Date: 2 June 2022
Our Ref: P210140 (3)

NSW Land and Housing Corporation,
Locked Bag 4009
Ashfield NSW BC 1800
Att: Mr Mano T Manoharan

Dear Mano,

RE: 97-99 Punchbowl Rd, Belfield
DESIGN COMPLIANCE ASSESSMENT

Please find enclosed our BCA Design Compliance Report prepared in respect of the proposed design contained within the architectural documentation provided.

In reviewing the content of this Report, particular attention is drawn to the content of Parts 3 and 4 as: –

- Part 3 summarizes the compliance status of the proposed design in terms of each prescriptive provision of the BCA.
  The inclusion of this summary enables an immediate understanding of the compliance status of the proposed design to be obtained.
- Part 4 contains a detailed analysis of the proposed design, and provides informative commentary & recommendation in respect of each instance of prescriptive non-compliance and area of insufficient (design) detail, as applicable.

  This commentary enables the project team to readily identify and understand the nature and extent of information required within the Building Permit (or other) application to demonstrate the attainment of BCA compliance.

Should you require any further information, please do not hesitate to contact me on the number provided.

Yours faithfully

Kieran Tobin
Director

DESIGN COMPLIANCE ASSESSMENT

PREPARED FOR

NSW LAND AND HOUSING CORPORATION

REGARDING

97-99 Punchbowl Rd, Belfield

Prepared By

BCA vision

REPORT REGISTER

The following report register documents the development and issue of this report and project as undertaken by this office, in accordance with the *Quality Assurance* policy of BCA Vision Pty Ltd.

Our Reference	Issue No.	Remarks	Issue Date
P210140	1	Design Compliance Assessment – Sketch Stage	19 October 2021
P210140	2		07 December 2021
P210140	3	Design Compliance Assessment – DA Stage	2 June 2022

CONTENTS PAGE

1.0 INTRODUCTION

1.1 GENERAL

This "BCA Compliance Assessment" report has been prepared at the request of NSW Land and Housing Corporation, and relates to 97-99 Punchbowl Rd, Belfield.

The project proposal includes construction of residential units containing 8 Sole Occupancy Units.

This report is based upon, and limited to, the information depicted in the documentation provided for assessment, and does not make assumptions regarding "design intention" or the like.

1.2 REPORT BASIS

The content of this report reflects –

(a) The principles and provisions of BCA 2019 (amendment 1) Volume 1;

(b) Architectural Design Plans provided by Mode Architects: –

Numbered	Titled	Dated
AR-000	Cover page	01/06/22
AR-0100	Site Plan	01/06/22
AR-1000	Ground Floor Plan	01/06/22
AR-1001	First Floor Plan	01/06/22
AR-1100	Roof Plan	01/06/22
AR-2000	Elevations	01/06/22
AR-2100	Sections	01/06/22

1.3 EXCLUSIONS

It is conveyed that this report should not construed to infer that an assessment for compliance with the following has been undertaken –

(a) Structural and services design documentation;

(b) General building services (i.e. passenger lifts);

(c) The individual requirements of service providers (i.e. Telstra, Water Supply, Energy Australia);

(d) The individual requirements of the Workcover Authority;

(e) Disability Discrimination Act (DDA);

(f) This assessment is a desk top assessment a site inspection of the proposed site has not been undertaken by BCA Vision Pty Ltd.

1.4 REPORT PURPOSE

The purpose of this report is to identify the extent to which the architectural design documentation complies with the relevant prescriptive provisions of the BCA 2019, (amendment 1) Volume 1.

Assessment of the proposed design considers each prescriptive BCA provision, and identifies such as either: –

(a) Being complied with; or
(b) Not being complied with; or
(c) Requiring the provision further detail with the future Building Permit or other application or
(d) Not being relevant to the particular building works proposal.

The status of the design, in terms of these four (4) categories, is summarised within Part 3 of this report.
Where prescriptive non-compliance is identified, suitable recommendations to remedy the non-compliance shall be detailed in Part 4.

In instances where insufficient detail exists, summary of the information required from the project team for inclusion within future applications (i.e. Building Permit) shall also be outlined in Part 4.

2.0 BUILDING DESCRIPTION

2.1 GENERAL

In the context of the Building Code of Australia (BCA), the subject development is described within items 2.2 – 2.6 below.

2.2 RISE IN STOREYS (CLAUSE C1.2)

The building is proposed to have a rise in storeys of Two (2)

2.2 BUILDING CLASSIFICATION (CLAUSE A3.2)

The entire building incorporates the following classifications:-

CLASS	DESCRIPTION
Class 2	a building containing 2 or more sole-occupancy units each being a separate dwelling.

2.3 EFFECTIVE HEIGHT (CLAUSE A1.1)

The building has an effective height Not exceeding 12m.

2.4 TYPE OF CONSTRUCTION (TABLE C1.1)

Required to be of Type B Construction.

Table 4 TYPE B CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element		Class of building—FRL: (in minutes)
		Structural adequacy*/ *Integrity*/ *Insulation
		2, 3 or 4 part
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
	1.5 to less than 3 m	90/ 60/ 30
	3 to less than 9 m	90/ 30/ 30
	9 to less than 18 m	90/ 30/–
	18 m or more	–/–/–
For non- *loadbearing* parts—		
	less than 1.5 m	–/ 90/ 90
	1.5 to less than 3 m	–/ 60/ 30
	3 m or more	–/–/–
EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is—		
For *loadbearing* columns—		

Building element		Class of building—FRL: (in minutes)
		Structural adequacy*/ *Integrity*/ *Insulation
		2, 3 or 4 part
	less than 18 m	90/–/–
	18 m or more	–/–/–
For non- *loadbearing* columns—		
		–/–/–
COMMON WALLS and FIRE WALLS—		90/ 90 / 90
INTERNAL WALLS—		
Fire-resisting lift and stair *shafts*—		
	Loadbearing	90/ 90/ 90
Fire-resisting stair *shafts*—		
	Non- *loadbearing*	–/ 90/ 90
Bounding *public corridors*, public lobbies and the like—		
	Loadbearing	60/ 60/ 60
	Non- *loadbearing*	–/ 60/ 60
Between or bounding *sole-occupancy units*—		
	Loadbearing	60/ 60/ 60
	Non- *loadbearing*	–/ 60/ 60
OTHER LOADBEARING INTERNAL WALLS		
and COLUMNS—		60/–/–

2.5 SECTION J – CLIMATE ZONE

Climate Zone 6

3.0 BCA ASSESSMENT – SUMMARY

3.1. GENERAL

The tables contained within items 3.2 – 3.6 below summarise the compliance status of the proposed architectural design in terms of each prescriptive provision of the Building Code of Australia.

For those instances of either "prescriptive non-compliance" or "insufficient detail", a detailed analysis and commentary is provided within Part 4.

3.2. SECTION B – STRUCTURE

BCA reference	Complies	Does not comply	Can Readily Comply	Not relevant
B1.1 – resistance to actions			✓	
B1.2 – determination of individual actions			✓	
B1.4 – Determination of Structural Resistance			✓	
B1.5 – Structural Software			✓	

3.3. SECTION C – FIRE RESISTANCE

BCA reference	Complies	Does not comply	Detail required	Not relevant
Spec. C1.1 – fire resisting construction			✓	
C1.3 – buildings of multiple classification				✓
C1.4 – mixed types of construction				✓
C1.5 – two storey Class 2 or 3 buildings				✓
C1.6 – Class 4 parts of a building				✓
C1.7 – open spectator stands & indoor sports stadiums				✓
C1.8 – lightweight construction				✓
C1.9 – non-combustible materials			✓	
C1.10 – fire hazard properties			✓	
C1.11 – performance of external walls				✓
C1.13 – Fire-protected timber: Concession			✓	
C2.2 – general floor area & volume limits				✓
C2.3 – large isolated buildings				✓
C2.4 – requirements for open spaces & vehicular access				✓
C2.5 – Class 9a and 9c buildings				✓
C2.6 – vertical separation of openings in external walls				✓
C2.7 – separation of firewalls				✓
C2.8 – separation of classifications in same storey				✓
C2.9 – separation of classifications in different storeys				✓
C2.10 – separation of lift shafts				✓
C2.11 – stairways and lifts in one shaft				✓
C2.12 – separation of equipment				✓
C2.13 – electricity supply system			✓	
C2.14 – public corridors in Class 2 and 3 buildings				✓
C3.2 – openings in external walls	✓			
C3.3 – separation of external walls & openings				✓
C3.4 – acceptable methods of protection				✓
C3.5 – doorways in firewalls				✓
C3.6 – sliding fire doors				✓
C3.7 – doorways in horizontal exits				✓
C3.8 – openings in fire-isolated exits				✓
C3.9 – service penetrations in fire-isolated exits				✓
C3.10 – openings in fire-isolated lift shafts				✓
C3.11 – bounding construction: Class 2, buildings			✓	
C3.12 – openings in floors & ceilings for services			✓	
C3.13 – openings in shafts				
C3.15 – openings for service installations			✓	
C3.16 – construction joints			✓	
C3.17 – columns protected with f/r lightweight construction				✓

3.4. SECTION D – ACCESS AND EGRESS

BCA reference	Complies	Does not comply	Detail required	Not relevant
D1.2 – number of exits required	✓			
D1.3 – when fire-isolated exits are required				✓
D1.4 – exit travel distances	✓			
D1.5 – distance between alternative exits	✓			
D1.6 – dimensions of exits and paths of travel to exits			✓	
D1.7 – travel via fire-isolated exits				✓
D1.8 – external stairways or ramps in lieu of fire-isolated exits				✓
D1.9 – travel via non-fire isolated stairways or ramps	✓			
D1.10 – discharge from exits	✓			
D1.11 – horizontal exits				✓
D1.12 – non-required stairways or ramps				✓
D1.13 – number of persons accommodated	✓			
D1.16 – plant rooms and lift motor rooms: concession				✓
D1.17 – access to lift pits				✓
D2.2 – fire-isolated stairways and ramps				✓
D2.3 – non-fire isolated stairways and ramps	✓			
D2.4 – separation of rising and descending stair flights				✓
D2.5 – open access ramps and balconies				✓
D2.6 – smoke lobbies				✓
D2.7 – installations in exits and paths of travel			✓	
D2.8 – enclosure of space under stairs and ramps			✓	
D2.9 – width of stairways				✓
D2.10 – pedestrian ramps				✓
D2.11 – fire-isolated passageways				✓
D2.12 – roof as open space				✓
D2.13 – goings and risers			✓	
D2.14 – landings			✓	
D2.15 – thresholds			✓	
D2.16 – balustrades			✓	
D2.17 – handrails			✓	
D2.18 – fixed platforms, walkways, stairways and ladders				✓
D2.19 – doorways and doors				✓
D2.20 – swinging doors	✓			
D2.21 – operation of latch			✓	
D2.22 – re-entry from fire-isolated exits				✓
D2.23 – signs on doors				✓
D2.24 – Protection of Openable windows			✓	
D3.1 – General Building Access requirements			✓	
D3.2 – Access to Buildings			✓	
D3.3 – parts of buildings to be accessible			✓	
D3.4 – concessions				✓
D3.5 – car parking	✓			
D3.6 – signage			✓	
D3.7 – hearing augmentation services and features				✓
D3.8 – tactile indicators			✓	
D3.9 – Wheelchair Seating				✓
D3.10 – Swimming Pools				✓
D3.11 - Ramps				✓
D3.12 – Glazing on Access ways			✓	

