



**BLACKETT
MAGUIRE+
GOLDSMITH**

BCA Assessment Report

Billbergia - 40 Walker Street, Rhodes

Prepared for Billbergia Developments Pty Ltd

Revision 1

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Job No. 100448

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REPORT STATUS				
DATE	REVISION	STATUS	AUTHOR	REVIEWED
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A. INTRODUCTION

A.1 BACKGROUND

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Billbergia Developments Pty Ltd, to undertake a BCA assessment for the proposed mixed use development at 40 Walker Street, Rhodes.

The proposed building consists of 5 residential towers sitting on a common podium which includes a gym, pool, as well as minor retail tenancies and ancillary car parking.

A.2 AIM

The aim of this report is to:

- Undertake a preliminary assessment of the proposed residential development against the deemed-to-satisfy provisions of the BCA.
- Identify any BCA compliance issues that require resolution/attention for the proposed development.

A.3 PROJECT TEAM

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

- Jason Storer (Report Preparation)
- Dean Goldsmith (Peer Review)

A.4 DOCUMENTATION

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

- Building Code of Australia 2010 (BCA)
- Guide to the Building Code of Australia.
- Architectural plans prepared by SJB, revision 3.

A.5 LIMITATIONS & EXCLUSIONS

The limitations and exclusions of this report are as follows:

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

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

- The Report does not address matters in relation to the following:
 - i. Local Government Act and Regulations.
 - ii. Occupational Health and Safety Act and Regulations.
 - iii. WorkCover Authority requirements.
 - iv. Water, drainage, gas, telecommunications and electricity supply authority requirements.
 - v. Disability Discrimination Act 1992.
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A.6 TERMINOLOGY

Alternative Solution – means a Building Solution which complies with the Performance Requirements other than by reason of satisfying the Deemed to Satisfy Provisions.

Building Code of Australia - Document published on behalf of the Australian Building Codes Board. The BCA is a uniform set of technical provisions for the design and construction of buildings and other structures throughout Australia and is adopted in NSW under the provisions of the Environmental Planning & Assessment Act & Regulation.

Deemed to Satisfy Provisions – means provisions which are deemed to satisfy the Performance Requirements.

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

Fire Resistance Level (FRL) - means the grading periods in minutes for the following criteria-

- (a) structural adequacy; and
- (b) integrity; and
- (c) insulation,
and expressed in that order.

Fire Source Feature (FSF) - the far boundary of a road adjoining the allotment; or a side or rear boundary of the allotment; or an external wall of another building on the allotment which is not a Class 10 building.

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

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

Compliance with the Performance Requirements can only be achieved by-

- (a) complying with the Deemed-to-Satisfy Provisions; or
- (b) formulating an Alternative Solution which-
 - (i) complies with the Performance Requirements; or
 - (ii) is shown to be at least equivalent to the Deemed-to-Satisfy Provisions; or
- (c) a combination of (a) and (b).

B. BCA ASSESSMENT

The following is a summary of relevant areas of BCA Compliance that would need to be addressed for the proposed residential development. In summary, the key building characteristics have been identified as follows:

▪ BCA Classification:	Class 2:	Residential
	Class 6:	Retail
	Class 7a:	Carpark
	Class 9b :	Assembly



▪ Rise in Storeys:	26
▪ Effective Height:	More than 75-metres
▪ Type of Construction:	Type A
▪ Climate Zone:	5

Note: As the proposed towers are constructed over a common carpark the building is deemed as one building for the purposes of our BCA Assessment. Therefore the description of the project above applies to the whole development in it's entirety.

BCA SECTION B - STRUCTURE

1. Part B1 - Structural Provisions

Structural engineering details prepared by an appropriately qualified structural engineer to be provided to demonstrate compliance with Part B1. This will include the following:

- AS 1170.0 – 2002 General Principles
- AS 1170.1 – 2002, including certification for balustrading (dead and live loads)
- AS 1170.2 – 2002, Wind loads
- AS 1170.4 – 2007, Earthquake loads
- AS 3700 – 2001, Masonry code
- AS 3600 – 2001, Concrete code
- AS 4100 – 1998, Steel Structures and/or
- AS 4600 – 2005, Cold formed steel.
- NASH standard for steel construction (residential and low rise steel framing).
- AS 1720.1 – 1997, Design of timber structures
- AS 2159 – 1995 or 2009, Piling,
- AS 2047 – 1999, Windows in buildings.
- AS 1288 – 2006, Glass in buildings.
- B1.4(h)(iii) – To protect against nickel sulphide inclusions.
- AS 3660.1 – 2000, Termite control (or confirmation no primary building elements are timber).

