to be marked up to reflect the above exit points.*

18. Clause D1.4 – Exit Travel Distances

This clause specifies the permitted travel distances allowable from Class 2 to Class 9 buildings, specifying the maximum distances to be taken into account for the various uses in each Class of building.

The following applies:

+ In a class 5-9c building:
    - No point on the floor must be more than 20m to 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 40m;
    - For the class 5 and 6, the distance to a single exit serving a storey at the level of access to a road or open space may be increased to 30m.

Comment: *The following extended travel distances will need to be addressed in the FER;*

Level 2 (Carpark) – *Distance to nearest exit up to 47m in lieu of 40m.*

Level 3 (Ground) – *Distance to point of choice up to*

Level 5 and 6 – *Distance to point of choice up to 23m in lieu of 20m from SOU's*

19. Clause D1.5 – Distances Between Alternative Exits

Exits required as alternative exits must be –

+ distributed as uniformly as practicable within or around the storey served and in positions where unobstructed access to at least 2 exits is readily available from all points on the floor including lift lobby areas; and
    - not less than 9m apart; and

- not more than –
  - in a Class 2 or 3 building - 45m apart; or
  - In a Class 9a health-care building, if such required exit serves a patient care area – 45m apart; or
  - In all other cases– 60m apart.

+ Located so that the alternative paths of travel do not converge such that they become less than 6m apart.

Comment: *The following extended travel distances will need to be addressed in the FER;*

Level 2 (Carpark) – *Distance between exits up to 67m in lieu of 60m.*

Level 4-6 *- Distance between exits up to 73m in lieu of 60m.*

20. Clause D1.6 – Dimensions of Exits

The unobstructed width in a public corridor of a Class 9c aged care building must be not less than:

+ 1.5m; and
+ 1.8m for the full width of the doorway, providing access into a sole-occupancy unit or communal bathroom.

The unobstructed height in a required exit or in a path of travel to an exit must not be less than 2 metres, except for a doorway which may be reduced to 1980mm.

The doorways in the building must have a minimum unobstructed clear opening as follows:

+ 1070mm where it opens from a public corridor to a resident room; and
+ 870mm in other resident use areas such as doors in corridors, quiet rooms, hairdresser (salon) rooms, assisted bathrooms, resident ensuites, balconies and fire isolated exits and the like, and
+ 850 mm in non-resident use areas such as offices, storage areas, staff/nurse stations, kitchen, medication rooms and utility areas.

Comment: *Provide a door schedule to confirm if the clear door widths are capable of complying.*

Note 1: Where two door leaves are provided in order to achieve the above dimensions, at least one leaf must achieve a minimum unobstructed width of 870mm. A door schedule is requested for our review with the Construction Certificate documentation.

Note 2: The proposed handrails (i.e. both sides of all resident-use corridors) are to be designed to facilitate a handhold with minimum 50mm distance to the wall and the cross-section of the handrails is to be circular, not less than 30mm or more than 50mm for a diameter not less than 270^{o} around the uppermost surface. Handrails are to have ends turned down or return back to the wall.

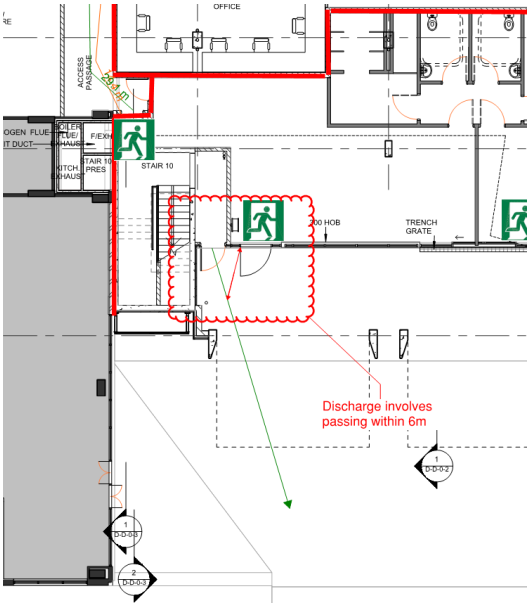
21. Clause D1.7 – Travel via fire isolated exits

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

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

+ an FRL of not less than 60/60/60; and
+ Any openings protected internally in accordance with BCA Clause C3.4,
+ For a distance of 3m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser.

Comment: *Discharge of the Southern fire stair involves passing within 6m of the retail shopfront. Openings shall be protected or addressed in the FER.*

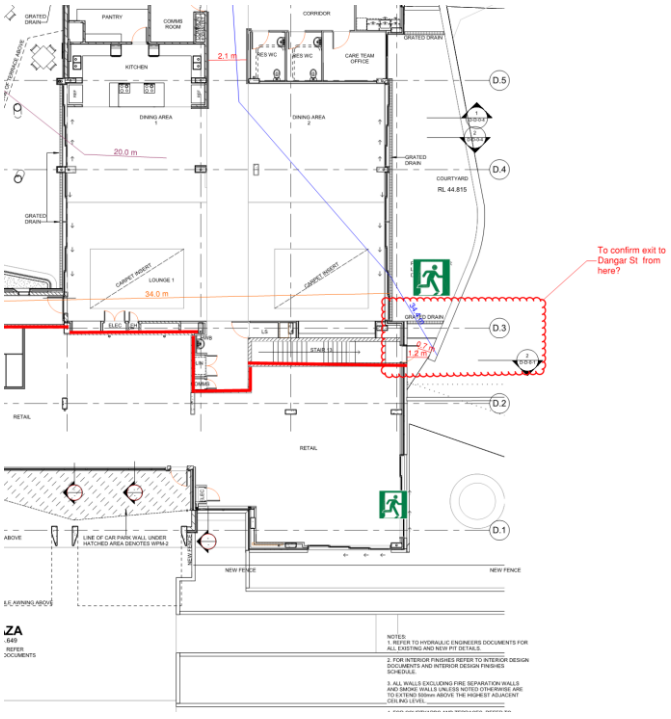


22. Clause D1.10 – Discharge From Exits

Upon egress occupants must have suitable paths of travel including compliant stairways and ramps (where required) between the building and the Roadway. Graded surfaces such as the vehicular ramp must not be steeper than 1:8 and may require handrails.