3.5. SECTION E – SERVICES AND EQUIPMENT

BCA reference	Complies	Does not comply	Detail required	Not relevant
E1.3 – fire hydrants			✓	
E1.4 – fire hose reels				✓
E1.5 – sprinklers				✓
E1.6 – portable fire extinguishers				✓
E1.8 – fire control centres				✓
E1.9 – fire precautions during construction				✓
E1.10 – provision for special hazards				✓
E2.2a – general provisions			✓	
E2.2b – specific provisions				✓
E2.3 – provision for special hazards				✓
E3.1- lift installations				✓
E3.2 – stretcher facility in lifts				✓
E3.3 – warning against use of lifts in fire				✓
E3.4 – emergency lifts				✓
E3.5 – landings				✓
E3.6 – facilities for people with disabilities				✓
E3.7 – fire service controls				✓
E3.8 – aged care buildings				✓
E4.2 – emergency lighting			✓	
E4.4 – design and operation of emergency lighting			✓	
E4.5 – exit signs			✓	
E4.6 – direction signs			✓	
E4.7 – Class 2 and 3 buildings and Class 4 parts: exemptions				✓
E4.8 – design and operation of exit signs			✓	
E4.9 – emergency warning and intercommunication systems				✓

3.6. SECTION F – HEALTH AND AMENITY

BCA reference	Complies	Does not comply	Detail required	Not relevant
F1.1 – storm water drainage			✓	
F1.5 – roof coverings			✓	
F1.6 – sarking			✓	
F1.7 – water proofing of wet areas			✓	
F1.9 – damp proofing			✓	
F1.10 – damp proofing of floors on ground			✓	
F1.11 – floor wastes			✓	
F1.12 – sub-floor ventilation				✓
F1.13 – glazed assemblies			✓	
F2.1 – facilities in residential buildings			✓	
F2.3 – facilities in Class 3 to 9 buildings				✓
F2.4 – facilities for people with disabilities			✓	
F2.5 – construction of sanitary compartments			✓	
F2.8 – waste management				✓
F3.1 – height of rooms	✓			
F4.1 – provision of natural light	✓			
F4.2 – methods and extent of natural lighting	✓			
F4.3 – natural lighting borrowed from adjoining room				✓
F4.4 – artificial lighting			✓	
F4.5 – ventilation of rooms			✓	
F4.6 – natural ventilation	✓			
F4.7 – ventilation borrowed from an adjoining room				✓
F4.8 – restriction on position of water closets and urinals			✓	
F4.9 – airlocks			✓	
F4.11 – car parks				✓
F4.12 – kitchen local exhaust ventilation				✓
F5.2 –Determination – airborne sound insulation			✓	
F5.3 Determination – impact sound insulation			✓	
F5.4 – sound insulation of floors			✓	
F5.5 – sound insulation rating of walls			✓	
F5.6 – sound insulation rating of services			✓	
F5.7 – sound insulation of pumps			✓	
F6.1 Application of Part			✓	
F6.2 Pliable building membrane			✓	
F6.3 Flow rate and discharge of exhaust systems			✓	
F6.4 Ventilation of roof spaces			✓	

3.7. SECTION G – HEALTH AND AMENITY

BCA reference	Complies	Does not comply	Detail required	Not relevant
Part G1 – Minor Structures and Components				✓
Part G2 – Heating Appliances				✓
Part G3 – Atrium Construction				✓
Part G4 – Construction in Alpine Areas				✓
Part G5 – Construction in Bushfire Prone Areas				✓

3.1. SECTION J – ENERGY EFFICIENCY

BCA reference	Complies	Does not comply	Detail required	Not relevant
J1.2 – thermal construction general				✓*
J1.3 – roof and ceiling construction				✓*
J1.4 – roof lights				✓*
J1.5 – walls				✓*
J1.6 – floors				✓*
J2.4 – glazing				✓*
J2.5 – shading				✓*
J3.2 – chimneys and flues				✓*
J3.3 – roof lights				✓*
J3.4 – external windows and doors			✓	
J3.5 – exhaust fans			✓	
J3.6 – construction of roofs, walls and floors			✓	
J3.7 – Evaporative coolers				✓
J5.2 – air conditioning and ventilation systems			✓	
J5.3 – time switch				✓
J5.4 – heating and cooling systems			✓	
J5.5 – ancillary exhaust systems				✓
J6.2 – interior artificial lighting			✓	
J6.3 – interior artificial lighting and power control			✓	
J6.4 – Interior and decorative lighting				✓
J6.5 – Artificial lighting around perimeter of building			✓	
✓* = Address within BASIX Certificate				

4.0 BCA ASSESSMENT – DETAILED ANALYSIS

4.1 GENERAL

With reference to the "BCA Assessment Summary" contained within Part 3 above, the following detailed analysis and commentary is provided.

This commentary is formulated to enable the design documentation to be further progressed, for the purpose of evidencing the attainment of compliance with the relevant provisions of the BCA.

In our opinion compliance with the Building Code of Australia 2019 amendment 1, Parts B, C, D, E, F, G & J can be achieved subject to the implementation of the following details into the Construction documentation.

4.2 SECTION B – STRUCTURE

Cl. B1.1	Resistance to actions 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 B1.2 and the general design procedures contained in AS/NZS 1170.0; and (b) the resistance of a building or structure is determined in accordance with B1.4.	Structural Engineers Design Compliance Certificate will be required at Construction Stage
Cl. B1.2	Determination of individual actions	As Above

	The magnitude of individual actions must be determined in accordance with the following: (a) Permanent actions: (i) the design or known dimensions of the building or structure; and (ii) the unit weight of the construction; and (iii) AS/NZS 1170.1. (b) Imposed actions: (i) the known loads that will be imposed during the occupation or use of the building or structure; and (ii) *construction activity actions*; and (iii) AS/NZS 1170.1. (c) Wind, snow and ice and earthquake actions: (i) the applicable annual probability of design event for safety, determined by— (A) assigning the building or structure an Importance Level in accordance with Table B1.2a; and (B) determining the corresponding annual probability of exceedance in accordance with Table B1.2b; and (ii) (A) AS/NZS 1170.2 (2002); or (B) AS/NZS 1170.2 (2011) except that clause 2.3 Design Wind Speed and Figure 3.1(A) Wind Regions do not apply and are replaced by clause	

	2.3 and Figure 3.1 of AS/NZS 1170.2 (2002); and (iii) AS/NZS 1170.3 and AS 1170.4 as appropriate; and (iv) in cyclonic areas, metal roof cladding, its connections and immediate supporting members must comply with Specification B1.2; and (v) for the purposes of (iv), cyclonic areas are those determined as being located in wind regions C and D in accordance with AS/NZS 1170.2 (2002). (d) Actions not covered in (a), (b) and (c) above: (i) the nature of the action; and (ii) the nature of the building or structure; and (iii) the Importance Level of the building or structure determined in accordance with Table B1.2a; and (iv) AS/NZS 1170.1. (e) For the purposes of (d) the actions include but are not limited to— (i) liquid pressure action; and (ii) ground water action; and (iii) rainwater action (including ponding action); and (iv) earth pressure action; and (v) differential movement; and (vi) time dependent effects (including creep and shrinkage); and (vii) thermal effects; and (viii) ground movement caused by—	

	(A) swelling, shrinkage or freezing of the subsoil; and (B) landslip or subsidence; and (C) *siteworks* associated with the building or structure	
Cl. B1.4	Determination of structural resistance of materials and forms of construction The structural resistance of materials and forms of construction must be determined in accordance with the following, as appropriate: (a) Masonry (including masonry-veneer, unreinforced masonry and reinforced masonry): AS 3700. (b) Concrete construction (including reinforced and prestressed concrete): AS 3600. (c) Steel construction— (i) Steel structures: AS 4100. (ii) Cold-formed steel structures: AS/NZS 4600. (iii) Residential and low-rise steel framing: NASH Standard. (d) Composite steel and concrete: AS 2327.1. (e) Aluminium construction: AS/NZS 1664.1 or AS/NZS 1664.2. (f) Timber construction: (i) Design of timber structures: AS 1720.1. (ii) * * * * *	Glazing Details and Termite Protection Details require clarification within the Construction Documentation at Construction Stage

	(iii) Timber structures: AS 1684 Part 2, Part 3 or Part 4. (g) Piling: AS 2159. (h) Glazed assemblies: (i) The following glazed assemblies in an *external wall* must comply with AS 2047: (A) Windows excluding those listed in (ii). (B) Sliding doors with a frame. (C) Adjustable louvres. (D) Shopfronts. (E) Window walls with one piece framing. (ii) All glazed assemblies not covered by (i) and the following glazed assemblies must comply with AS 1288: (A) All glazed assemblies not in an *external wall*. (B) Hinged doors, including French doors and bi-fold doors. (C) Revolving doors. (D) Fixed louvres. (E) Skylights, roof lights and windows in other than the vertical plane. (F) Sliding doors without a frame. (G) Shopfront doors. (H) Windows constructed on site and architectural one-off windows, which are not design tested in accordance with AS 2047. (I) Second-hand windows, re-used windows,	

	recycled windows and replacement windows. (J) Heritage windows. (K) Glazing used in balustrades and sloping overhead glazing. (i) Termite Risk Management: Where a *primary building element* is subject to attack by subterranean termites: AS 3660.1, and— (i) for the purposes of this provision, a *primary building element* consisting entirely of, or a combination of, any of the following materials is considered not subject to termite attack: (A) Steel, aluminium or other metals. (B) Concrete. (C) Masonry. (D) Fibre-reinforced cement. (E) Timber — naturally termite resistant in accordance with Appendix C of AS 3660.1. (F) Timber — preservative treated in accordance with Appendix D of AS 3660.1; and (ii) a durable notice must be permanently fixed to the building in a prominent location, such as a meter box or the like, indicating— (A) the method of termite risk management; and (B) the date of installation of the system; and (C) where a chemical barrier is used, its life expectancy as listed on the National Registration Authority label; and	

	(D) the installer's or manufacturer's recommendations for the scope and frequency of future inspections for termite activity. (j) Roof construction (except in cyclone areas): (i) Plastic sheeting: AS/NZS 1562.3, AS/NZS 4256 Parts 1, 2, 3 and 5. (ii) Roofing tiles: AS 2049, AS 2050. (iii) Cellulose cement corrugated sheets: AS/NZS 2908.1 with safety mesh installed in accordance with AS/NZS 1562.3 clause 2.4.3.2 except for sub clause (g) for plastic sheeting. (iv) Metal roofing: AS 1562.1. (v) Asphalt shingles: ASTM D3018-90, Class A. (k) Particleboard structural flooring: AS 1860.2. (l) * * * * * (m) Lift *shafts* which are not *required* to have an FRL: AS 1735.2 Clause 11.1.2.	
Cl. B1.5	Structural Software (a) Structural software used in computer aided design of a building or structure, that uses design criteria based on the *Deemed-to-Satisfy Provisions* of the BCA, including its referenced documents, must comply with the ABCB Protocol for Structural Software. (b) The requirements of (a) only apply to structural software used to design steel or timber trussed roof and floor systems and framed building systems for	For Reference

	buildings within the following geometrical limits: (i) The distance from ground level to the underside of eaves must not exceed 6 m. (ii) The distance from ground level to the highest point of the roof, neglecting chimneys must not exceed 8.5 m. (iii) The building width including roofed verandahs, excluding eaves, must not exceed 16 m. (iv) The building length must not exceed five times the building width. (v) The roof pitch must not exceed 35 degrees. (c) The requirements of (a) do not apply to design software for individual frame members such as electronic tables similar to those provided in AS 1684.	