BCA SECTION C – FIRE RESISTANCE

2. Clause C1.10 – Fire Hazard Properties

The fire hazard properties of all new building materials and assemblies used in the development must comply with the requirements of Specification C1.10 of the BCA and all new floor materials, floor coverings, wall and ceiling lining materials must comply with Specification C1.10a of the BCA.

Test sheets of new floor, wall and ceiling linings are to be provided with the Construction Certificate application.

3. Clause C2.6 – Vertical Separation of Openings in External Walls

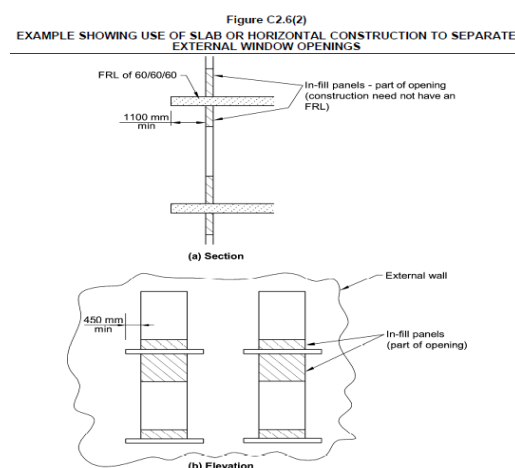
As only parts of the building are proposed to be sprinkler protected due to a potential performance based solution for the deletion of sprinklers to the low rise towers, the low rise towers will be required to comply with the spandrel separation requirements of the BCA.



If the deletion of sprinklers to the low rise buildings is approved, a performance based solution will also be required to address that the whole of the building is not sprinkler protected and that spandrels are not required to the high rise towers.

Spandrel separation is required to be provided to the external openings of the building. In this regard, any part of a window or other opening in an external wall that is above another opening in the storey next below and its vertical projection falls no further than 450mm outside the lower opening (measured horizontally), the opening must be separated by a spandrel that is less than 900mm in height and extends not less than 600mm above the upper surface of the intervening floor.

Note: Where balconies provide horizontal spandrels, they are required to provide 450mm protection on either side of an opening in accordance with the figure detailed below.



4. Clause C2.7 - Separation by Fire Walls

Fire walls must extend to the underside of the slab above or to the underside of the roof sheeting with no penetrations through the fire wall other than roof battens with a dimension of 75mm x 50mm or sarking. This occurs to separate residential from commercial and residential from retail on the ground floor.

5. Clause C2.10 - Separation of Lift Shafts

The lift shafts are required to have an FRL in accordance with Specification C1.1 below.

6. Clause C2.12 - Separation of Equipment

Any of the following equipment must be fire rated with a fire resistance level of 120/120/120 and any doors have an FRL of not less than --/120/30:

- Lift motors and lift control panels, except the wall between the lift shaft and the lift motor room need only have an FRL of 120/--/--.

7. Clause C2.13 - Electricity Supply System

The electricity substation is to be fire separated from the remainder of the building with construction achieving an FRL of 120/120/120 with any doors to be --/120/30 self-closing fire doors.



8. Clause C2.14 – Public corridors in class 2 and 3 buildings

Where corridors within the new building are more than 40-metres in length smoke doors will be provided to separate the corridors, with these doors and walls provided as per specification C2.5.

- E.g. towers A and E.

The provision of smoke doors will be required in order to achieve compliance with the above requirement.

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

Where openings in the external walls of the building are located within 3 metres of a rear or side boundary, it is required to be protected in accordance with clause C3.4.

In this instance, the openings in building B are indicated as being located within 3-metres of the side boundary and require protection in accordance with C3.4.

10. Clause C3.4 – Acceptable methods of protection

The openings required to be fire rated in clause C3.2 above must be fire rated as per one of the options listed below:

Doors

- a self-or auto-closing 60 minute fire door.
- self or auto-closing doors with internal or external wall wetting sprinklers as appropriate.

Windows

- windows with internal or external wall wetting sprinklers with the windows being fixed in the closed position or auto-closing.
- -/60/- fire windows.
- -/60/- fire shutters

Other openings

Internal or external wall wetting sprinklers as appropriate or construction having an FRL of not less than --/60/--.

11. Clause C3.5 – Doorways in Fire Walls

The doors in fire walls will be required to be self-closing or auto-closing and achieve a fire rating equivalent to that of the fire wall within which they are located.