Bollards are required to exit doors where they could be potentially blocked by vehicles. This will also include the discharge points of the stair to the carparking areas above to ensure that a clear 1 metre wide path of travel is provided to the public roadway. Bollards may also be required in front of the exits in the basement and in front of exits in the workshop.

Comment: *Further details are required regarding the path of travel from exits the Eastern side of the building to Dangar St. All paths of travel from an exit to the road are required to be detailed on the plans noting ramps (with gradients) or stairs. All paths to the road are required to be not less than 1200mm wide.*



Note 1: Any proposed external gates between and bounding resident external courtyards are to be connected to automatic fail safe systems to unlock in fire mode or if to remain locked, addressed in the FER.

Note 2: The Construction Certificate drawings are to detail the grade of all paths of travel from exits to the public roadway.

PART D2 CONSTRUCTION OF EXITS

23. Clause D2.7 – Installations in Exits & Paths of Travel

This clause restricts the installation of certain services in fire-isolated exits, non-fire-isolated exits and certain paths of travel to exits. It prescribes which services shall not be installed as well as the circumstances in which certain services may be installed in fire-isolated and non-fire-isolated exits.

If installed in a path of travel to an exit, Electrical distribution boards, Communication cupboards and the like containing motors, etc are to be enclosed with non-combustible construction, and doors are to be provided with smoke seals to the perimeter.

Note that an opening to any chute that or duct that is to convey hot products or combustion from a boiler incinerator, fireplace or the like must not be located in any part of a required exit or any corridor, hallway, lobby or the like leading to a required exit.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

24. Clause D2.15 – Thresholds

The threshold of a doorway in a class 9c aged care building is required to have a ramp with a maximum gradient of 1:8 for a maximum height of 25mm over the threshold

Comment: *Compliance readily achievable. The Construction Certificate drawings are to detail the grade of any ramp that is required in a doorway threshold.*

25. Clause D2.17 – Handrails

In a class 9c aged care building handrails must be provided along both sides of every passageway or corridor used by resident and must be:

- Fixed not less than 50mm clear of the wall; and
- Where practicable, continuous for their full length.

Please note the additional handrail requirements for stairs required to be accessible under AS1428.1-2009.

Comment: *It is noted handrails are provided on one side only to various corridors throughout the resident use areas, provision of one handrail on one side will need to be addressed as an alternative solution.*

Handrails in external egress pathways that are not required to be made accessible in accordance with Part D3 only require a handrail along one side.

26. Clause D2.19 – Doorways & Doors

A doorway in a residential use area of a class 9c aged care building must not be fitted with:

- A sliding fire door; or
- A sliding smoke door; or
- A revolving door; or
- A roller shutter door; or
- A tilt-up door

Comment: *The plans show that all doors within the residential use area appear to be either single or double leaf swinging doors.*

27. Clause D2.20 – Swinging Doors

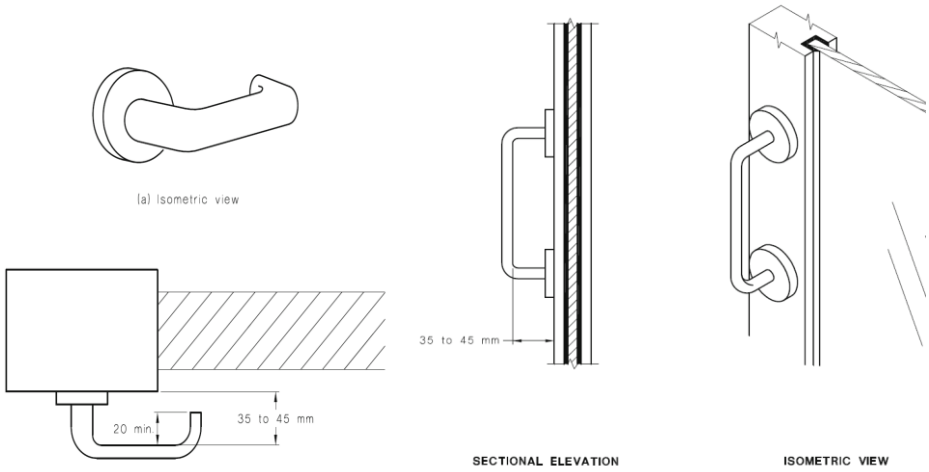
All hinged exit doors are required to swing in the direction of egress.

Comment: *All fire & smoke doors are required to swing in both directions as the direction of egress is, in most instances, in both directions. This issue is to be addressed in the FER, either by providing duel swing doors and addressing smoke leakage around the perimeter of the doors, or address single swing smoke doors.*

Horizontal exit doors into Block C on level 4 shall swing in direction of egress (i.e into Block C) All final egress doors shall swing in direction of egress.