4.3 SECTION C – FIRE RESISTANCE

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
Cl. C1.1	Type of construction required (a) The minimum Type of *fire-resisting construction* of a building must be that specified in Table C1.1 and Specification C1.1, Type B Requirements External Columns The columns provided to the external balcony of units are required to achieve an FRL of 90/--/- External walls 90/60/30 Internal Walls (i) 90/90/90 for stair shafts (ii) 60/60/60 between residential sole-occupancy units and public corridors (iii) 60/60/60 between or bounding residential sole-occupancy units (iv) 60/--/-- for all other internal loadbearing walls and columns. Floors The intermediate floor/s between ground floor and level 1 are to be constructed in accordance with one of the following:-	Refer to Part 2.4, pages 3-4 of this report (and left) for the required FRLs Further detail will be required prior to the issue of a Section 6.28 Crown Certificate in relation to the method of achieving the required FRLs for external walls and columns in addition to separating walls and floors. Note Gable sections are considered an external wall element and do require an FRL equal to the external wall from each side of the wall (internal and external Further detail confirming compliance will be required within the construction plans

	(i) The floor/ceiling system incorporate a ceiling which has a resistance to the incipient spread of fire to the space above itself of not less than 60 minutes; or (ii) Have an FRL of at least 30/30/30. General Notes The internal walls located between sole occupancy units and separating the common stairway are to be constructed in accordance with one of the following methods:- (i) Extend to the underside the floor next above; or (ii) Extend to the underside of a roof covering if it is non-combustible and must not be crossed by timber or other combustible building elements, except for roof battens with dimensions of 75mm x 50mm or less, or sarking-type material; or (iii) Extend to a ceiling that is immediately below the roof and has a resistance to the incipient spread of fire to the roof space between the ceiling and the roof of not less than 60 minutes. If a stair shaft supports a floor or any structural part of it:- (i) the floor (or part) must have FRL of at least 60/--/--; or (ii) The junction of the stair must be constructed such that the floor (or part) will be free to sag or fall without causing structural damage to the shaft.	

Cl. C1.9	Non-combustible building elements (a) In a building required to be of Type A or B construction, the following building elements and their components must be non-combustible: (i) External walls and common walls, including all components incorporated in them including the facade covering, framing and insulation. (ii) The flooring and floor framing of lift pits. (iii) Non-loadbearing internal walls where they are required to be fire-resisting. (b) 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 in— (i) a building required to be of Type A construction; and (ii) a building required to be of Type B construction, subject to C2.10, in— (A) a Class 2, 3 or 9 building; and (B) a Class 5, 6, 7 or 8 building if the shaft connects more than 2 storeys. (c) A loadbearing internal wall and a loadbearing fire wall, including those that are part of a loadbearing shaft, must comply with Specification C1.1. (d) The requirements of (a) and (b) do not apply to the following: (i) Gaskets. (ii) Caulking. (iii) Sealants. (iv) Termite management systems.	External cladding proposed for this development - Confirmation will be required that the wall system is compliant with Clause C1.9 In addition an AS 1530.1 Fire Test Certificate will be required for the proposed wall insulation. Further detail confirming compliance will be required within the construction plans

	(v) Glass, including laminated glass. (vi) Thermal breaks associated with glazing systems. (vii) Damp-proof courses. (e) The following materials may be used wherever 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) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0. (vi) Sarking-type materials that do not exceed 1 mm in thickness and have a Flammability Index not greater than 5. (vii) Bonded laminated materials where— (A) each lamina, including any core, is non-combustible; and (B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and (C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.	
Cl. C1.10	Fire Hazard Properties (a) The *fire hazard properties* of the following linings, materials and assemblies in a Class 2 to 9 building must comply with Specification C1.10	Detail as follows must be identified within the project specification: -

		The general materials of construction must have fire hazard properties calculated in accordance with *AS/NZS1530.3-1999* and *AS1530.4-2005*, and must not: (i) Have a Spread-of-Flame index more than 9; and (ii) A Smoke-Developed Index not more than 8 if the Spread-of- Flame is more than 5; or (iii) In the case of a sarking material have a Flammability index not more than 5 Rigid and flexible ductwork must comply with the fire hazard properties set out in „*AS4254 – Ductwork for air-handling systems in buildings'*. Floor, wall and ceiling linings must have fire hazard properties accordant with BCA Specification C1.10a, which specifies that: A floor material or floor covering must have a critical radiant flux not less than 2.2 kW/M2 and a maximum smoke development rate of 750 percent-minutes. A material used as a finish, surface,

		lining or attachment to a wall or ceiling must be a Group 1, Group 2 or Group 3 material as per Table 2. The material must have a smoke growth rate index not more than 100 or an average extinction area less than 250m 2/kg.
Cl. C1.13	Fire-protected timber: Concession Fire-protected timber may be used wherever an element is required to be non-combustible, provided— (a) the building is— (i) a separate building; or (ii) a part of a building— (A) which only occupies part of a storey, and is separated from the remaining part by a fire wall; or (B) which is located above or below a part not containing fire-protected timber and the floor between the adjoining parts is provided with an FRL not less than that prescribed for a fire wall for the lower storey; and (b) the building has an effective height of not more than 25 m; and (c) the building has a sprinkler system (other than a FPAA101D or FPAA101H system) throughout complying with Specification E1.5; and	Further detail required prior to Crown Certificate

	(d) any insulation installed in the cavity of the timber building element required to have an FRL is non-combustible; and (e) cavity barriers are provided in accordance with Specification C1.13.	
Cl. C2.13	Electricity supply system (a)An electricity substation located within a building must— (i)be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and (ii)have any doorway in that construction protected with a *self-closing* fire door having an FRL of not less than –/120/30. (b)A main switchboard located within the building which sustains emergency equipment operating in the emergency mode must— (i)be separated from any other part of the building by construction having an FRL of not less than 120/120/120; and (ii)have any doorway in that construction protected with a *self-closing* fire door having an FRL of not less than –/120/30. (c)Electrical conductors located within a building that supply— (i)a substation located within the building which supplies a main switchboard covered by (b); or (ii)a main switchboard covered by (b), must— (iii)have a classification in accordance with AS/NZS 3013 of	The Main Switch Board beneath the stairs must be provided with Fire separating construction to achieve an FRL of 120/120/120 and a self closing -/120/30 fire door Further detail required prior to Crown Certificate

	not less than— (A)if located in a position that could be subject to damage by motor vehicles — WS53W; or (B)otherwise — WS52W; or (iv)be enclosed or otherwise protected by construction having an FRL of not less than 120/120/120. (d)Where emergency equipment is *required* in a building, all switchboards in the electrical installation, which sustain the electricity supply to the emergency equipment, must be constructed so that emergency equipment switchgear is separated from non-emergency equipment switchgear by metal partitions designed to minimise the spread of a fault from the non-emergency equipment switchgear. (e)For the purposes of (d), emergency equipment includes but is not limited to the following: (i)Fire hydrant booster pumps. (ii)Pumps for *automatic* sprinkler systems, water spray, chemical fluid suppression systems or the like. (iii)Pumps for fire hose reels where such pumps and fire hose reels form the sole means of fire protection in the building. (iv)Air handling systems designed to exhaust and control the spread of fire and smoke. (v)Emergency lifts. (vi)Control and indicating equipment. (vii)Emergency warning and intercom systems.	
Cl. C3.11	Doorways leading from sole occupancy units to a public corridor, public lobby, a room not within a sole occupancy unit and any other sole occupancy unit must be self-closing tight fitting solid core doors not less than 35mm thick.	Details are required within the specification or architectural plans.

Cl. C3.12	Service openings through any floors in the building must be either fire sealed or enclosed in a fire rated shaft, using materials having an FRL not less than the floor concerned.	Details are required within the specification or architectural plans.
Cl. C3.15	Openings for service installations 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* or a *resistance to the incipient spread of fire*, that installation must comply with any one of the following: (a) **Tested systems** (i) The service, building element and any protection method at the penetration are identical with a prototype assembly of the service, building element and protection method which has been tested in accordance with AS 4072.1 and AS 1530.4 and has achieved the *required* FRL or *resistance to the incipient spread of fire*. (ii) It complies with (i) except for the *insulation* criteria relating to the service if— (A) the service is a pipe system comprised entirely of metal (excluding pipe seals or the like); and (B) any *combustible* building element is not located within 100 mm of the service for a distance of 2 m from the penetration; and (C) *combustible* material is not able to be located within 100 mm of the service for a distance of 2 m	Details are required within the specification or architectural plans.

	from the penetration; and (D) it is not located in a *required exit*. (b) **Ventilation and air-conditioning** — In the case of ventilating or air-conditioning ducts or equipment, the installation is in accordance with AS/NZS 1668.1. (c) **Compliance with Specification C3.15** (i) The service is a pipe system comprised entirely of metal (excluding pipe seals or the like) and is installed in accordance with Specification C3.15 and it— (A) penetrates a wall, floor or ceiling, but not a ceiling *required* to have a *resistance to the incipient spread of fire*; and (B) connects not more than 2 *fire compartments* in addition to any *fire-resisting* service *shafts*; and (C) does not contain a flammable or *combustible* liquid or gas. (ii) The service is sanitary plumbing installed in accordance with Specification C3.15 and it— (A) is of metal or UPVC pipe; and (B) penetrates the floors of a Class 5, 6, 7, 8 or 9b building; and (C) is in a *sanitary compartment* separated from other parts of the building by walls with the FRL *required* by Specification C1.1 for a stair *shaft* in the building and a *self-closing* –/60/30 fire door. (iii) The service is a wire or cable, or a cluster of wires or cables installed in accordance with Specification C3.15	

	and it— (A) penetrates a wall, floor or ceiling, but not a ceiling *required* to have a *resistance to the incipient spread of fire*; and (B) connects not more than 2 *fire compartments* in addition to any *fire-resisting* service *shafts*. (iv) The service is an electrical switch, outlet, or the like, and it is installed in accordance with Specification C3.15.	
Cl. C3.16	Construction joints between fire resistant elements must be fire sealed with a material having a fire resistance level not less than the elements being joined.	Details are required within the specification or architectural plans.