12. Clause C3.8 – Openings in Fire Isolated Exits

The doors to the fire isolated exits are required to be self closing -/60/30 fire doors.

13. Clause C3.9 – Service Penetrations in Fire Isolated Exits

Fire isolated exits are not to be penetrated by any services other than electrical wiring for lighting, or security and essential services; ducting for stair pressurisation systems (if adequately fire separated from the remainder of the building) and water supply pipes for fire services.



14. Clause C3.10 - Openings in Fire Isolated Lift Shafts

- The doors to the lift shafts are to be protected by doors having an FRL of -/60/- and comply with AS 1735.11.
- In addition if the lift call panels exceed 35000mm² they must be backed by construction with a rating of not less than --/60/60.

15. Clause C3.11 - Bounding Construction

The doors to each sole occupancy unit are required to be self closing -/60/30 fire doors.

Other doors that open from rooms into public areas must also be self closing -/60/30 fire doors.

16. Clause C3.13 - Openings in Shafts

Any openings to the service shafts are required to be protected by -/30/30 panel (if in a sanitary compartment), or a self closing -/60/30 fire door, or a -/60/30 access panel.

If the shaft is a garbage shaft, a door hopper of non-combustible construction is permitted to be installed.

17. Clause C3.15 - Openings for Service Installations

Where service installations penetrate the walls or floors required to have an FRL with respect to integrity and insulation they are to be protected by fire seals having an FRL of the building element concerned. Fire seals are required to comply with Specification C3.15. Where the mechanical ventilation system penetrates floors or walls that require an FRL the installation is to comply with AS/NZS 1668.1.

18. Clause C3.16 - Construction Joints

Any construction joints must be fire rated as per the ratings of the building elements within which they are installed.

19. Specification C1.1 - Fire Resisting Construction

Type A Construction

The proposed building is required to comply with the requirements detailed under Table 3 of Specification C1.1 for Type A Construction. In this regard the proposed building elements are required to comply with the following:

Type A Construction

The proposed building is required to comply with the requirements detailed under Table 3 of Specification C1.1 for Type A Construction. In this regard the proposed building elements are required to comply with the following:



External walls

Loadbearing

Between 1.5m and 3m from boundary

Class 2 90/60/60

Class 6 180/180/120

Class 7a & 9b 120/90/90

3m or more from boundary

Non-loadbearing

Class 2 --/90/90

Class 6 --/60/60

Class 7a & 9b --/--/--

Fire Walls

120/120/120 between carpark and residential

180/180/180 between retail and residential.

Internal Walls

Lift and Stair Shafts (**loadbearing**)

Class 2 90/90/90

Class 7a & 9b 120/120/120

Class 6 180/120/120

Lift and Stair Shafts (**non-loadbearing**)

Class 2 --/90/90

Class 6 --/120/120

Class 7b & 9b --/120/120

Walls bounding public corridors

Class 2 residential plus storage areas ancillary to class 2

Loadbearing

FRL of 90/90/90

Non-loadbearing

FRL of --/60/60



Service Shafts (loadbearing)

Class 2	90/90/90
Class 6	180/120/120
Class 7a & 9b	120/90/90

Service Shafts (non-loadbearing)

Class 2, 7a & 9b	--/90/90
Class 6	--/120/120

Other loadbearing internal walls, beams, trusses and columns.

Note: any walls required to achieve a fire rating must utilise steel studs and cannot be constructed using timber studs.

Class 2, 7a & 9b	120/--/--
Class 6	180/--/--

Floors (fire ratings of floors is based on the floor slab above the classification not below)

Class 2	90/90/90
Class 7a	120/120/120
Class 6	180/180/180

Roofs

The ceiling below the roof to achieve a fire rating of 60 minute incipient spread of fire to the class 9b gym area as the building is not sprinkler protected throughout. Alternatively due to the proximity of the gym to adjacent properties this issue may be addressed via a performance based solution. The concession granted under Clause 3.5 of Specification C1.1 does not require the roof of the residential parts of the building to have an FRL.

Note 1: Where a combustible material is used as a finish or lining to a wall or roof, or sunscreen, or awning, to a building element required to have an FRL the material must be exempted or complies with the fire hazard properties prescribed under C1.10 or C1.10a and does not otherwise constitute an undue risk of fire spread via the façade of the building.

Note 2: Fire isolated stairs and lift shafts are required to be enclosed at the top of the shaft with fire rated construction having an FRL of 90/90/90 in both directions.