28. Clause D2.21 – Operation of Latch

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



Comment: *Compliance readily achievable. Attention is drawn to sliding doors on Level 3 eastern exit from the dining area. The sliding door hardware must be fitted with a devices that allows single handed downward action, or alternatively provide a hinged door in this location.*

29. Clause D2.23 – Signs on Doors

This clause requires the use of signs to alert persons that the operation of smoke doors and fire doors and doors discharging form fire isolated exits, must not be impaired and must be installed where they can be readily seen.

Comments: *Compliance is readily achievable.*

Any new self-closing fire and/or smoke doors forming part of a Horizontal Exit or smoke compartment are to be provided with signage as follows:

Any new automatic closing fire and/or smoke doors which are held on hold open devices that leads into the fire stair or forming part of a Horizontal Exit or smoke compartment are to be provided with signage as follows:

PART D3 ACCESS FOR PEOPLE WITH A DISABILITY

30. Part D3 Access for People with a Disability

Access and facilities for people with disabilities will need to be provided to satisfy the requirements of Part D3 of the BCA & AS1428.1-2009, and the Access to Premises – Buildings Standards 2010 satisfying the client's obligations under the DDA.

Under Table D3.1, the subject building must be accessible as follows:

Class of Building	Access Requirements
Class 5,6	To and within all areas normally used by the occupants.
Class 9c	Common Areas + From a pedestrian entrance required to be accessible to at least 1 floor containing sole-occupancy units and to the entrance doorway of each sole-occupancy unit located on that level. + To and within not less than 1 of each type of room or space for use in common by the residents, including a cooking facility, sauna, gymnasium, swimming pool, common laundry, games room, TV room, individual shop, dining room, public viewing area, ticket purchasing service, lunch room, lounge room, or the like. + Where a ramp complying with AS 1428.1 or a passenger lift is installed— (a) to the entrance doorway of each sole-occupancy unit; and (b) to and within rooms or spaces for use in common by the residents, located on the levels served by the lift or ramp. Sole-occupancy units + Where more than 2 accessible sole-occupancy units are required, they must be representative of the range of rooms available. + 81-100 sole-occupancy units requires 5 accessible sole-occupancy units.

Comments: *Where access to bedrooms and resident ensuites is not compliant with AS1428.1, an alternative solution will be required.*

31. Clause D3.2 – General Building Access Requirements for People with Disabilities

Accessways are to be provided to accessible buildings from the main points of pedestrian entry at the allotment boundary and any accessible car parking space or accessible associated buildings connected by a pedestrian link.

Access must be provided through the principal pedestrian entrance and through not less than 50% of all pedestrian entrances (including the principal pedestrian entry).
In addition, as the building is greater than 500m^2, the non-accessible entrance must not be greater than 50m from an accessible entrance.
The minimum width of an accessible doorway must have a clear opening width of not less than 850mm in accordance with AS1428.1.

Comments: *Compliance is readily achievable.*

32. Clause D3.3 – Parts of the Building to be Accessible

This part specifies the requirements for accessways within buildings which must be accessible.

The following is a summary of some of the key matters which will need to be considered:

Access for persons with disabilities must be provided, at a minimum, to and within all areas normally used by the occupants.

The minimum width of an accessible doorway must have a clear opening width of not less than 850mm for all non resident areas.

All resident use doors are to have clearances as follows:-

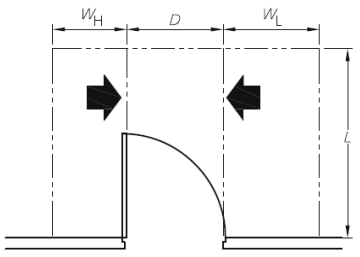
+ 1070 mm where it opens from a public corridor to a resident room; or

+ 870 mm in other resident use areas such as sitting & lounge areas; or

All new doorways on a continuous path of travel shall have a minimum luminance contrast of 30% provided between: door leaf and door jamb; or door leaf and adjacent wall; or architrave and wall; or door leaf and architrave; or door jamb and adjacent wall.

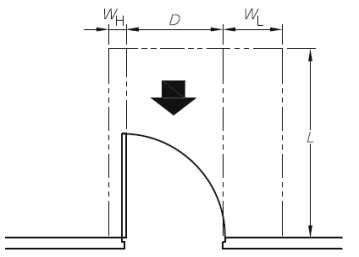
The minimum width of the area of luminance contrast shall be 50mm.

Circulation space to the new doorways that are required to be accessible are to comply with Section 13 of AS1428.1-2009, including as follows:



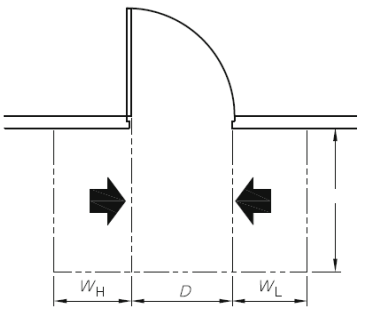
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1670	660	900
900	1670	610	900
950	1670	560	900
1000	1670	510	900

(g) Either side approach, door opens towards user



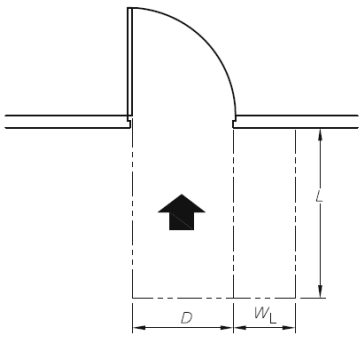
Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	110	530
900	1450	110	530
950	1450	110	530
1000	1450	110	530

