BLACKETT MAGUIRE+ GOLDSMITH

BCA ASSESSMENT REPORT

1-13 BARBER AVENUE, KINGSWOOD NSW
MIXED USE DEVELOPMENT

PREPARED FOR
AESTHETE No.3 Pty Ltd

Revision C
24 July 2012
Project No: 100296

Address
Suite 2.01,
22-36 Mountain St
Ultimo NSW 2007

Contact
Ph: 02 9211 7777
Fax: 02 9211 7774

CONTENTS

REPORT STATUS				
DATE	**REVISION**	**STATUS**	**AUTHOR**	**REVIEWED**
14.10.10	A	Report issued to client to accompany the Part 3A Application	JS	DB
14.07.12	B	Report updated and issued in Draft for Review	SR	DB
24.07.12	C	Report issued to client to accompany the Section 75W Application	SR	DB

Prepared by:

Steven Rodriguez
Building Regulations Consultant
Member Australian Institute of Building Surveyors (AIBS)
Accredited Certifier/Principal Certifying Authority (NSW)
Building Surveying Grade A1 – Accreditation No. BPB 0823

Review by:

David Blackett
Director - PCA
Member Australian Institute of Building Surveyors (AIBS)
Accredited Certifier/Principal Certifying Authority (NSW)
Building Surveying Grade A1 - Accreditation No. BPB 0032

A. INTRODUCTION

A.1 BACKGROUND & PROPOSAL

Blackett Maguire + Goldsmith Pty Ltd (BM+G) have been commissioned by Aesthete No.3 Pty Ltd to carry out an assessment of the revised architectural design documentation against the requirements of the National Construction Code Series Building Code of Australia – Volume 1 2012 (BCA), and prepare a BCA Assessment Report for submission with the Section 75W Application to the Department of Planning.

The building the subject of this report is located at 1 – 13 Barber Avenue Kingswood NSW and is within the Penrith City Council local government precinct. The subject site is legally described as Lot 100 of Deposited Plan 701623 and Stage 1 (the subject of this report) has an approximate site area of 5853 square meters.

Figure 1: Locality Map – Stage 1
(Source: www.googleearth.com.au)

The development will be staged with Stage 1 being the emphasis of this report. Stage 1 contains one (1) building with two components identified as **Building A & Building B** which are situated over a podium ground level and basement level carparking. The principal building characteristics are defined as follows:

- Basement Level 02 – Vehicle Car parking, Storage and Services (Building A & B).
- Basement Level 01 – Vehicle Car parking, Storage and Services (Building A & B).
- Lower Ground Floor Level – Vehicle Car parking (Building A) & Commercial tenancies (Building B).
- Ground Floor Level – Retail / Commercial Tenancies (Building A) & Serviced Apartments X16 (Building B).
- Level 1 - Commercial Tenancies (Building A) & Serviced Apartments x16 (Building B).
- Level 2 - Commercial Tenancies (Building A) & Serviced Apartments x16 (Building B).
- Level 3 - Commercial Tenancies (Building A) & Serviced Apartments x13 (Building B).
- Level 4 - Residential Sole Occupancy Units x18 (Building A) and Serviced Apartments x13 (Building B).
- Level 5 - Residential Sole Occupancy Units x18 (Building A) and Serviced Apartments x13 (Building B).
- Level 6 - Roof top/s and Ancillary Plant Areas (Building A & B).