Note 3: Where roof lights are proposed over the residential units on the top floor they are required to be located not less than 3 metres from a roof light in an adjoining sole occupancy unit.

Note 4: External walls and common walls must be non combustible construction.

Note 5: Internal lightweight walls to be fire rated, as well as non-load bearing lift, ventilating, pipe, garbage or similar shaft wall must be of non-combustible construction.



Note 6: the walls to fire rated shafts must achieve the fire rating from both directions i.e. from inside and outside the shaft.

Note 7: the lintels within any walls required to be fire rated will achieve the same fire rating as the walls within which they are located. This is not applicable if the opening is less than 3m wide and the masonry is non-load bearing or less than 1.8m wide of the masonry is loadbearing.

BCA SECTION D – ACCESS & EGRESS

20. Clause D1.2 – Number of Exits Required

Given the building has an effective height of less than 25 metres, each occupant is required to have access to a minimum of two exits, however there are some areas, e.g. retail, on the podium level for instance that only have access to a single exit. This issue has been confirmed by the fire engineer as being able to be addressed by a performance based solution to comply with performance requirements DP4 and EP2.2.

21. Clause D1.4 – Exit Travel Distances

The exit travel distances in the residential areas exceed 6-metres to a point of choice and within the car park exceed 40-metres to the exits. These issues have been confirmed by the fire engineer as being able to be addressed by a performance based solution to comply with performance requirements DP4 and EP2.2.

Clause D1.5 – Distances Between Alternative Exits

The distance between alternative exits within the carpark is proposed to exceed 60 metres within the carpark levels. This issue has been confirmed by the fire engineer as being able to be addressed by a performance based solution to comply with performance requirements DP4 and EP2.2.

22. Clause D1.6 – Dimensions of Exits

The unobstructed height throughout an exit or a path of travel to an exit must be not less than 2 metres, except for doorways which may be reduced to not less than 1980mm. In addition, the unobstructed width of an exit or a path of travel to an exit must be not less than 1 metre or the required exit width determined under D1.6. Please note that exit widths are measured from wall to handrail in fire stairs.

All doors in public areas must also be not less than 750-mm in width other than doors for disabled access, see clause D3.2 below.

23. Clause D1.7 – Travel via Fire Isolated Exit

The fire isolated exits are required to, discharge directly to open space, or discharge to an area that is open for 2/3 of its perimeter and is within 20 metres of open space; or discharge to an area that is open for 1/3 of its perimeter, has a clear height throughout of not less than 3 metres and is within 6 metres to open space.

The fire stairs to building C are indicated as discharging within the confines of the building and as such a performance based solution will be required to address this discharge. In addition there are a number of fire stairs who's discharge path requires passing within 6-metres of the external façade. As such the external facade must be fire rated to 60/60/60 FRL and any openings protected as per clause C3.4 above.



This includes the following:

- South fire stairs of building A.
- Stairs discharging either side of the carpark entry at podium.
- Stairs at the west end of building D.
- Stairs at the east end of building E.
- Stairs from building C.

24. Clause D1.10 – Discharge from Exit

Bollards or other barriers are to be provided to exits on the carparking levels where they could be blocked by vehicles.

Where an exit discharges to open space that is at a different level to that of the public roadway, the path of travel must be via a 1:8 ramp or DTS compliant stairs. In this regard, the design is indicated as compliant.

25. Clause D1.17 – Access to lift pits

Access to lift pits must be as follows: –

1. where the pit depth is not more than 3m, be through the lowest landing doors; or
2. where the pit depth is more than 3m, be provided through an access doorway comply with the following: –
 - (i) in lieu of D1.6, the doorway must be level with the pit floor and not be less than 600mm wide by 1980mm high clear opening, which may be reduced to 1500mm where no part of the lift car or platform encroaches on the pit doorway entrance when the car is on a fully compressed buffer.
 - (ii) Access to the doorway via a stairway complying with AS 1657.
 - (iii) In lieu of D2.21, doors fitted to the doorway must be –
 - (A) of the horizontal sliding or outward opening hinged type and self-closing and self-locking from the outside; and
marked on the landing side with letters not less than 35mm high “DANGER LIFTWELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES”

26. Clause D2.2 – Fire Isolated Stairway

The fire isolated stairs are required to be constructed of non-combustible materials and so that if there is local failure it will not cause structural damage, or impair the fire resistance of the shaft.