4.4 SECTION D – ACCESS AND EGRESS

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
Cl. D1.6	Dimensions of exits and paths of travel to exits In a *required* *exit* or path of travel to an *exit*— (a) the unobstructed height throughout must be not less than 2 m, except the unobstructed height of any doorway may be reduced to not less than 1980 mm; a (b) the unobstructed width of each *exit* or path of travel to an *exit*, except for doorways, must be not less than 1m	Details are required within the specification or architectural plans.
Cl. D2.7	Electrical ducts, meter or distribution boards, and communication boards or equipment, and electrical motors, must be separated from an exit or path of travel by smoke sealed non-combustible construction.	Details are required within the specification or architectural plans.
Cl. D2.8	Enclosure of space under stairs and ramps (b) Non fire-isolated stairways and ramps — The space below a *required* non *fire-isolated stairway* (including an external stairway) or non *fire-isolated ramp* must not be enclosed to form a cupboard or other enclosed space unless— (i) the enclosing walls and ceilings have an FRL of not less than 60/60/60; an (ii) any access doorway to the enclosed space is fitted with a *self-closing* -/60/30 fire door.	The Comms cupboard beneath the stairs must be provided with Fire separating construction to achieve an FRL of 160/160/160 and a self closing -/60/30 fire door Details are required within the specification or architectural plans.
Cl. D2.13	Goings and risers (a) A stairway must have— (i) not more than 18 nor less than 2 risers in each *flight*; and (ii) except as permitted by (b) and (c), going (G), riser (R) and quantity (2R + G) in accordance with Table D2.13; and (iii) except as permitted by (b) and (c), goings and risers that are constant	Details are required within the specification or architectural plans.

throughout in one *flight*; and

(iv) risers which do not have any openings that would allow a 125 mm sphere to pass through between the treads; and

(v) treads which have—

(A) a surface with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586; or

(B) a nosing strip with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586; and

(vi) treads of solid construction (not mesh or other perforated material) if the stairway is more than 10 m high or connects more than 3 *storeys*; and

(vii) in a Class 9b building, not more than 36 risers in consecutive *flights* without a change in direction of at least 30°; and

(viii) in the case of a *required* stairway, no winders in lieu of a landing.

(b) In the case of a non- *required* stairway—

(i) the stairway must have—

(A) not more than 3 winders in lieu of a quarter landing; and

(B) not more than 6 winders in lieu of a half landing; and

(ii) the going of all straight treads must be constant throughout the same *flight*; and

(iii) the going of all winders in lieu of a quarter or half landing may vary from the going of the straight treads within the same *flight* provided that the going of all such winders is constant.

(c) Where a stairway discharges to a sloping public walkway or public road—

(i) the riser (R) may be reduced to account for the slope of the walkway or

	road; and (ii) the quantity (2R+G) may vary at that location.	
Cl. D2.14	Landings In a stairway— (a) landings having a maximum gradient of 1:50 may be used in any building to limit the number of risers in each ***flight*** and each landing must— (i) be not less than 750 mm long, and where this involves a change in direction, the length is measured 500 mm from the inside edge of the landing; and (ii) have— (A) a surface with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586; or (B) a strip at the edge of the landing with a slip-resistance classification not less than that listed in Table D2.14 when tested in accordance with AS 4586, where the edge leads to a ***flight*** below; and	Details are required within the specification or architectural plans.

Table D2.14 SLIP-RESISTANCE CLASSIFICATION

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

Cl. D2.15	Thresholds The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless— (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 190 mm above the finished surface of the ground, balcony, or the like, to which the doorway opens.	Door thresholds to the lowest level units and entry foyers must comply with AS 1428.1 – 2009. Details are required within the specification or architectural plans.
Cl. D2.16	Balustrades or other barriers (a) A continuous balustrade or other barrier must be provided along the side of any roof to which public access is provided, any stairway or ramp, any floor, corridor, hallway, balcony, deck, verandah, *mezzanine*, access bridge or the like and along the side of any delineated path of access to a building, if— (i) it is not bounded by a wall; and (ii) its level above the surface beneath, is more than— (A) 4 m where it is possible for a person to fall through an openable *window*; or (B) 1 m in any other case. (c) A balustrade or other barrier in— (i) *fire-isolated stairways*, *fire-isolated ramps* and other areas used primarily for emergency purposes, excluding external stairways and external ramps; and (ii) Class 7 (other than *car parks*) and Class 8 buildings and parts of buildings containing those classes, must comply with (g) and (h)(i). (d) A balustrade or other barrier in stairways and ramps, other than those covered in (c), must comply with (g) and (h)(ii).	Details are required within the specification or architectural plans. Note:- D2.24 (b) requires the sill height of the first floor common foyer windows to achieve a minimum 865mm

	(e) A balustrade or other barrier along the side of a horizontal or near horizontal surface such as a— (i) roof to which public access is provided and any path of access to a building; and (ii) floor, corridor, hallway, balcony, verandah, ***mezzanine***, access bridge or the like, must comply with (g) and (h)(ii). (g) The height of a balustrade or other barrier must be constructed in accordance with the following: (i) The height is not less than 865 mm above the nosings of the stair treads or the floor of a ramp or other path of travel with a gradient not less than 1:20. (ii) The height is not less than— (A) 1 m above the floor of any access path, balcony, landing or the like where the path of travel has a gradient less than 1:20; or (B) 865 mm above the floor of a landing to a stair or ramp where the balustrade or other barrier is provided along the inside edge of the landing and does not exceed a length of 500 mm; or (C) 865 mm above the floor beneath an openable ***window***. (iii) A transition zone may be incorporated where the balustrade or other barrier height changes from 865 mm on the stair ***flight*** or ramp to 1 m at the landing. (iv) For a balustrade or other barrier provided under (f), the height above the floor must be not less than— (A) 1 m; or (B) 700 mm and a horizontal projection extends not less than 1 m outwards from the top of the balustrade. (h) Openings in a balustrade or other barrier must be constructed in accordance with the following: (i) For a balustrade or other barrier provided under (c)—	

	(A) the space between balusters or the width of any opening (including any openable *window* or panel) must not be more than 300 mm; or (B) where rails are used, a rail must be provided at a height of not more than 150 mm above the nosings of the stair treads or the floor of the landing, balcony or the like and the space between rails must not be more than 460 mm. (ii) For a balustrade or other barrier other than those provided under (c)— (A) any opening does not permit a 125 mm sphere to pass through it and for stairs, the space is measured above the nosings; and (B) for floors more than 4 m above the surface beneath, any horizontal or near horizontal elements between 150 mm and 760 mm above the floor must not facilitate climbing.	
Cl. D2.17	Handrails must be provided to at least one side of all stairways and ramps less than 2-metres in width, and to both sides where more than 2-metres in width, and must: – ❑ Be continuous between stair flight landings ❑ Have no obstruction that would cause a break in the hand hold ❑ Have one rail fixed at a height not less than 865-mm ❑ Comply with AS 1428.1 – 2009 – Design for Access and mobility	The hand rails to all common area stairs must comply with Clause 12 of AS 1428.1 – 2009. Details are required within the specification or architectural plans.
Cl. D2.21	All doors in a required exit, forming part of a required exit or in the path of travel to a required exit must be readily provided with door hardware located between 900-1100-mm above floor level and be readily openable without a key from the side facing a person seeking egress by a single downward action.	Details are required within the specification or architectural plans.
Cl. D2.24	Protection of openable windows (a) A window opening must be provided with protection, if the floor below the windo is 2 m or more above the surface beneath in— (i) a bedroom in a Class 2 or 3 building or Class 4 part of a building; or (ii) a Class 9b *early childhood centre*.	Details are required within the specification or architectural plans.

(b) Where the lowest level of the window opening is less than 1.7 m above the floor, a window opening covered by (a) must comply with the following:

(i) The openable portion of the window must be protected with—

(A)

a device to restrict the window opening; or

(B)

a screen with secure fittings.

(ii) A device or screen *required* by (i) must—

(A) not permit a 125 mm sphere to pass through the window opening or screen; and

(B) resist an outward horizontal action of 250 N against the—

(aa) window restrained by a device; or

(bb) screen protecting the opening; and

(C) have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden.

(c) A barrier with a height not less than 865 mm above the floor is *required* to an openable window—

(i) in addition to window protection, when a child resistant screen release mechanism is *required* by (b)(ii)(C); and

(ii) for openable windows 4 m or more above the surface beneath if the window is not covered by (a).