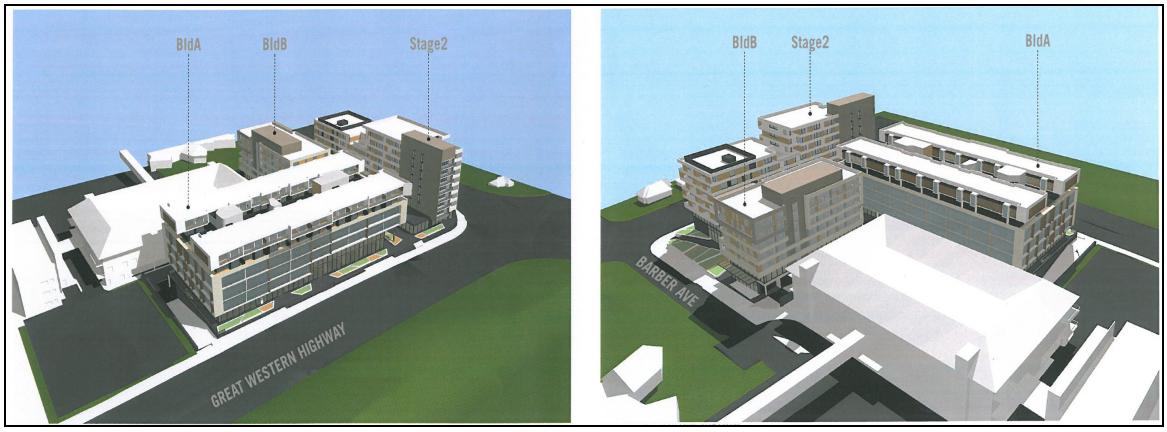


Figure 2: Locality Map
(Source: Turner + Associates)

Building A contains an atrium void which will connect 4 storeys from ground to Level 3. The ground floor podium slab is situated over 2 basement carpark levels and shares ground floor level carparking and commercial tenancies. Vehicular access to the site will be via the Great Western Hwy to the North and via Barber Avenue to the South. The Principal pedestrian entrances associated with Stage 1 are off Great Western Highway, Barber Avenue footways whilst access will also be available via open space connected to Parker Street, when Stage 2 of the development is completed.

A.2 AIM

The aim of this compliance report is to:-

1. Confirm that the referenced documentation has been reviewed by an appropriately qualified Building Surveyor and Accredited Certifier.
2. Identify any BCA compliance issues that require resolution at the Construction Certificate stage.
3. Undertake an assessment of the architectural design documentation against the Performance Requirements of Volume 1 of the Building Code of Australia – National Construction Code Series 2012 (BCA).
4. Accompany submission of the Section 75W Application to the Department of Planning to enable the Consent Authority to be satisfied that the building design is capable of complying with the BCA and that subsequent compliance with the fire & life safety, health & amenity and energy efficiency requirements of the BCA, will not give rise to design changes to the building which may necessitate the submission of further applications under Section 75W of the Environmental Planning and Assessment Act, 1979.
5. Enable the certifying authority to satisfy its statutory obligations under Clause 145 of the Environmental Planning and Assessment Regulation, 2000.
6. Enable the certifying authority to satisfy its statutory obligations under Clauses 17 & 18 of the Building Professionals Regulation 2007.

The compliance statement is not intended to identify all issues of compliance or non-compliance with the BCA with such other issues to be appropriately addressed prior to issue of the Construction Certificate.

A.3 PROJECT TEAM

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

- Project Team Leader – Steven Rodriguez (A1 Accredited Certifier / Senior Building Surveyor)
- Project PCA/Peer Reviewer – David Blackett (A1 Accredited Certifier / PCA / Director)

A.4 DOCUMENTATION

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

- National Construction Code Series – Vol. 1 - Building Code of Australia 2012 (BCA)
- Guide to the Building Code of Australia – Volume 1 2012 (BCA GUIDE)
- Environmental Planning and Assessment Act 1979 (EP&A)
- Environmental Planning and Assessment Regulation 2000 (EP&AR).
- Email correspondence outlining changes subject to the S75W application prepared by Turner + Associates dated 9 May 2012.
- Accessibility compliance Report prepared by Morris Goding Accessibility Consulting, dated 03 July 2012.
- Basix Certification prepared by Efficient Living dated 10 July 2012.
- Architectural plans prepared by Turner + Associates as referenced below:

Drawing No.	Issue	Date
EA01	D	01.02.2010
EA02	G	18.04.2012
EA03	K	16.07.2012
EA04	D	16.07.2012
EA05	D	18.04.2012
EA11	K	16.07.2012
EA12	K	03.05.2012
EA13	K	16.07.2012
EA14	J	16.07.2012
EA15	I	18.04.2012
EA16	H	18.04.2012
EA17	H	18.04.2012
EA18	I	16.07.2012
EA19	I	18.04.2012
EA20	I	18.04.2012
EA30	I	18.04.2012
EA31	I	18.04.2012
EA32	H	18.04.2012
EA40	I	18.04.2012
EA41	I	18.04.2012
EA42	I	18.04.2012
EA44	H	18.04.2012
EA45	I	18.04.2012
EA50	F	18.04.2012
EA51	F	18.04.2012
EA60	E	18.04.2012
EA61	D	18.04.2012
EA70	A	01.12.2012

A.5 RELEVANT VERSION OF THE BCA

The proposed building will be subject to compliance with the relevant requirements of the BCA as in force at the time the application for the Construction Certificate is made. In this regard it is assumed that the Construction Certificate application will be made prior to the 1st May 2013, as such ***BCA 2012*** Version applies to the subject development.

A.6 LIMITATIONS & EXCLUSIONS

The limitations and exclusions of this report are as follows:

- The following assessment is based upon a review of the architectural documentation.
- Our comments relate to the relevant BCA Issues associated with Sections B, C, D, E, F, G & J of the Building Code of Australia only.
- 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.
- Blackett Maguire + Goldsmith Pty Ltd do not guarantee acceptance of this report by Local Council, NSW Fire Brigades or other approval authorities.
- No part of this document may be reproduced in any form or by any means without written permission from Blackett Maguire + Goldsmith Pty Ltd. This report is based solely on client instructions, and therefore should not be used by any third party without prior knowledge of such instructions.

A.6 TERMINOLOGY

Atrium – Means a space within a building which connects 2 or more storeys, and –

(a) Is wholly or substantially enclosed at the top by a floor or roof (including a glazed roof structure),
(b) Includes any adjacent part of the building not separated by an appropriate barrier to fire; but
(c) Does not include a stairwell, rampwell or space within a shaft.

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.

Construction Certificate – Building Approval issued by the Certifying Authority pursuant to Part 4A of the Environmental Planning & Assessment regulation 1979.

Effective Height – Means the height to the floor of the top most storey (excluding the top most storey of 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.

Occupation Certificate – Building Occupation Approval issued by the Principal Certifying Authority pursuant to Part 4A of the Environmental Planning & Assessment Act 1979.

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).

Rise in storeys - means the greatest number of *storeys* calculated in accordance with BCA C1.2.

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

B. BCA ASSESSMENT

In summary, the key building characteristics as per the BCA have been identified as follows:

BCA Classification:	Class 2 (Residential Sole Occupancy Units) Class 3 (Serviced Apartments), Class 5 (Commercial/Professional Consulting), Class 6 (Retail) & Class 7a (Carpark). *Note: We understand that any professional consulting use will not include any day surgery or similar use which would constitute Class 9a health care).*
Rise in Storeys:	Seven (7)
Storeys Contained:	Ten (10)
Type of Construction:	Type A
Effective Height:	> 12m & <25m (74.200 – 51.300 = 22.9m)
Floor Area/Volume:	Max. Fire Compartment Size:8,000m^2 & 48,000m^3 – Class 5 parts Max. Fire Compartment Size:5,000m^2 & 30,000m^3 – Class 6 parts *Note: Class 2 & 3 SOUs and Class 7a sprinkler protected carpark are not subject to fire compartmentation size limitations.*
Climate Zone:	Zone 6

*Note: The development will be staged with Stage 1 being the emphasis of this report. Stage 1 contains one (1) building with two components identified as **Building A & Building B** which are situated over a podium ground level and basement level carparking.*

B.1 SUMMARY OF ASSESSMENT & COMPLIANCE ISSUES:

Section B – Structural Provisions:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section B of the BCA subject to the following:

1. BCA Section B – Structural provisions: Structural engineering documentation for structural works are to comply with the structural provisions of BCA Clauses B1.1, B1.2 & B1.3, and are to be submitted with the Construction Certificate (CC) application together with design certification from the design engineer.