(h) Front approach, door opens towards user



Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1240	560	660
900	1210	510	660
950	1175	460	660
1000	1155	410	660

(c) Either side approach, door opens away from user



Dimension D	Dimension L	Dimension W_H	Dimension W_L
850	1450	0	510
900	1450	0	510
950	1450	0	510
1000	1450	0	510

(d) Front approach, door opens away from user

Circulation space requirements at doorways

Handrails

+ Handrails shall be installed along stairways as follows:

- Shall be continuous through the flight and where practicable, around landings and have no obstruction on or above up to a height of 600mm,
- Shall be constructed to comply with Clause 12 of AS1428.1,
- Installed along both sides of the stairway (giving consideration also to 1m unobstructed width),
- Handrails must not contain any vertical sections,
- Handrails shall terminate in accordance with the following diagrams.

Accessible Ramps – where provided (AS1428.1-2009 Section 10.3):

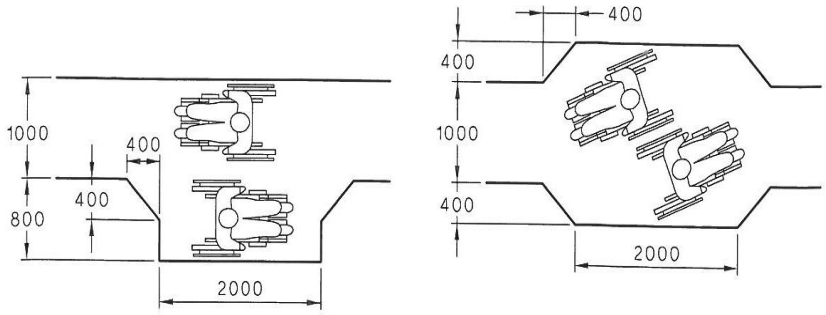
AS1428.1 defines an accessible ramp as an inclined surface on a continuous accessible path of travel between two landings with a gradient steeper than 1:20 but not steeper than 1:14.

Handrails are required both sides of all accessible ramps as follows:

+ Shall be continuous through the flight and where practicable, around landings and have no obstruction on or above up to a height of 600mm,
+ Installed along both sides of the stairway (giving consideration also to the required 1m unobstructed width),
+ Handrails must not contain any vertical sections.

Accessways / corridors (including common area corridors in the class 2 residential parts) must be constructed in accordance with the following:

+ Passing spaces complying with the following diagram at 20m intervals on those parts of the accessway / corridor, where a direct line of sight is not available:

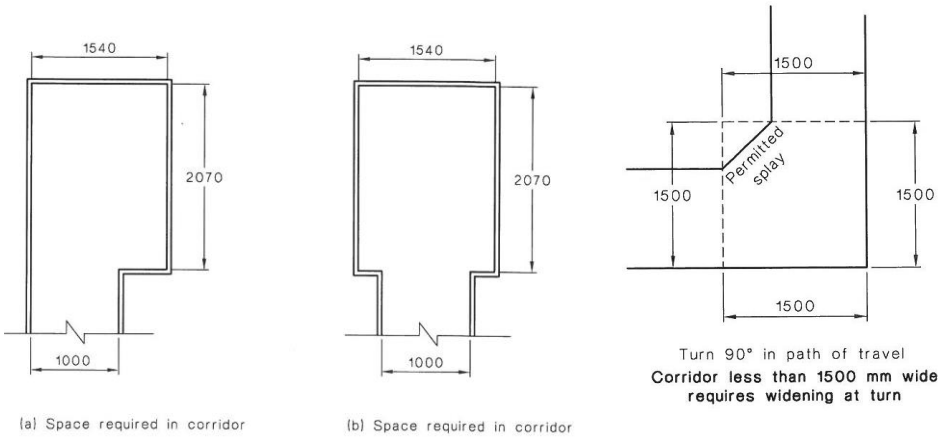


DIMENSIONS IN MILLIMETRES

FIGURE 3 EXAMPLES FOR PASSING SPACE FOR WHEELCHAIRS

Requirements for passing space in corridors

+ Turning spaces provided (in accordance with the following diagram) within 2m of the end of an accessway where it is not possible to continue travelling along the accesssway.



Turning space requirements

Comments: *Additional comments will be provided from an Access Consultant to determine compliance. Affected part under the Access to premises standard will be assessed to determine the level of upgrade (if any) required from the building entry to the new work.*

33. Clause D3.4 – Exemptions

This part provides details on buildings or parts of buildings not required to be accessible under the BCA where providing access would be inappropriate because of the nature of the area or the tasks undertaken. Access need not be provided to:

+ An area where access would be inappropriate because of the particular purpose for which the area is used.
+ An area that would pose a health or safety risk for people with a disability.
+ Any path of travel providing access only to an area exempted by (a) or (b).

Comments: *Parts of the building where an exemption are applicable include plant rooms, commercial kitchens and the like.*

34. Clause D3.5 – Assess Carparking

This part provides details of the number of accessible carparking spaces required in a carpark depending on the classification of the building. In this regard the commercial and retail tenancies will require parking for people with disabilities.