27. Clause D2.3 – Fire Isolated Stairway

The new non-fire isolated stairs must be either:

- Reinforced concrete or prestressed concrete; or
- Steel no less than 6mm thick;
- Wood with a finished thickness not less than 44mm, density not less than 800kg/m³ at a moisture content of 12% and not been joined by means of glue unless laminated with resorcinol formaldehyde or resorcinol phenol formaldehyde glue.



28. Clause D2.4 - Separation of Rising and Descending Stair Flights

A fire isolated exit must have no direct connection between a flight rising from the basement levels and a flight descending from the residential levels. In addition, the separating construction must be non-combustible and smoke proof in accordance with Clause 2 of Specification C2.5. In this instance the design is to be addressed via a performance based solution due to the interconnection of the following rising and descending stairs flights:

- North fire stair from building A.
- East fire stair from building B.
- Fire stairs to building D.

29. Clause D2.7: Installations in exits and Paths of Travel

No access to service shafts will be provided within fire isolated stairs, passageways or ramps.

Any electrical meters, distribution boards or ducts, central communications distribution boards or equipment or electrical motors must be smoke sealed and enclosed within non-combustible construction with any penetrations smoke sealed.

Gas and other fuel services must not be located within a required exit.

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

30. Clause D2.10 - Pedestrian ramps

The pedestrian ramp at the front needs to have a non-slip finish.

31. Clause D2.13 - Treads and Risers

The stairs must comply with the tread, riser and going dimensions of this clause and the nosing of the stairs must be provided with a non-slip tread with no gaps between risers exceeding 125mm.

32. Clause D2.15 - Thresholds

No thresholds to be provided other than to open space where the step may be a maximum of 190-mm.

33. Clause D2.16 - Balustrades or other barriers

- All balustrades generally must be compliant in terms of a minimum of 1m in height above any fall more than 1m with no gaps greater than 125-mm.
- In addition where the fall exceeds 4-metres the balconies must not have any climbable elements between 150-mm and 760-mm above the floor. This includes feature lighting installed within the inside face of concrete upturns.
- For fire stairs, where the fall exceeds 1m, the balustrading must be a minimum of 865-mm above the nosing of the tread with a rail no more than 150-mm above the nosing of the tread and no gaps greater than 460-mm. At the landing of stairs where the



landing exceeds 500-mm in length the balustrade must be increased to 1m in height, with a rail no more than 150-mm above the landing and no gaps greater than 460-mm.

- For non-fire isolated stairs where the fall exceeds 1-metre the balustrade must be provided a minimum of 865-mm in height with no gaps greater than 125-mm and where any landing exceeds 500-mm that the height of balustrading will be a minimum of 1-metre.
- For a driveway ramp or stairs within a carpark which is a required path of travel where the fall exceeds 1m, balustrading must be a minimum of 1-metre with no gaps greater than 125-mm.
- Where the window sill height is less than 865-mm and the fall exceeds 1-metre the window must be fixed so as to open no more than 125-mm or that a rail/s will be installed to restrict the gap to 125-mm where less than 865-mm above the floor.

34. Clause D2.19 - Doorways and Doors

Any auto-sliding doors to be used as egress doors must be able to be opened with a force not more than 110N if power fails and also fail open on power failure and activation of a smoke detector within the fire compartment.

35. Clause D2.20 - Swinging Doors

Exit doors are required to swing in the direction of egress. In this regard details are to be provided on the Construction Certificate plans to verify compliance.

36. Clause D2.21 - Operation of Latch

A door in a required exit or in a path of travel to an exit must be readily openable from the side facing a person seeking egress, by a single hand downward action or pushing action on a device located between 900mm and 1100mm above finished floor level. All door hardware is required to comply with this clause, other than internal doors to the apartments.

37. Clause D2.22 - Operation of Latch

As the building exceeds 25-metres in height access to the fire stairs to allow for re-entry must be provided. The doors are either to be unlocked, fail open on fire trip with every floor not able to be locked or have intercoms or an audible or visual alarm system provided. Signage is also required in respect to the re-entry or alarm systems.

38. Clause D2.23 - Signs on Doors

The doors to the fire isolated exits are to have signage located on the outside of the fire isolated exit stating "Fire Safety Door, Do Not Obstruct, Do Not Keep Open". In addition, the discharge doors from the fire stairs are to have signage located on either side of the door stating "Fire Safety Door - Do Not Obstruct".

39. Part D - Access for People with Disabilities

The disabled access consultant for the project is to provide a disabled access report to verify compliance in respect to the proposed design.