(d) A barrier covered by (c) must not—

(i) permit a 125 mm sphere to pass through it; and

(ii) have any horizontal or near horizontal elements between 150 mm

	and 760 mm above the floor that facilitate climbing.	
Cl. D3.1	General building access requirements Buildings and parts of buildings must be *accessible* as *required* by Table D3.1, unless exempted by D3.4. 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.	**Key Compliance Issues** A Final Access Compliance Assessment will be required prior to issue of a Crown Certificate **General Compliance Comments: -** All stairs must comply with the requirements of Clauses 11 and 12 (stair ways and hand rails) of AS 1428.1 – 2009 and be provided with tactile indicators in accordance with AS 1428.4; Grates in accordance with Clause 7.5 of AS 1428.1 - 2009 Signage in accordance with Clause 8 of AS 1428.1 - 2009 Tactile Ground Surface Indicators in accordance with Clause 9 of AS 1428.4 Details of kerbs and kerb rails adjacent to walkways in accordance with Clause 10 of AS1428.1 – 2009 The proposed luminance contrast doors (30%) required in accordance with Clause 13.1 of AS 1428.1 – 2009 Dimensions, configuration of light switches and GPO's in accordance with Clause 14 of AS 1428.1 – 2009, Dimensions, configuration of door controls

		in accordance with Clause 14 of AS 1428.1 – 2009, Positioning of fixtures and fittings within accessible sanitary facilities in accordance with Clauses 15 and 17 of AS 1428.1 – 2009.
Cl. D3.2	Access to Buildings ▪ Must be provided by an AS 1428.1 complying path of travel from – (i) a entry point from the road at the allotment boundary to the entrance doorway. (ii) any disabled car parking space on the allotment. (iii) any other accessible building on the allotment. (iv) through the principal public entrance. ▪ Parts of buildings required to be accessible must comply with AS 1428.1	As Above
Cl. D3.3	Parts of buildings to be accessible In a building *required* to be *accessible*: (a) every ramp and stairway, except for ramps and stairways in areas exempted by clause D3.4, must comply with: (i) for a ramp, except a fire-isolated ramp, clause 10 of AS 1428.1; and (ii) for a stairway, except a fire-isolated stairway, clause 11 of AS 1428.1; (iii) for a fire-isolated stairway, clause 11.1(f) and (g) of AS 1428.1; (b) every passenger lift must comply with clause E3.6; (c) *access ways* must have: (i) passing spaces complying with AS 1428.1 at maximum 20 m	Note

	intervals on those parts of an *access way* where a direct line of sight is not available; and (ii) turning spaces complying with AS 1428.1: (A) within 2 m of the end of *access ways* where it is not possible to continue travelling along the *access way*; and (B) at maximum 20 m intervals along the *access way*; (d) an intersection of *access ways* satisfies the spatial requirements for a passing and turning space; (e) a passing space may serve as a turning space; (f) a ramp complying with AS 1428.1 or a passenger lift need not be provided to serve a *storey* or level other than the entrance *storey* in	
Cl. D3.8	Tactile indicators (a) For a building *required* to be *accessible*, tactile ground surface indicators must be provided to warn people who are blind or have a vision impairment that they are approaching— (i) a stairway, other than a *fire-isolated stairway*; and (ii) an escalator; and (iii) a passenger conveyor or moving walk; and (iv) a ramp other than a *fire-isolated ramp*, step ramp, kerb ramp or *swimming pool* ramp; and (v) in the absence of a suitable barrier— (A) an overhead obstruction less than 2 m above floor level, other than a doorway; and (B) an *accessway* meeting a vehicular way adjacent to any pedestrian entrance to a building, excluding a pedestrian entrance serving an area referred to in D3.4, if there is no	Details are required within the specification or architectural plans.

	kerb or kerb ramp at that point, except for areas exempted by D3.4. (b) Tactile ground surface indicators *required* by (a) must comply with sections 1 and 2 of AS/NZS 1428.4.1.	
Cl. D3.11	Glazing on an access way On an *access way*, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1.	Details are required within the specification or architectural plans.

4.5 SECTION E – SERVICES AND EQUIPMENT

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
Cl. E1.3	Fire hydrants (a)A fire hydrant system must be provided to serve a building— (i)having a total *floor area* greater than 500 m2; and (ii)where a *fire brigade station* is— (A)no more than 50 km from the building as measured along roads; and (B)equipped with equipment capable of utilising a fire hydrant. (b)The fire hydrant system— (i)must be installed in accordance with AS 2419.1, except— (A)a Class 8 *electricity network substation* need not comply with clause 4.2 of AS 2419.1 if— (aa)it cannot be connected to a town main supply; and (bb)one hour water storage is provided for fire-fighting; and (B)where a sprinkler system is installed throughout a building in accordance with AS 2118.1, AS 2118.4, AS2118.6, FPAA101H or FPAA101D the fire hydrant booster protection requirements of clauses 7.3(c)(ii) and7.3(d)(iii) of AS 2419.1 do not apply; and (C)a fire hydrant booster assembly may be located between 3.5 m and 10 m of the building, and need not comply with clause 7.3(d)(iii) of AS 2419.1 where the assembly is protected by an adjacent fire-rated freestanding wall that— (aa)achieves an FRL of not less than 90/90/90; and (bb)extends not less than 1 m each side of the outermost fire hydrant booster risers within the assembly and is not less than 3 m wide; and (cc)extends to a height of not less than 2 m above finished ground level; and (ii)where internal fire hydrants are provided, they must serve only the *storey* on which they are located except that a *sole-occupancy unit*— (A)in a Class 2 or 3 building or Class 4 part of a building may be served by a single fire hydrant located at the level of egress from that *sole-occupancy unit*; or (B)of not more than 2 *storeys* in a Class 5, 6, 7, 8 or 9 building may be served by a single fire	A Fire Services Detail and Design Compliance Certificate from a suitably qualified person is required

	hydrant located at the level of egress from that *sole-occupancy unit* provided the fire hydrant can provide coverage to the whole of the *sole-occupancy unit*.	
Cl. E2.2a	**SMOKE HAZARD MANAGEMENT** **General requirements** (a) A building must comply with (b), (c), (d) and— (i) Table E2.2a as applicable to Class 2 to 9 buildings such that each separate part complies with the relevant provisions for the classification; and **Type of system** A *required automatic* smoke detection and alarm system must comply with the following: (a) **Class 2 and 3 buildings and Class 4 parts of a building** : (i) Subject to (ii), a Class 2 and 3 building and Class 4 part of a building must be provided with— (A) a smoke alarm system complying with Clause 3; or (B) a smoke detection system complying with Clause 4; or (C) a combination of a smoke alarm system complying with Clause 3 within *sole-occupancy units* and a smoke detection system complying with Clause 4 in areas not within the *sole-occupancy units*. (ii) A Class 3 building must be provided with a smoke detection system complying with Clause 4 if it— (A) has a Class 3 part located more than 2 *storeys* above ground level; or (B) accommodates more than 20 residents and is used as a residential part of a *school* or accommodation for the aged, children or people with disabilities. ***Clause 3. Smoke alarm system*** (a) A smoke alarm system must— (i) consist of smoke alarms complying with AS 3786; and	A Fire Services Detail and Design Compliance Certificate from a suitably qualified person is required.

	(ii) be powered from the consumer's mains source. (b) In kitchens and other areas where the use of the area is likely to result in smoke alarms causing spurious signals— (i) any other alarm deemed suitable in accordance with AS 1670.1 may be installed provided that smoke alarms are installed elsewhere in the *sole-occupancy unit* in accordance with Clause 3(c)(i); or (ii) an alarm acknowledgement facility may be installed, except where the kitchen or other area is sprinklered, the alarms need not be installed in the kitchen or other areas likely to result in spurious signals. (c) In a Class 2 or 3 building or Class 4 part of a building, smoke alarms must be installed— (i) within each *sole-occupancy unit*, located on or near the ceiling in any *storey*— (A) containing bedrooms— (aa) between each part of the *sole-occupancy unit* containing bedrooms and the remainder of the *sole-occupancy unit*; and (bb) where bedrooms are served by a hallway, in that hallway; and (B) not containing any bedrooms, in egress paths; and (ii) in a building not protected with a sprinkler system, in *public corridors* and other internal public spaces, located in accordance with the requirements for smoke detectors in AS 1670.1 and connected to activate a building occupant warning system in accordance with Clause 6; and ***Clause 4. Smoke detection system*** (a) A smoke detection system must— (i) subject to (c) and (d), comply with AS 1670.1 except for the provisions of— (A) Clause 3.26(f); and (ii) activate a building occupant warning system in accordance with Clause 6.	

(b) In kitchens and other areas where the use of the area is likely to result in smoke detectors causing spurious signals—

(i) any other detector deemed suitable in accordance with AS 1670.1 may be installed provided that smoke detectors are installed elsewhere in the *sole-occupancy unit* in accordance with Clause 3(c)(i); or

(ii) an alarm acknowledgement facility may be installed,

except where the kitchen or other area is sprinklered, the detectors need not be installed in the kitchen or other areas likely to result in spurious signals.

(c) In a Class 2 or 3 building or Class 4 part of a building smoke detectors must be installed—

(i) within each *sole-occupancy unit*, located in accordance with the requirements for smoke alarms in Clause 3(c)(i); and

(ii) in a building not protected with a sprinkler system, in *public corridors* and other internal public spaces.

6. Building occupant warning system

Subject to E4.9, a building occupant warning system provided as part of a smoke hazard management system must comply with clause 3.22 of AS 1670.1 to sound through all occupied areas except—

(a) in a Class 2 and 3 building or Class 4 part of a building provided with a smoke alarm system in accordance with Clause 3(c)(ii)—

(i) the sound pressure level need not be measured within a *sole-occupancy unit* if a level of not less than 85 dB(A) is provided at the door providing access to the *sole-occupancy unit*; and

(ii) the inbuilt sounders of the smoke alarms may be used to wholly or partially meet the requirements; and

(b) in a Class 2 and 3 building or Class 4 part of a building provided with a smoke detection system in accordance with Clause 4(c), the sound pressure level from a warning system

	need not be measured within a *sole-occupancy unit* if a level of not less than 100 dB(A) is provided at the door providing access to the *sole-occupancy unit*; and (c) in a Class 3 building used as a *residential aged care building*, the system— (i) must be arranged to provide a warning for occupants; and (ii) in areas used by residents, may have its alarm adjusted in volume and content to minimise trauma consistent with the type and condition of residents	
Cl. E4.2	AS 2293.1 compliant emergency lighting must be provided throughout the residential common areas and stairwells of the building.	A Fire Services Detail and Design Compliance Certificate from a suitably qualified person is required.
Cl. E4.4	Refer Clause E4.2 above for emergency lighting requirements	A Fire Services Detail and Design Compliance Certificate from a suitably qualified person is required.
Cl. E4.5 **Cl. E4.8**	AS 2293.1 compliant Exit Signage is required above each Exit (door or stair) A concession applies within the Sole Occupancy Units	A Fire Services Detail and Design Compliance Certificate from a suitably qualified person is required.
Cl. E4.6 **Cl. E4.8**	AS 2293.1 compliant Directional signage must be provided where Exit signage is not directly visible A concession applies within the Sole Occupancy Units	A Fire Services Detail and Design Compliance Certificate from a suitably qualified person is required.

4.6 SECTION F – HEALTH AND AMENITY

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
Cl. F1.0	Deemed-to-Satisfy Provisions (a) Performance Requirement FP1.4, for the prevention of the penetration of water through external walls, must be complied with. There are no Deemed-to-Satisfy Provisions for this Performance Requirement in respect of external walls. (b) Where a Deemed-to-Satisfy Solution is proposed, Performance Requirements FP1.1 to FP1.3 and FP1.5 to FP1.7 are satisfied by complying with F1.1 to F1.13. (c) Where a Performance Solution is proposed, the relevant Performance Requirements must be determined in accordance with A2.2(3) and A2.4(3) as applicable.	A Design Certificate is required confirming that the wall system achieves compliance with Performance Requirement FP1.4, for the prevention of the penetration of water through external walls
Cl. F1.1	Stormwater drainage Stormwater drainage must comply with AS/NZS 3500.3	A Hydraulic Detail Design Compliance Certificate from the hydraulic Engineer is required.
Cl. F1.5	Roof coverings A roof must be covered with metal roof sheeting complying with AS 15662.1	Details are required within the specification or architectural plans.
Cl. F1.6	Sarking *Sarking-type materials* used for weatherproofing of roofs and walls must comply with AS/NZS 4200 Parts 1 and 2.	Details are required within the specification or architectural plans.
Cl. F1.7	Wet areas must be water proofed in accordance with AS 3740	Details are required within the specification or architectural plans.
Cl. F1.9	Damp-proofing (a) Except for a building covered by (c), moisture from the ground must be prevented from reaching— (i) the lowest floor timbers and the walls above the lowest floor joists; and	Details are required within the specification or architectural plans.