Comments: *Carparking spaces must be in accordance with AS 2890.6. Access consultant to review the numbers and design of accessible to confirm compliance.*

35. Clause D3.8 – Tactile Indicators

This clause provides for the installation of tactile indicators in buildings required to be accessible and must be provided to warn people who are blind or have a vision impairment that they are approaching a stairway, escalator , passenger conveyor, ramp, overhead obstruction or an accessway meeting a vehicular way, except for areas exempted by D3.4.

Comments: *Ramps and stairways serving the Class 5 & 6 building, will need to be provided with Tactile Ground Surface Indicators in accordance with AS1428.4.*

36. Clause D3.12 – Glazing on an Accessway

This part requires the provision of a contrasting strip, chair rail, handrail or transom across all frameless or fully glazed doorways and surrounding glazing capable of being mistaken for an opening.

Comments: *Design details to note requirements for full height glass.*

SECTION E – SERVICES AND EQUIPMENT

We have provided below a summary of all relevant essential fire safety measures that will need to be provided to comply with the performance requirements of the BCA for the proposed Block D:-

Statutory Fire Safety Measure	Design/Installation Standard
Access Panels, Doors & Hoppers	BCA Clause C3.13 & AS 1530.4 - 2005
Alarm Signaling Equipment	AS1670.3 – 2004
Automatic Fail Safe Devices	BCA Clause D2.21
Automatic Fire Detection & Alarm System	BCA Spec. E2.2a & AS 1670.1 - 2015.
Automatic Fire Suppression Systems	BCA Spec. E1.5 AS2118. 1 -2012
Building Occupant Warning System activated by the Sprinkler System	BCA Spec E1.5 Clause 8 and/ or Clause 3.22 of AS 1670.1 – 2015
Emergency Lighting	BCA Clause E4.4 & AS 2293.1 - 2005
Emergency Evacuation Plan	AS 3745 - 2002
Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 - 2005
Fire Blankets	AS 3504 - 1995 & AS 2444 – 2001
Fire Dampers	BCA Clause C3.15, AS 1668.1 - 1998 & AS 1682.1 & 2 - 1990
Fire Doors	BCA Clause C2.12, C2.13, C3.2, C3.4, C3.5, C3.6 C3.8, and AS 1905.1 – 2005
Fire Hose Reels (Class 5,6 and 7a parts)	Clause E1.4& AS 2441
Fire Hydrant Systems	Clause E1.3 & AS 2419.1 - 2005
Fire Seals	BCA Clause C3.15, AS 1530.4 & AS4072.1 - 2005
Lightweight FRL Construction	BCA Clause C1.8 & AS 1530.3 – 1999
Manual Call Points (BGAs)	BCA Section E
Mechanical Air Handling Systems	BCA Clause E2.2, AS/NZS 1668.1 - 2015 & AS 1668.2 – 2015
Paths of Travel	EP & A Regulation Clause 186
Pressurising Systems	BCA Clause E2.2 & AS/NZS 1668.1 – 2015
Required Exit Doors (power operated)	BCA Clause D2.19(b)
Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
Smoke Dampers (Class 9c parts)	AS/NZS 1668.1 - 1998
Smoke Doors (Class 9c parts)	BCA Spec. C3.4 & C2.5
Wall Wetting Drenchers	BCA Spec. C3.4 & C2.5
Warning & Operational signs	AS 1905.1 - 2005, BCA Clause C3.6, D2.23, E3.3

NOTE 1:

- *The measures included and the standards of performances nominated above may vary as a result of any proposed fire engineered alternative solutions.*
- *The above list is a schedule of fire safety measures required under Section E of the BCA only and does not take into consideration any other measures that may be required in the building as a result of other requirements of the BCA or other statutory standards.*

NOTE 2:

Note that we have not yet received any fire services details to review in this regard:-

- *Mimic panels are required in 'every' smoke compartment of the Class 9c.*

  We can look to accommodate a performance solution to rationalise the extent of mimic panel coverage, based on the fire system being connected to staff pagers/DECT phones.

- *All fire hydrants are to be provided with stortz couplings to the satisfaction of the fire brigades.*
- *The proposed location of the external fire hydrant & sprinkler booster is to be documented on the architectural plans for our review.*
- *Smoke detectors and sprinkler coverage is required within each and every comms and EDB enclosure and cupboard throughout the building cater for the requirements of the Depts. Commonwealth Assessor*
- *Portable fire extinguishers are to be provided with a combination of H2O and CO2 throughout all resident use areas.*
- *The required sprinkler system in the Class 9c is to be installed throughout and must be installed in accordance with AS2118.1, including within each EDB and Comms enclosure.*
- *Smoke detectors should be installed in communal WCs off the corridors.*
- *Nurse call system is to be provided throughout all resident use areas including bedrooms, ensuites (separate call button for shower and WC) & in all common/sitting areas.*
- *A public address system is to be provided throughout the facility & interconnected to the BOWS.*

PART E1 FIRE FIGHTING EQUIPEMENT

37. Clause E1.3 - Fire hydrants

A Hydrant system is required to be installed in accordance with AS 2419.1 – 2005 given the total floor area of the building exceeding 500msq. Any required Fire Hydrant Booster assembly that is required must be affixed to the external wall and protected by a radiant heat shield that has an FRL of 90/90/90 located 2 metres either side and 3 metres above the outlets. Alternatively the booster needs to be located at least 10m away from the building and any high voltage power supply.

Any Internal Hydrants are to be located within 4m of the exits. In addition, if floor coverage cannot be achieved supplementary fire hydrants may be provided to suit the operational requirements of the NSW Fire Brigades.