BCA SECTION E – SERVICES AND EQUIPMENT

40. Clause E1.3 – Fire Hydrants

A Hydrant system is required to be installed in accordance with AS 2419.1 – 2005.

It should be noted that the Hydrant Booster assembly is required to be located greater than 10 metres from an external wall of the building, or affixed to the external wall and protected by a radiant heat shield that has an FRL of 90/90/90 located 2 metres either side and 3 metres above the outlets.

Internal Hydrants are to be located within each required Fire Isolated Exit. In addition, if floor coverage can not be achieved supplementary fire hydrants may be provided to suit the operational requirements of the NSW Fire Brigades.

Note 1: Fire Hydrants located in the fire Isolated stair must not encroach on the required 1 metre clear exit width.

Note 2: A block plan complying with AS 2419.1 – 2005 is required to be installed to the Hydrant Booster assembly together with the required signage.

Note 3: as the building exceeds 75-m in height a hydrant pump relay must be provided as per clause 7.7 of AS 2419.1 – 2005.

41. Clause E1.4 – Hose Reels

Fire hose reels are required to be located within the building in accordance with AS 2441 – 2005.

Fire Hose Reels must be provided to serve the whole building where one or more internal hydrants are installed. In this regard, hose reel coverage is required throughout the building.

Hose reels are required to be located within 4 metres of an exit or adjacent to internal Hydrants (other than hydrants located in fire isolated exits).

In addition, Fire Hose Reels must be located so that the hose will not pass through doorways fitted with a fire door, other than a door associated with Clauses C2.12, C2.13, C3.11 and C3.13.

42. Clause E1.5 – Sprinklers

As the building is more than 25-metres in height sprinklers are required throughout, other than to the low rise towers and gym area where the fire engineers have proposed to undertake a performance based solution to allow for the removal of the sprinklers under performance requirement EP1.4. This is dependent upon assessment and approval by the fire brigade.

43. Clause E1.6 – Portable Fire Extinguishers

Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444.

44. Clause E1.6 – Fire Control Room

The fire control room must comply with Specification E1.8, this includes the provision of a second access door as per clause 7 of Specification E1.8.



45. Clause E1.9 – Fire Precautions During Construction

Not less than one fire extinguisher to suit Class A, B and C fires and electrical fires must be provided at all times on each storey adjacent to each required exit or temporary stairway or exit. In addition, after the building has reached an effective height of 12 metres, the required fire hydrants and hose reels must be operational in at least every storey that is covered by the roof or the floor structure above, except the 2 uppermost storeys and the required booster connections must be installed.

46. Clause E2.2 – Smoke Hazard Management

The mechanical ventilation systems in the building are required to be designed in accordance with AS/NZS 1668.1 incorporating smoke dampers where air handling ducts penetrate any building elements separating fire compartments served.

The Class 2 residential part of the building is required to be provided with an automatic smoke detection and alarm system complying with Specification E2.2a. In this regard, as a minimum requirement smoke detectors complying with AS 3786 are to be provided throughout the residential levels within each sole occupancy unit on or near the ceiling between the bedrooms and the remainder of the sole occupancy unit. In addition, smoke alarms must be installed in public corridors and other internal spaces, located in accordance with AS 1670.1, and connected to activate a building occupant warning system in accordance with Clause 6 of Specification E2.2a. It is noted that this may be varied depending on the requirements of the fire brigade approval process.

In this regard, Clause 6 requires the sound pressure level at the door providing access to the Sole Occupancy Unit to be not less than 85dB(A) and in built sounders of the smoke detectors may be used to wholly or partially meet the requirements.

The mechanical ventilation system in the basement carpark levels is required to comply with Clause 5.5 of AS/NZS 1668.1 except that fans with metal blades suitable for operation at normal temperatures may be used and electrical power and control cabling need not be fire rated.

Stairs serving storeys more than 25-m above the ground must be provided with stair pressurisation as per AS 1668.1, this includes any associated fire passage.

The class 6 and 9b parts of the building are not proposed to be provided with zone smoke control due to a performance based solution proposed by the fire engineers, this will be justified using performance requirement EP2.2 and is dependent upon assessment and approval by the fire brigade.

47. Clause E3.3 – Warning against use of lifts in fire

Signage “DO NOT USE LIFT IF THERE IS A FIRE” must be installed as per this clause.



48. Clause E3.4 – Emergency lifts

As the building exceeds 25-metres in height two emergency lifts must. These are to be installed as per AS 1735.2 – 2001 or AS 1735.1 - Appendix A and be fire rated to an FRL of 120/120/120. In addition as the building exceeds 75-metres in height the lifts must have a rating of not less than 600kg.