	(ii) the walls above the damp-proof course; and (iii) the underside of a suspended floor constructed of a material other than timber, and the supporting beams or girders. (b) Where a damp-proof course is provided, it must consist of— (i) a material that complies with AS/NZS 2904; or (ii) impervious termite shields in accordance with AS 3660.1. (c) The following buildings need not comply with (a): (i) A Class 7 or 8 building where in the particular case there is no necessity for compliance. (ii) A garage, tool shed, *sanitary compartment*, or the like, forming part of a building used for other purposes. (iii) An *open spectator stand* or *open-deck car park.*	
Cl. F1.10	Damp-proofing of floors on the ground If a floor of a room is laid on the ground or on fill, moisture from the ground must be prevented from reaching the upper surface of the floor and adjacent walls by the insertion of a vapour barrier in accordance with AS 2870, except damp-proofing need not be provided if— (a) weatherproofing is not *required*; or (b) the floor is the base of a stair, lift or similar *shaft* which is adequately drained by gravitation or mechanical means.	Details are required within the specification or architectural plans.
Cl. F1.11	The floor of each bathroom and laundry must be graded to permit drainage to a floor waste.	Details are required within the specification or architectural plans.
Cl. F1.13	Glazed assemblies (a) Subject to (b) and (c), the following glazed assemblies in an *external wall*, must comply with AS 2047 requirements for resistance to water penetration:	Details are required within the specification or architectural plans.

	(i) Windows. (ii) Sliding doors with a frame. (iii) Adjustable louvres. (iv) Shopfronts. (v) Window walls with one piece framing. (b) The following buildings need not comply with (a): (i) A Class 7 or 8 building where in the particular case there is no necessity for compliance. (ii) A garage, tool shed, *sanitary compartment*, or the like, forming part of a building used for other purposes, except where the construction of the garage, tool shed, *sanitary compartment* or the like contributes to the weatherproofing of the other part of the building. (iii) An *open spectator stand* or *open-deck car park.* (c) The following glazed assemblies need not comply with (a): (i) All glazed assemblies not in an *external wall*. (ii) Hinged doors, including French doors and bi-fold doors. (iii) Revolving doors. (iv) Fixed louvres. (v) Skylights, roof lights and windows in other than the vertical plane. (vi) Sliding doors without a frame. (vii) Shopfront doors. (viii) Windows constructed on site and architectural one-off windows, which are not design tested in accordance with AS 2047. (ix) Second-hand windows, re-used windows, recycled windows and replacement windows.	

	(x) Heritage windows.	
Cl. F2.1	Within each sole-occupancy unit, provide— (a) a kitchen sink and facilities for the preparation and cooking of food; and (b) a bath or shower; and (c) a closet pan; and (d) a washbasin. Laundry facilities, provide either— (a) in each sole-occupancy unit— (i) clothes washing facilities, comprising at least one washtub and space for a washing machine; and (ii) clothes drying facilities comprising— (A) clothes line or hoist with not less than 7.5 m of line; or (B) space for one heat-operated drying cabinet or appliance in the same room as the clothes washing facilities; or Note: A kitchen sink or washbasin must not be counted as a laundry washtub. (b) a separate laundry for each 4 sole-occupancy units, or part thereof— (i) clothes washing facilities comprising at least one washtub and one washing machine; and (ii) clothes drying facilities comprising— (A) clothes line or hoist with not less than 7.5 m of line per sole-occupancy unit; or (B) one heat-operated drying cabinet or appliance for each 4 sole-occupancy units. Facilities for employees— If the building contains more than 10 sole-occupancy units, or a group of Class 2 buildings on the one allotment contains, in total, more than 10 sole-occupancy units — provide a closet pan and washbasin in a compartment or room at or near ground level and accessible to employees without entering a sole-occupancy unit. Note: A reference to "employees" includes owners, managers, workers and contractors. Class	Details are required within the specification or architectural plans.
Cl. F2.4	Accessible sanitary facilities In a building *required* to be *accessible*— (a) *accessible* unisex *sanitary compartments* must be provided in *accessible* parts of the	Details are required within the specification or architectural plans.

	building in accordance with Table F2.4(a); and (b) *accessible* unisex showers must be provided in accordance with Table F2.4(b); and (c) at each bank of toilets where there is one or more toilets in addition to an *accessible* unisex *sanitary compartment* at that bank of toilets, a *sanitary compartment* suitable for a person with an ambulant disability in accordance with AS 1428.1 must be provided for use by males and females; and (d) an *accessible* unisex *sanitary compartment* must contain a closet pan, washbasin, shelf or bench top and adequate means of disposal of sanitary towels; and (e) the circulation spaces, fixtures and fittings of all *accessible* sanitary facilities provided in accordance with Table F2.4(a) and Table F2.4(b) must comply with the requirements of AS 1428.1; and (f) an *accessible* unisex sanitary facility must be located so that it can be entered without crossing an area reserved for one sex only; and (g) where two or more of each type of *accessible* unisex sanitary facility are provided, the number of left and right handed mirror image facilities must be provided as evenly as possible; and (h) where male sanitary facilities are provided at a separate location to female sanitary facilities, *accessible* unisex sanitary facilities are only *required* at one of those locations; and (i) an *accessible* unisex *sanitary compartment* or an *accessible* unisex shower need not be provided on a *storey* or level that is not *required* by D3.3(f) to be provided with a passenger lift or ramp complying with AS 1428.1.	
Cl. F2.5	Construction of sanitary compartments (b) The door to a fully enclosed *sanitary compartment* must— (i) open outwards; or	Details are required within the specification or architectural plans.

	(ii) slide; or (iii) be readily removable from the outside of the *sanitary compartment*, unless there is a clear space of at least 1.2 m, measured in accordance with Figure F2.5, between the closet pan within the *sanitary compartment* and the doorway.	
Cl. F4.5	Ventilation to rooms and spaces other than habitable rooms within the Residential Sole Occupancy Units must be either natural or AS 1668.2 compliant mechanical ventilation.	Details are required within the specification or architectural plans.
Cl. F4.6	Natural ventilation (a) Natural ventilation provided in accordance with F4.5(a) must consist of permanent openings, *windows*, doors or other devices which can be opened— (i) with an aggregate opening or openable size not less than 5% of the *floor area* of the room *required* to be ventilated; and (ii) open to— (A) a suitably sized court, or space open to the sky; or (B) an open verandah, carport, or the like; or (C) an adjoining room in accordance with F4.7.	A window schedule and elevations are required to determine compliance.
Cl. F4.8	Restriction on location of sanitary compartments Sanitary compartments must not open directly into— (a) a kitchen or pantry; or (b) a public dining room or restaurant; or (c) a dormitory in a Class 3 building; or (d) a room used for public assembly (which is not an early childhood centre, primary school or open spectator stand); or (e) a workplace normally occupied by more than one person.	Details are required within the specification or architectural plans.
Cl. F4.9	Airlocks If a sanitary compartment is prohibited under F4.8 from opening directly to another room—	Details are required within the specification or architectural plans.

	(a) in a sole-occupancy unit in a Class 2 or 3 building or Class 4 part of a building— (i) access must be by an airlock, hallway or other room; or (ii) the sanitary compartment must be provided with mechanical exhaust ventilation; and (b) in a Class 5, 6, 7, 8 or 9 building (which is not an early childhood centre, primary school or open spectator stand)— (i) access must be by an airlock, hallway or other room with a floor area of not less than 1.1 m2 and fitted with self-closing doors at all access doorways; or (ii) the sanitary compartment must be provided with mechanical exhaust ventilation and the doorway to the room adequately screened from view.	
Cl. F5.2	Determination of airborne sound insulation ratings A form of construction ***required*** to have an airborne sound insulation rating must— (a) have the ***required*** value for weighted sound reduction index (R_w) or weighted sound reduction index with spectrum adaptation term ($R_w + C_{tr}$) determined in accordance with AS/NZS 1276.1 or ISO 717.1 using results from laboratory measurements; or (b) comply with Specification F5.2.	Details are required within the specification or architectural plans.
Cl. F5.3	Determination of impact sound insulation ratings (a) A floor in a building ***required*** to have an impact sound insulation rating must— (i) have the ***required*** value for weighted normalised impact sound pressure level with spectrum adaptation term ($L_{n,w} + C_I$) determined in accordance with AS/ISO 717.2 using results from laboratory measurements; or (ii) comply with Specification F5.2. (b) A wall in a building ***required*** to have an impact sound insulation rating must— (i) for a Class 2 or 3 building be of discontinuous construction; and	Details are required within the specification or architectural plans.

	(ii) for a Class 9c *aged care building*, must— (A) for other than masonry, be two or more separate leaves without rigid mechanical connection except at the periphery; or (B) be identical with a prototype that is no less resistant to the transmission of impact sound when tested in accordance with Specification F5.5 than a wall listed in Table 2 of Specification F5.2. (c) For the purposes of this Part, discontinuous construction means a wall having a minimum 20 mm cavity between 2 separate leaves, and (i) for masonry, where wall ties are required to connect leaves, the ties are of the resilient type; and (ii) for other than masonry, there is no mechanical linkage between leaves except at the periphery.	
Cl. F5.4	Sound insulation rating of floors (a) A floor in a Class 2 or 3 building must have an $R_w + C_{tr}$ (airborne) not less than 50 and an $L_{n,w} + C_I$ (impact) not more than 62 if it separates— (i) *sole-occupancy units*; or (ii) a *sole-occupancy unit* from a plant room, lift *shaft*, stairway, *public corridor*, public lobby or the like, or parts of a different classification. (b) A floor in a Class 9c *aged care building* separating *sole-occupancy units* must have an R_w not less than 45.	Details are required within the specification or architectural plans.
Cl. F5.5	Sound insulation rating of walls (a) A wall in a Class 2 or 3 building must—	Details are required within the specification or architectural plans.