External attack hydrants are required to be located not less than 10 metres from the building or protected by construction having an FRL of not less than 90/90/90 and extending 2 metres each side of the hydrant outlets and extending 3 metres above ground level. In addition, Hydrants must be located not less than 10 metres from high voltage main electrical distribution equipment or liquefied petroleum gas.

Where required, a hydrant pump room is required to have a door opening to a road or open space, or a door opening direct into a fire isolated airlock connected to a fire stair.

Comment: *Final fire services details are requested for our review, including location of Fire Hydrant Booster. If Block D is proposed to be an extension of the existing FH system, adequacy and capacity of the system to be confirmed by hydraulic fire services consultant.*

38. Clause E1.4 – Fire hose reels

A fire hose reel system must be provided to serve a building where one or more internal fire hydrants are installed or in a building with a floor area greater than 500m².

Fire hose reels are not required in a Class 9c part of the building.

Fire Hose Reels are to be located within 4m of an exit, or located adjacent to an internal hydrant (other than one within a fire isolated exit). Where system coverage is not achieved by the above, additional FHR may be located in paths of travel to an exit.

Comments: *Compliance readily achievable. Fire hose reels are required throughout the Class 5, 6 and 7a parts.*

39. Clause E1.5 – Sprinklers

The building will be sprinkler protected throughout in accordance with BCA Specification E1.5 AS2118.1-1999. The sprinkler valve room must have direct access to the street and the current location complies. Sprinklers and any required wall wetting systems must be provided with independent stop valves.

Residential sprinkler system to consider maximum floor area capacities able to be served by each valve.

Comment: *Final fire services details are requested for our review. If Block D is proposed to be an extension of the existing sprinkler system, adequacy and capacity of the system to be confirmed by hydraulic fire services consultant.*

40. Clause E1.6 – Portable fire extinguishers

Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444. Portable fire extinguishers are to be provided with a combination of *H20 and C02* throughout all resident use areas.

Comment: *Compliance readily achievable. To be noted for the Construction Certificate stage.*

PART E2 SMOKE HAZARD MANAGEMENT

41. Clause E2.2 – General Requirements

The mechanical ventilation systems in the building are required to be designed in accordance with AS/NZS 1668.2 (A/C systems) incorporating fire/smoke dampers where air handling ducts penetrate any building elements separating fire/smoke compartments served.

A smoke detection and alarm system is required throughout the building as per Clause 4 of Specification E2.2a of the BCA and the relevant provisions of AS 1670.1 – 2004. Automatic Shutdown of any air handling system upon activation of the Automatic Smoke Detection System and Sprinkler System will also be required.

Comment: *Details of the smoke hazard management systems are required to be provided at the Construction Certificate stage. Stair pressurisation required to both fire isolated exits serving the RACF.*

Note 1: The system will be requiring a fire indicator panel (FIP) located at the building main entry & same entry that the fire hydrant booster is located at. A building occupant warning system is required to be installed throughout all areas of all buildings. Noting the relationship between the buildings, it will be necessary to ensure all fire safety systems installed within new-build Block D are interconnected to the existing (and future) buildings. Fire Services Consultant is to confirm the existing fire panel infrastructure is of suitable capacity and compatibility to enable integration and extension to the proposed Block D and also future Block E & F.

Note 2: Smoke detectors should be installed in all EDB cupboards. Detectors are required in all enclosed stairways and there are to be no supply air grills or other obstructions around the radius of the detectors for 400mm.

Note 3: The building will require manual call points are required to be installed in paths of travel so that no point on the floor is more than 30m from a manual call point.

Note 4: The AS1670.1 detection system is to have the indication of the zone where the smoke detection system has actuated achieved by one of the following

- *Remote automatic indication of each zone must be given in each smoke compartment; and indication of must be indicated on remote annunciator panels with alpha-numeric displays with a minimum of 20 characters of 9 mm minimum height; or*
- *Indication of the zone where the smoke detection system has actuated must be communicated via a suitable interface with the fire indicator panel to a portable remote communication device; and*
- *At least one such portable remote communication device per smoke compartment must be provided to staff nominated by the owner or operator and properly instructed as to the duties and responsibilities involved; and*
- *The portable remote communication device may be a pager with alpha-numeric display or portable telephone handset with capability of receiving alpha-numeric display.*

Location of the mimic panels can be rationalised with the FER to require one panel at each staff station. The addressable fire system will be connected to the mobile staff devices.

PART E4 EMERGENCY LIGHTING, EXIT SIGNS AND WARNING SYSTEMS

42. Clause E4.2 & E4.4 – Emergency Lighting

Emergency Lighting is required in the building in accordance with AS 2293.1 -2005.

Comment: *Compliance readily achievable. Design details and statements to be provided for assessment.*

43. Clause E4.5 & E4.8 – Exit Signs

Exit signs are required to be installed in the building in accordance with AS 2293.1 -2005. External way finding exit signage provisions need to also be provided.

Comment: *Compliance readily achievable. Design details and statements to be provided for assessment.*

44. Clause E4.6 – Direction Signs

Directional exit signs are required to be installed in the building where the exits are not readily apparent to occupants in accordance with AS 2293.1 -2005.