49. Clause E3.6 – Facilities for people with disabilities

The lift providing disabled access must:

- Have a handrail complying with the provisions of AS 1735.12 and BCA 2010.
- Have minimum internal floor dimensions complying with AS 1735.12 and BCA 2010.
- Have doors with a minimum clear width as per AS 1735.12 and BCA 2010.
- Be fitted with a series of door opening sensory devices which will detect a 75mm diameter rod across the door opening between 50mm and 1550mm above the floor level.
- Have car control buttons complying with section 7 of AS 1735.12 and BCA 2010.

The disabled access consultant is to provide confirmation via a report of compliance.

50. Clause E3.7 – Fire service controls

Each lift must be fitted with fire controls.

51. Clause E4.2 – Emergency Lighting

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

52. Clause E4.5 – Exit Signs

Exit signs are required to be installed in the building in accordance with AS 2293.1 -2005. Alternatively within the residential area of the building the exit signage may comply with clause E4.7.

53. Clause E4.7 – Class 2 and 3 Buildings and Class 4 Parts: Exemptions

The doors providing egress to residential fire stairs as well as from the ground floor residential lobby to open space need be provided with signage “EXIT”, in capital letters not less than 25-mm in height contrasting with the background where illuminated exit signage is not provided.

54. Clause E4.9 – Sound System and intercom System for Emergency Services

An AS 1670.4 sound system and intercom system for emergency purposes is required throughout. However due to the proposal to have staged evacuation of the building as detailed in respect to the building occupant warning system, the proposal is to have the sound system and intercom system mimic this method of building evacuation, so that if a fire trip in a tower occurs, only that tower would initially evacuate. This has been confirmed by the fire engineers as being addressed via performance requirement EP4.3.



BCA SECTION F – HEALTH & AMENITY

55. Clause F1.1 – Stormwater Drainage

Stormwater drainage must be installed as per AS 3500.3 -2003.

56. Clause F1.6 – Sarking

Sarking must be installed to roof and walls for weatherproofing as per AS/NZS 4200.1 and 2 - 1994.

57. Clause F1.7 – Waterproofing of Wet Areas

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

58. Clause F1.9 – Damp-proofing

Damp proofing must be provided as per this clause and AS 2904 – 1995 or AS 3660.1 - 2000.

59. Clause F1.10 – Damp-proofing of Floors on the Ground

A vapour barrier is to be provided in accordance with the relevant requirements of AS 2870.

60. Clause F1.11 – Provision of Floor Wastes

Floor wastes are required to be provided within the floor of each bathroom and laundry located on any level above a sole occupancy unit and must be graded to permit drainage to a floor waste.

61. Clause F1.13 – Glazed Assemblies

Glazed assemblies in an external wall of a building are required to comply with AS 2047 requirements for resistance to water penetration.

62. Clause F2.3 – Facilities in class 3 to 9 buildings

Toilet facilities for the retail area, gym and pool are to be provided as per table F2.3.

63. Clause F2.4 – Facilities for People with Disabilities

The disabled toilets are to be provided in accordance with AS 1428.1. this is to be confirmed by the access consultant for the project.

64. Clause F2.5 – Construction of Sanitary Compartments

The door to fully enclosed sanitary facilities must open outwards, slide or be readily removable from the outside unless there is a clear space of 1.2 metres measured in accordance with figure F2.5. The doors to the toilets (grid 4) to apartments 1,2,4,6 and 8 do not comply and the doors should be reconfigured as per this clause.



65. Clause F3.1 – Height of Rooms

The floor to ceiling heights in the Class 2 Residential part of the building must not be less than 2.4 metres in habitable rooms and 2.1 metres in kitchens, laundries, and bathrooms.

In addition, the floor to ceiling heights car parking areas must be not less than 2.1 metres.

If the gym accommodates more than 100 persons the ceiling height must be not less than 3-metres.

66. Clause F4.1 – Provision of Natural Light

Natural light is required to be provided to all habitable rooms in accordance with F4.2.

67. Clause F4.4 – Artificial Lighting

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

68. Clause F4.5 – Ventilation of Rooms

The building is required to be provided with natural ventilation achieving 5% of the floor area of the room served. Where natural ventilation is not provided, AS 1668.2 mechanical ventilation is to be provided. Confirmation is required from the Mechanical Consultant.

69. Clause F4.11 – Carparks

The carpark levels are required to be ventilated in accordance with AS 1668.2 where natural ventilation complying with clause F4.5 cannot be provided.