(i) have an $R_w + C_{tr}$ (airborne) not less than 50, if it separates *sole-occupancy units*; and

(ii) have an R_w (airborne) not less than 50, if it separates a *sole-occupancy unit* from a plant room, lift *shaft*, stairway, *public corridor*, public lobby or the like, or parts of a different classification; and

(iii) comply with F5.3(b) if it separates—

(A) a bathroom, *sanitary compartment*, laundry or kitchen in one *sole-occupancy unit* from a *habitable room* (other than a kitchen) in an adjoining unit; or

(B) a *sole-occupancy unit* from a plant room or lift *shaft*.

(b) A door may be incorporated in a wall in a Class 2 or 3 building that separates a *sole-occupancy unit* from a stairway, *public corridor*, public lobby or the like, provided the door assembly has an R_w not less than 30.

(c) A wall in a Class 9c *aged care building* must have an R_w not less than 45 if it separates—

(i) *sole-occupancy units*; or

(ii) a *sole-occupancy unit* from a kitchen, bathroom, *sanitary compartment* (not being an associated ensuite), laundry, plant room or utilities room.

(d) In addition to (c), a wall separating a *sole-occupancy unit* in a Class 9c *aged care building* from a kitchen or laundry must comply with F5.3(b).

(e) Where a wall *required* to have sound insulation has a floor above, the wall must continue to—

(i) the underside of the floor above; or

(ii) a ceiling that provides the sound insulation *required* for the wall.

	(f) Where a wall *required* to have sound insulation has a roof above, the wall must continue to— (i) the underside of the roof above; or (ii) a ceiling that provides the sound insulation *required* for the wall.	
Cl. F5.6	Sound insulation rating of internal services (a) If a duct, soil, waste or water supply pipe, including a duct or pipe that is located in a wall or floor cavity, serves or passes through more than one *sole-occupancy unit*, the duct or pipe must be separated from the rooms of any *sole-occupancy unit* by construction with an $R_w + C_{tr}$ (airborne) not less than— (i) 40 if the adjacent room is a *habitable room* (other than a kitchen); or (ii) 25 if the adjacent room is a kitchen or non- *habitable room*. (b) If a storm water pipe passes through a *sole-occupancy unit* it must be separated in accordance with (a)(i) and (ii).	Details are required within the specification or architectural plans.
Cl. F5.7	Flexible coupling must be used at the point of connection of service pipes and circulating pumps.	Details are required within the specification or architectural plans.
Cl. F6.1	Application of Part The Deemed-to-Satisfy Provisions of this Part only apply to a sole-occupancy unit of a Class 2 building and a Class 4 part of a building.	Details are required within the specification or architectural plans.
Cl. F6.2	Pliable building membrane (a) Where a pliable building membrane is installed in an external wall, it must— (i) comply with AS/NZS 4200.1; and (ii) be installed in accordance with AS 4200.2; and (iii) be a vapour permeable membrane for climate zones 6, 7 and 8; and (iv) be located on the exterior side of the primary insulation layer of wall assemblies that form the external envelope of a building. (b) Except for single skin masonry and single skin concrete, where a pliable building membrane is not installed in an external wall, the primary water control layer must be	Details are required within the specification or architectural plans.

	separated from water sensitive materials by a drained cavity.	
Cl. F6.3	Flow rate and discharge of exhaust systems (a) An exhaust system installed in a kitchen, bathroom, sanitary compartment or laundry must have a minimum flow rate of— (i) 25 L/s for a bathroom or sanitary compartment; and (ii) 40 L/s for a kitchen or laundry. (b) Exhaust from a kitchen must be discharged directly or via a shaft or duct to outdoor air. (c) Exhaust from a bathroom, sanitary compartment, or laundry must be discharged— (i) directly or via a shaft or duct to outdoor air; or (ii) to a roof space that is ventilated in accordance with F6.4.	Details are required within the specification or architectural plans.
Cl. F6.4	Ventilation of roof spaces (a) Where an exhaust system covered by F6.3 discharges directly or via a shaft or duct into a roof space, the roof space must be ventilated to outdoor air through evenly distributed openings. (b) Openings required by (a) must have a total unobstructed area of 1/300 of the respective ceiling area if the roof pitch is greater than 22°, or 1/150 of the respective ceiling area if the roof pitch is less than or equal to 22°. (c) 30% of the total unobstructed area required by (b) must be located not more than 900 mm below the ridge or highest point of the roof space, measured vertically, with the remaining required area provided by eave vents.	Details are required within the specification or architectural plans.

4.7 SECTION J – BUILDING FABRIC

CLAUSE	CLAUSE REQUIREMENT	ACTION/RECOMENDATION
Part JO.1	Energy Efficiency J0.1 Application of Section J Performance Requirement JP1 is satisfied by complying with— (a) for reducing the heating or cooling loads— (i) of sole-occupancy units of a Class 2 building or a Class 4 part of a building, J0.2 to J0.5; and (ii) of a Class 2 to 9 building, other than the sole-occupancy units of a Class 2 building or a Class 4 part of a building, Parts J1 and J3; and (b) for air-conditioning and ventilation, Part J5; and (c) for artificial lighting and power, Part J6	For Reference
Part JO.2	Heating and cooling loads of sole-occupancy units of a Class 2 building or a Class 4 part The sole-occupancy units of a Class 2 building or a Class 4 part of a building must— (a) for reducing the heating or cooling loads— (i) collectively achieve an average energy rating of not less than 6 stars, including the separate heating and cooling load limits; and (ii) individually achieve an energy rating of not less than 5 stars, including the separate heating and cooling load limits, using house energy rating software and the load limits specified in the ABCB Standard for NatHERS Heating and Cooling Load Limits. (b) for general thermal construction, comply with J1.2; and (c) for thermal breaks, comply with J0.4 and J0.5; and (d) for floor edge insulation, comply with J1.6(b) and J1.6(c); and (e) for building sealing, comply with Part J3.	Provide a copy of the project NatHERS Certificates.
Part JO.3	Ceiling fans Ceiling fans required as part of compliance with J0.2(a), must— (a) be permanently installed; and (b) have a speed controller; and (c) serve the whole room, with the floor area that a single fan serves not exceeding— (i) 15 m2 if it has a blade rotation diameter of not less than 900 mm; and	Provide a copy of the project NatHERS Certificates.

	(ii) 25 m2 if it has a blade rotation diameter of not less than 1 200 mm.	
Part JO.4	Roof thermal breaks For compliance with J0.2(c), a roof that— (a) has metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and (b) does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens, must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed at all points of contact between the metal sheet roofing and its supporting metal purlins, metal rafters or metal battens.	Provide details within the Architectural plans
Part JO.5	Wall thermal breaks For compliance with J0.2(c), a wall that— (a) does not have a wall lining or has a wall lining that is fixed directly to the same metal frame; and (b) has lightweight external cladding such as weatherboards, fibre-cement or metal sheeting fixed to a metal frame, must have a thermal break, consisting of a material with an R-Value of not less than R0.2, installed at all points of contact between the external cladding and the metal frame.	Provide details within the Architectural plans
Cl. J3.1	Application of Part The Deemed-to-Satisfy Provisions of this Part apply to elements forming the envelope of a Class 2 to 9 building, other than— (a) a building in climate zones 1, 2, 3 and 5 where the only means of air-conditioning is by using an evaporative cooler; or (b) a permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance; or (c) a building or space where the mechanical ventilation required by Part F4 provides sufficient pressurisation to prevent infiltration	Details are required within the specification or architectural plans.
Cl. J3.3	Roof lights (a) A roof light must be sealed, or capable of being sealed, when serving— (i) a conditioned space; or (ii) a habitable room in climate zones 4, 5, 6, 7 or 8. (b) A roof light required by (a) to be sealed, or capable of being sealed, must be constructed with— (i) an imperforate ceiling diffuser or the like installed at the ceiling or internal lining level; or (ii) a weatherproof seal; or	Details are required within the specification or architectural plans.

	(iii) a shutter system readily operated either manually, mechanically or electronically by the occupant.	
Cl. J3.4	Windows and doors (a) A door, openable window or the like must be sealed— (i) when forming part of the envelope; or (ii) in climate zones 4, 5, 6, 7 or 8. (b) The requirements of (a) do not apply to— (i) a window complying with AS 2047; or (ii) a fire door or smoke door; or (iii) a roller shutter door, roller shutter grille or other security door or device installed only for out-of-hours security. (c) A seal to restrict air infiltration— (i) for the bottom edge of a door, must be a draft protection device; and (ii) for the other edges of a door or the edges of an openable window or other such opening, may be a foam or rubber compression strip, fibrous seal or the like. (d) An entrance to a building, if leading to a conditioned space must have an airlock, self-closing door, rapid roller door, revolving door or the like, other than— (i) where the conditioned space has a floor area of not more than 50 m2; or (ii) where a café, restaurant, open front shop or the like has— (A) a 3 m deep un-conditioned zone between the main entrance, including an open front, and the conditioned space; and (B) at all other entrances to the café, restaurant, open front shop or the like, self-closing doors. (e) A loading dock entrance, if leading to a conditioned space, must be fitted with a rapid roller door or the like.	Details are required within the specification or architectural plans.
Cl. J3.5	Exhaust fans (a) An exhaust fan must be fitted with a sealing device such as a self-closing damper or the	Details are required within the specification or architectural plans.

	like when serving— (i) a conditioned space; or (ii) a habitable room in climate zones 4, 5, 6, 7 or 8.	
Cl. J3.6	Construction of roofs, walls and floors (a) Roofs, ceilings, walls, floors and any opening such as a *window* frame, door frame, *roof light* frame or the like must be constructed to minimise air leakage in accordance with (b) when forming part of— (i) the *envelope*; or (ii) the external *fabric* of a *habitable room* or a public area in *climate zones* 4, 5, 6, 7 and 8. (b) Construction *required* by (a) must be— (i) enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions; or (ii) sealed by caulking, skirting, architraves, cornices or the like. (c) The requirements of (a) do not apply to openings, grilles or the like *required* for smoke hazard management.	Details are required within the specification or architectural plans.
Cl. J5.2	Air-conditioning system control (a) An air-conditioning system— (i) must be capable of being deactivated when the building or part of a building served by that system is not occupied; and (ii) when serving more than one air-conditioning zone or area with different heating or cooling needs, must— (A) thermostatically control the temperature of each zone or area; and (B) not control the temperature by mixing actively heated air and actively cooled air; and (C) limit reheating to not more than— (aa) for a fixed supply air rate, a 7.5 K rise in temperature; and	A Mechanical Engineers Design Plans and Design Compliance Certificate are required