Comment: *Compliance readily achievable. To be noted for during construction.*

SECTION F – HEALTH & AMENITY

PART F1 DAMP AND WEATHERPROOFING

45. Clause F1.5 – Roof Coverings

A roof must be covered with

- concrete roof tiles complying with AS 2049 and fixed as per AS 2050.
- cellulose cement corrugated sheeting compiling with AS/NZS 2908.1 and installed as per AS/NZS 1562.2.
- metal roof sheeting comply with AS 1562.1
- plastic roof sheeting complying with AS/NZS 4256 parts 1, 2 3 and 5 and AS/NZS 1562.3.
- ashphalt shingles complying with ASTM D3018-90 class A.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided at the Construction Certificate stage.*

Note: The external wall system is to be capable of resisting the passage of moisture.

46. Clause F1.7 – Waterproofing of Wet Areas

Wet areas in the building are required to comply with AS 3740-2004.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

47. Clause F1.11 – Provision of Floor Wastes

Floor wastes are required to be provided within the floor of each bathroom and laundry and must be graded to permit drainage to a floor waste.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

48. Clause F1.13 – Glazed Assemblies

Glazed assemblies in an external wall of a building are required to comply with AS 2047 requirements for resistance to water penetration. All other glazing installations are to comply with AS1288-2006 and full height glazing is to be toughened glass and provided with decals/motifs. Toughened glass must be affixed with its required permanent label in accordance with AS1288-2006.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

Note: Smoke doors require toughened glass and imbedded decals are a mandatory requirement of the Australian Standard.

PART F2 SANITARY AND OTHER FACILITIES

49. Clause F2.1 – Facilities in Residential Buildings

In addition to the proposed sanitary facilities and showers provided to each of the units, the following facilities are required to be provided within the building:

+ A suitable bath, fixed or mobile,
+ One clinical hand washing basin for each 16 residents or part thereof,
+ The bathroom facilities for residents are to be provided with appropriate hot water regulation systems to control hot water temperature in accordance with AS/NZS3666.1 and Part F2.7 of the BCA,
+ At least one slop-hopper device (*or equivalent devices*) is to be provided at each of the Class 9c resident occupied floors to facilitate emptying of containers of sewage or dirty water; and with a flushing apparatus, tap and grating.

Comment: *Compliance readily achievable. Final details are required with the CC documentation.*

50. Clause F2.2 / F2.3 – Calculation of Number of Occupants & Facilities

This clause sets out the requirements for the calculation of the number of occupants and the number of sanitary facilities required to be installed in Class 2 to 9 buildings.

Sanitary facilities are required to be provided for the employees of the commercial tenancies. If not more than 10 persons are employed a single unisex facility may be provided, the facility is required to comply as an accessible sanitary facility with AS 1428.1-2009.

Comments*: Compliance readily achievable, further details are required on the proposed staff numbers. It is noted only 1 unisex accessible toilet is provided on Level 3 which contains Class 5 admin area. Additional facilities may be required or confirmation further sanitary facilities for staff use are available in Block C. Sanity facilities are provided for retail areas.*

51. Clause F2.4 – Accessible Sanitary Facilities

All Accessible WC's must be designed in accordance with the requirements of Section 15 of AS 1428.1-2009 and are to be located at each floor containing sanitary facilities to at least 50% of the banks.

Additionally, ambulant facilities need to be provided at each bank of toilets where there is an accessible sanitary facility and are to comply with Section 16 of AS1428.1-2009.

Comment: *Compliance generally achieved. Accessible W.C's shall be located at each bank of toilets.*

52. Clause F2.5 – Construction of Sanitary Compartments

The door to fully enclosed sanitary facilities must open outwards, slide or be readily removable from the outside unless there is a clear space of 1.2 metres measured in accordance with figure F2.5.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

53. Clause F2.7 – Microbial (Legionella) Control:

Hot water, warm water and cooling water systems in a RACF building must be installed in accordance with AS/NZS 3666.1.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided at the Construction Certificate stage.*

Note: The bathroom facilities for resident use are to be provided with TMVs (or other similar hot water regulation systems) to control hot water temperature.

54. Clause F2.8 – Waste Management

In a Class 9c aged care building a minimum of 1 slop-hopper or similar devices (i.e. one for every 60 residents) is to be provided within both for disposal of sewerage or dirty water.

Comment: *Details of at least 1 slop-hopper per 60 residents are to be shown on the plans.*

PART F3 ROOM HEIGHTS

55. Clause F3.1 Height of Rooms and other spaces

The minimum ceiling heights within the building must be as follows:

+ A kitchen, laundry or the like – 2.1m,
+ A corridor, passageway or the like – 2.4m,
+ A habitable room excluding a kitchen – 2.4m,
+ Bathrooms, sanitary compartments, tea preparations rooms, pantries, store rooms or the like – 2.1m,
+ A commercial kitchen – 2.4m,
+ Community Building – 2.4m,
+ Offices, hairdresser, consultation rooms etc – 2.4m,

Comment: *Compliance readily achievable.*

PART F4 LIGHT AND VENTILATION

56. Clause F4.1 – Provision of natural Light

Natural lighting must be provided in:

+ Class 2 buildings and Class 4 parts of buildings – to all habitable rooms.
+ Class 3 buildings – all bedrooms and dormitories.
+ Class 9a and 9c buildings – all rooms used for sleeping purposes.
+ Class 9b buildings – to all general purpose classrooms in primary or secondary schools and all playrooms and the like for the use of children in an early childhood centre.

Comment: *Natural light is provided to all rooms for sleeping purposes.*

57. Clause F4.2 - Methods & Extent of Natural Lighting

Windows or the like are to have an aggregate light transmitting area of not less than 10% of the floor area of the room.