70. Part F5 Sound Transmission and Insulation

Acoustic compliance is to be assessed by the acoustic consultant with a report verifying compliance to be provided prior to the issuing of the Construction Certificate.

SECTION G – ANCILLARY PROVISIONS

71. Clause G1.01 (NSW) – Provision for Cleaning of Windows

A building must provide a safe manner of cleaning windows located 3 or more storeys above ground level. In this regard, the windows must be able to be cleaned from within the building, or provisions made for cleaning of windows by a method complying with the OH&S Act 2000 and regulations made under the Act.

Details are to be submitted with the Construction Certificate application.



SECTION J – ENERGY EFFICIENCY

72. Section J – Energy Efficiency

The proposed building is subject to the requirements of section J of the BCA. This will require compliance in respect to building fabric, glazing, building sealing, air-conditioning and ventilation, artificial lighting and power, hot water supply and access for maintenance and facilities for monitoring.

Details and design certification are required to be provided from the Architect, Electrical, Mechanical, Hydraulic Consultants or ESD consultants at the Construction Certificate stage.

C. CONCLUSION

This report contains an assessment of the referenced architectural documentation for the proposed mixed use development at 40 Walker Street, Rhodes, against the Deemed-to-Satisfy provisions of the Building Code of Australia 2010 (BCA).

Arising from the review, it is considered that the proposed development can achieve compliance with the relevant provisions of the BCA, by virtue of compliance with BCA Deemed-to-Satisfy provisions or Alternative Solutions, following confirmation from the Fire Safety Engineer for the project, Norman Disney Young.



APPENDIX 1: FIRE SAFETY SCHEDULE

Issued under Clause 168 of the Environmental Planning and Assessment Regulation 2000

The following essential fire safety measures shall be implemented in the whole of the building premises and each of the fire safety measures must satisfy the standard of performance listed in the schedule, which, for the purposes of Clause 168 of the Environmental Planning and Assessment Regulation 2000, is deemed to be the current fire safety schedule for the building.

Statutory Fire Safety Measure	Design/Installation Standard	Potential Systems
Access Panels, Doors & Hoppers	BCA Clause C3.13 & AS 1530.4 - 2005	✓
Alarm Signalling Equipment	AS1670.3 - 2004	✓
Automatic Fire Detection & Alarm System	BCA Spec. E2.2a &/or AS 1670.1 - 2004 /AS 3786 - 1993	✓
Building Occupant Warning System activated by the Sprinkler System	BCA Spec E1.5 Clause 8 and/ or Clause 3.22 of AS 1670.1 - 2004	✓
Emergency Lighting	BCA Clause E4.4 & AS 2293.1 - 2005	✓
Exit Signs	BCA Clauses E4.5, E4.6, E4.7 E4.8 and AS 2293.1 - 2005	✓
Fire Dampers	BCA Clause C3.15, AS 1668.1 - 1998 & AS 1682.1 & 2 - 1990	✓
Fire Doors	BCA Clause C2.12, C2.13, C3.4,C3.8, C3.11 and AS 1905.1 - 2005	✓
Fire Hose Reels	BCA Clause E1.4 & AS 2441 - 2005	✓
Fire Hydrant Systems	Clause E1.3 & AS 2419.1 - 2005	✓
Fire Seals	BCA Clause C3.15, AS 1530.4 & AS4072.1 - 2005	✓
Mechanical ventilation to car park	BCA E2.2, Clause 5.5 of AS 1668.1 - 1998.	✓
Paths of Travel	EP & A Regulation Clause 186	✓
Pressurisation of stairs	BCA E2.2a and AS 1668.1 - 1998	✓
Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 - 2001	✓
Smoke doors	BCA clause C2.14	✓
Wall-Wetting Sprinklers	BCA Clause C3.4 & D1.7 AS 2118.2 - 1995	✓



Statutory Fire Safety Measure	Design/Installation Standard	Potential Systems
Warning & Operational signs	Clause 183 of the EP & A Regulations 2000, AS 1905.1 - 2005, BCA Clause D2.23, E3.3	✓
Proposed Fire Engineered Alternative Solutions: <ul style="list-style-type: none">• Spandrel separation.• Travel distances.• Distances between exits.• Fire stair discharge.• Rising and descending stair flights.• Sprinklers.• Zone smoke control.• Sound system and intercom system for emergency purposes.	The relevant Performance Requirements associated with any proposed Fire Engineered Alternative Solution.	✓