	(bb) for a variable supply air rate, a 7.5 K rise in temperature at the nominal supply air rate but increased or decreased at the same rate that the supply air rate is respectively decreased or increased; and (iii) which provides the required mechanical ventilation, other than in climate zone 1 or where dehumidification control is needed, must have an outdoor air economy cycle if the total air flow rate of any airside component of an air-conditioning system is greater than or equal to the figures in Table J5.2; and (iv) which contains more than one water heater, chiller or coil, must be capable of stopping the flow of water to those not operating; and (v) with an airflow of more than 1000 L/s, must have a variable speed fan when its supply air quantity is capable of being varied; and (vi) when serving a sole-occupancy unit in a Class 3 building, must not operate when any external door of the sole- occupancy unit that opens to a balcony or the like, is open for more than one minute; and (vii) must have the ability to use direct signals from the control components responsible for the delivery of comfort conditions in the building to regulate the operation of central plant; and (viii) must have a control dead band of not less than 2°C, except where a smaller range is required for specialised applications; and (ix) must be provided with balancing dampers and balancing valves that ensure the maximum design air or fluid flow is achieved but not exceeded by more than 15% above design at each— (A) component; or (B) group of components operating under a common control in a system containing multiple components, as required to meet the needs of the system at its maximum operating condition; and (x) must ensure that each independently operating space of more than 1 000 m2 and every separate floor of the building has provision to terminate airflow independently of the remainder of the system sufficient to allow for different operating times; and	

	(xi) must have automatic variable temperature operation of heated water and chilled water circuits; and (xii) when deactivated, must close any motorised outdoor air or return air damper that is not otherwise being actively controlled. (c) (i) A time switch must be provided to control— (A) an air-conditioning system of more than 2 kWr; and (B) a heater of more than 1 kW used for air-conditioning. heating (ii) The time switch must be capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days. (iii) The requirements of (i) and (ii) do not apply to— (A) an air-conditioning system that serves— (aa) only one sole-occupancy unit in a Class 2, 3 or 9c building; or (bb) a Class 4 part of a building; or (B) a conditioned space where air-conditioning is needed for 24 hour continuous use.	
Cl. J5.4	Mechanical ventilation system control General — the mechanical system serves only one sole-occupancy unit in a Class 2 building or serves only a Class 4 part of a building, must— (a) A mechanical ventilation system, including one that is part of an air-conditioning system, except where (i) be capable of being deactivated when the building or part of the building served by that system is not occupied; and (ii) when serving a conditioned space, except in periods when evaporative cooling is being used— (A) where specified in Table J5.3, have— (aa) an energy reclaiming system that preconditions outdoor air at a minimum sensible heat transfer effectiveness of 60%; or	A Mechanical Engineers Design Plans and Design Compliance Certificate are required

	(bb) demand control ventilation in accordance with AS 1668.2 if appropriate to the application; and (B) not exceed the minimum outdoor air quantity required by Part F4 by more than 20%, except where— (aa) additional unconditioned outdoor air is supplied for free cooling; or (bb) additional mechanical ventilation is needed to balance the required exhaust or process exhaust; or (cc) an energy reclaiming system preconditions all the outdoor air; and NC (iii) for an airflow of more than 1000 L/s, have a variable speed fan unless the downstream airflow is required by Part F4 to be constant. (b) An exhaust system with an air flow rate of more than 1000 L/s must be capable of stopping Carpark exhaust systems — (c) Carpark exhaust systems must have a control system in accordance with— (i) 4.11.2 of AS 1668.2; or (ii) 4.11.3 of AS 1668.2. Time switches— (d) (i) A time switch must be provided to a mechanical ventilation system with an air flow rate of more than 1000 L/s. (ii) The time switch must be capable of switching electric power on and off at variable pre-programmed times and on variable pre-programmed days. (iii) The requirements of (i) and (ii) do not apply to— (A) a mechanical ventilation system that serves— (aa) only one sole-occupancy unit in a Class 2, 3 or 9c building; or (bb) a Class 4 part of a building; or (B) a building where mechanical ventilation is needed for 24 hour occupancy.	

Cl. J5.5	Fan systems (a) Fans, ductwork and duct components that form part of an air-conditioning system or mechanical ventilation system must— (i) separately comply with (b), (c), (d) and (e); or (ii) achieve a fan motor input power per unit of flowrate lower than the fan motor input power per unit of flowrate achieved when applying (b), (c), (d) and (e) together. Fans— (b) (i) Fans in systems that have a static pressure of not more than 200 Pa must have an efficiency at the full load operating point not less than the efficiency calculated with the following formula: ηmin = 0.13 x In(p) - 0.3 where— ηmin = the minimum required system static efficiency for installation type A or C or the minimum required system total efficiency for installation type B or D; and p = the static pressure of the system (Pa); and In = natural logarithm. (ii) Fans in systems that have a static pressure above 200 Pa must have an efficiency at the full load operating point not less than the efficiency calculated with the following formula: ηmin = 0.85 x (a x In(P) - b + N) / 100 where— = the minimum total efficiency for installation type B or D; and P = the motor input power of the fan (kW); and N = the minimum performance grade obtained from Table J5.4a; and a = regression coefficient a, obtained from Table J5.4b; and b = regression coefficient b, obtained from Table J5.4c; and ln = natural logarithm. required system static efficiency for installation type A or C or the minimum required system η min (iii) The requirements of (i) and (ii) do not apply to fans that need to be explosion proof. (c) (i) The pressure drop in the index run across all straight sections of rigid ductwork and all sections of flexible ductwork must not exceed 1 Pa/m when averaged over the entire length of straight rigid duct and flexible duct. The pressure drop of flexible ductwork sections may be calculated as if the flexible ductwork is laid straight. (ii) Flexible ductwork must not account for more than 6 m in length in any duct run. (iii) The upstream connection to ductwork bends, elbows and tees in the index run must have an equivalent diameter to the connected duct.	A Mechanical Engineers Design Plans and Design Compliance Certificate are required

	(iv) Turning vanes must be included in all rigid ductwork elbows of 90° or more acute than 90° in the index run except where— (A) the inclusion of turning vanes presents a fouling risk; or (B) a long radius bend in accordance with AS 4254.2 is used. Ductwork components in the index run— (d) (i) The pressure drop across a coil must not exceed the value specified in Table J5.4d. (ii) A high efficiency particulate arrestance (HEPA) air filter must not exceed the higher of— (A) a pressure drop of 200 Pa when clean; or (B) the filter design pressure drop when clean at an air velocity of 1.5 m/s. (iii) Any other air filter must not exceed— (A) the pressure drop specified in Table J5.4e when clean; or (B) the filter design pressure drop when clean at an air velocity of 2.5 m/s. (iv) The pressure drop across intake louvres must not exceed the higher of— (A) for single stage louvres, 30 Pa; and (B) for two stage louvres, 60 Pa; and (C) for acoustic louvres, 50 Pa; and (D) for other non-weatherproof louvres, 30 Pa. (v) The pressure drop across a variable air volume box, with the damper in the fully open position, must not exceed— (A) for units with electric reheat, 100 Pa; and (B) for other units, 25 Pa not including coil pressure losses. (vi) Rooftop cowls must not exceed a pressure drop of 30 Pa. (vii) Attenuators must not exceed a pressure drop of 40 Pa. (viii) Fire dampers must not exceed a pressure drop of 15 Pa when open. (ix) Balancing and control dampers in the index run must not exceed a pressure drop of 25 Pa when in the fully open position. (x) Supply air diffusers and grilles must not exceed a pressure drop of 40 Pa. (xi) Exhaust grilles must not exceed a pressure drop of 30 Pa. (xii) Transfer ducts must not exceed a pressure drop of 12 Pa.	

	(xiii) Door grilles must not exceed a pressure drop of 12 Pa. (xiv) Active chilled beams must not exceed a pressure drop of 150 Pa. (e) The requirements of (a), (b), (c) and (d) do not apply to— (i) fans in unducted air-conditioning systems with a supply air capacity of less than 1000 L/s; and (ii) smoke spill fans, except where also used for air-conditioning or ventilation; and (iii) the power for process-related components; and (iv) kitchen exhaust systems.	
Cl. J5.6	Ductwork insulation (a) Ductwork and fittings in an air-conditioning system must be provided with insulation— (i) complying with AS/NZS 4859.1; and (ii) having an insulation R-Value greater than or equal to— (A) for flexible ductwork, 1.0; or (B) for cushion boxes, that of the connecting ductwork; or (C) that specified in Table J5.5. (b) Insulation must— (i) be protected against the effects of weather and sunlight; and (ii) be installed so that it— (A) abuts adjoining insulation to form a continuous barrier; and (B) maintains its position and thickness, other than at flanges and supports; and (iii) when conveying cooled air— (A) be protected by a vapour barrier on the outside of the insulation; and (B) where the vapour barrier is a membrane, be installed so that adjoining sheets of the membrane— (aa) overlap by at least 50 mm; and (bb) are bonded or taped together. (c) The requirements of (a) do not apply to— (i) ductwork and fittings located within the only or last room served by the system; or (ii) fittings that form part of the interface with the conditioned space; or	A Mechanical Engineers Design Plans and Design Compliance Certificate are required

	(iii) return air ductwork in, or passing through, a conditioned space; or (iv) ductwork for outdoor air and exhaust air associated with an air-conditioning system; or (v) the floor of an in-situ air-handling unit; or (vi) packaged air conditioners, split systems, and variable refrigerant flow air-conditioning equipment complying with MEPS; or (vii) flexible fan connections. (d) For the purposes of (a), (b) and (c), fittings— (i) include non-active components of a ductwork system such as cushion boxes; and (ii) exclude active components such as air-handling unit components.	
Cl. J6.2	Artificial lighting (a) In a sole-occupancy unit of a Class 2 building or a Class 4 part of a building— (i) the lamp power density or illumination power density of artificial lighting must not exceed the allowance of— (A) 5 W/m2 within a sole-occupancy unit; and (B) 4 W/m2 on a verandah, balcony or the like attached to a sole-occupancy unit; and (ii) the illumination power density allowance in (i) may be increased by dividing it by the illumination power density adjustment factor for a control device in Table J6.2b as applicable; and (iii) when designing the lamp power density or illumination power density, the power of the proposed installation must be used rather than nominal allowances for exposed batten holders or luminaires; and (iv) halogen lamps must be separately switched from fluorescent lamps.	An Electrical Engineers Design Plans and Design Compliance Certificate are required
Cl. J6.5	Exterior artificial lighting (a) Exterior artificial lighting attached to or directed at the facade of a building, must— (i) be controlled by— (A) a daylight sensor; or (B) a time switch that is capable of switching on and off electric power to the system at variable pre- programmed times and on variable pre-programmed days; and	An Electrical Engineers Design Plans and Design Compliance Certificate are required

	(ii) when the total lighting load exceeds 100 W— (A) use LED luminaires for 90% of the total lighting load; or (B) be controlled by a motion detector in accordance with Specification J6; or (C) when used for decorative purposes, such as façade lighting or signage lighting, have a separate time switch in accordance with Specification J6. (b) The requirements of (a)(ii) do not apply to the following: (i) Emergency lighting in accordance with Part E4.	

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