In the 9c building windows must be transparent and located in an external wall with a window sill not higher than 1.0m above the floor level and where the window faces an allotment, another building or structure, it must not be located less than 3m away to maintain amenity to the space. In this regard compliance is readily achieved.

Comment: *Compliance readily achievable. Windows sills to be no higher than 1m.*

58. Clause F4.4 – Artificial Lighting

Artificial lighting to the storage areas, bathrooms, laundries, public areas, common lobby / corridors etc is required in accordance with AS/NZS 1680.0. Advice is required from the Electrical Consultant.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided at the Construction Certificate stage.*

59. Clause F4.5 – Ventilation of Rooms

The building is required to be provided with natural ventilation achieving 5% of the floor area of the room served. Where natural ventilation is not provided and borrowed ventilation relied upon design statements will be required. Alternatively, spaces within the building may be mechanically ventilated in accordance with AS 1668.2-1991.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided at the Construction Certificate stage.*

Note: Any openings proposed to have restrictors or security screens provided need to ensure compliance with the free air space requirements for natural ventilation under Part F4 are not compromised.

60. Clause F4.8 – Restriction on Position of Water Closets & Urinals

A sanitary facility must not open directly into a public dining room or restaurant, kitchen or pantry or a work place normally occupied by more than 1 person.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided at the Construction Certificate stage.*

61. Clause F4.12 – Kitchen Local Exhaust Ventilation

Any new mechanical exhaust to accommodate a commercial kitchen would need to be installed in accordance with AS 1668.1 – 1998 and AS 1668.2 – 1991.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided at the Construction Certificate stage.*

PART F5 SOUND TRANSMISSION AND INSULATION

62. Clause F5.2 – Determination of Airborne Sound Insulation Ratings

A form of construction required to have an airborne sound insulation rating must comply with sub-clauses (a) and (b). Sub-clause (b) calls up the provisions of **Specification F5.2.**

Comment: *A report from an Acoustic Consultant is to be submitted with the Construction Certificate application to confirm the design complies with the requirements of Part F5. The acoustic provisions apply to the Class 9c Residential parts of the building (RACF).*

63. Clause F5.3 – Determination of Impact Sound Insulation Ratings

The walls within the Residential part of the building that are required to have an impact sound insulation rating must be of discontinuous construction.

Note: Discontinuous construction means a wall having a minimum 20mm cavity between 2 separate leaves, and for masonry, wall ties are of a resilient type. For all other construction there is no mechanical link between leaves except at the periphery.

It is recommended that the proposed design be reviewed from an acoustic consultant prior to the issue of the Construction Certificate to ensure that it can meet the requirements of Part F5.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

64. Clause F5.4 – Sound Insulation Rating of Floors

Class 9c: The floors separating the sole occupancy units of the building as well as between the units and other classes are required to have an airborne sound insulation rating of not less than 45.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

65. Clause F5.5 – Sound Insulation Rating of Walls

Class 9c: A wall separating a sole occupancy unit within the RACF building, requires Walls separating SOU's must have a sound insulation rating of not less than R_w 45.

Walls required to have a sound insulation must extend to:

- If there is a floor above, to the underside of the floor or a ceiling that provides a sound insulation rating of not less than R_w 45.
- If there is roof above, to the underside of the roof or a ceiling that provides a sound insulation rating of not less than R_w 45.
- Walls separating SOU's from kitchens, bathrooms, sanitary compartments (not being any associated ensuite), laundry, plant room or utilities room must have a sound insulation rating of not less than R_w 45.

A wall separating a SOU from a kitchen or laundry must be constructed as follows:

- For other than masonry, be two or more separate leaves without rigid mechanical connection except at the periphery; or
- Be identical with a prototype that is no less resistant to the transmission of impact sound when tested in accordance with Specification F5.5 or a wall listed in Table 2 of Specification F2.5.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

66. Clause F5.6 – Sound Insulation Rating of Services

Where a duct, soil, waste or water supply pipe passes through more than one sole occupancy unit, the duct or pipe must be separated from the rooms of a sole occupancy unit by construction having an airborne sound insulation rating of not less than 40 if the adjoining room is habitable or 25 if it is a kitchen or non-habitable room.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

67. Clause F5.7 – Sound Isolation of Pumps

A flexible coupling must be used at the point of connection between the service pipes in a building and any circulating or other pump.

Comment: *Compliance readily achievable. Details demonstrating specific compliance will need to be provided with the Construction Certificate application.*

SECTION J – ENERGY EFFICIENCY

As applicable to new building works:-

68. SECTION J

The building is subject to compliance with the Energy Efficiency Provisions of BCA Section J relating to:

- J1: Building Fabric
- J2: External Glazing
- J3: Building Sealing
- J5: Air-conditioning and ventilation systems
- J6: Artificial lighting and power
- J7: Hot water supply
- J8: Access for maintenance

Comment: *In order to demonstrate compliance it is understood that a Section J report from an ESD Consultant will be submitted with the Construction Certificate Application.*

E. CONCLUSION

This report contains an assessment of the referenced architectural documentation for the proposed new aged care facility to accommodate a Class 9c RACF, Class 7a carpark, Class 5 office and Class 6 retail against the requirements of the BCA 2016.

Arising from the review, it is considered that the proposed development can readily achieve compliance with the relevant provisions of the BCA 2016, subject to relevant design certification from various consultants. The FEBQ and FER are to be prepared in conjunction with the CC application.