2. BCA cl. B1.4 – Materials and Forms of Construction: Structural resistance of materials and forms of construction to comply with BCA clause B1.4. Design certification confirming compliance in this instance is to also be submitted with the Construction Certificate application. Structural engineering details are to consider the following Australian Standards (as applicable), and any other appropriate standards accordingly:
    1. AS 1170.0 – 2002 General Principles
    2. AS 1170.1 – 2002, including certification for balustrades (dead and live loads)
    3. AS 1170.2 – 2002, Wind loads
    4. AS 1170.4 – 2007, Earthquake loads
    5. AS 3700 – 2009, Masonry code
    6. AS 3600 – 2001, Concrete code
    7. AS 4100 – 1998, Steel Structures and/or
    8. AS 4600 – 2005, Cold formed steel
    9. AS 2159 – 1995 or 2009, Piling
    10. AS 1720.1 – 2010, Design of timber structure
    11. AS/NZS 1664.1 and 2 – 1997, Aluminium construction
    12. AS 2047 – 1999, Windows in buildings
    13. AS 1288 – 2006, Glass in buildings
    14. B1.4(h)(iii) – To protect against nickel sulphide inclusions

Section C – Fire Resistance and Compartmentation:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section C of the BCA subject to the following:

3. BCA cl. C1.10 – Early Fire Hazard Properties: Floor, wall and ceiling linings, along with any other combustible materials that form part of the proposed are required to comply with the fire hazard properties requirements under Specification C1.10 as relevant.

   Note that reflective foils such as sarking/insulations also need to achieve compliance and have a flammability index of not greater than 5. Insulation in all fire rated walls is to be non-combustible and comply with AS1530.1. Certification of design will be required at Construction Certificate (CC) Application stage and test certificates of the proposed materials and linings will be required to be submitted prior to issue of the Occupation Certificate (OC).

4. BCA cl. C2.2 – General Floor Area and Volume Limitations: The floor area and volume of the proposed building must not exceed the DTS limitations prescribed above, unless otherwise addressed under an Alternative Solution.

   By virtue of the proposed atrium in **Building A** connecting 4 storeys the compartment limitations will be exceeded.

   In this regard it is understood that the client will engage the services of an Accredited Fire Safety Engineer to prepare an Alternative Solution report to justify the above at the CC stage.

5. BCA cl. C2.6 – Vertical Separation of Openings in External Walls: As the building is proposed to be sprinkler protected throughout (as required by the atrium), spandrel separation is therefore not required to be provided between levels at external openings of the building.

6. BCA cl. C2.8 – Separation of Classifications on the Same Storey: Different building classifications situated adjacent to each other are required to be fire separated and achieve relevant FRL's in accordance with BCA Spec C1.1, unless otherwise the entire storey they are situated on adopts the higher FRL's throughout.

   In this regard it is under stood that the mixed commercial and retail uses on The Ground Level in Building A will achieve the higher FRL's associated with the Class 6 parts (generally 180 mins) and as such no fire separation between classifications is required.

   Note: Architectural / Structural design statements will be required at the CC stage.

7. BCA cl. C2.9 – Separation of Classifications on different storeys: The floors between different classifications need to be fire rated accordingly. In this regard separation would necessitate the floor between the adjoining parts to have an FRL specified under BCA Specification C1.1 for the classification of the lower storey e.g.

   - The floor between the Class 7a Carpark (Basement Level) and the Class 5 Commercial areas (Ground Floor Level) is required to achieve a minimum FRL of 120/120/120 mins,
   - The floor between the Class 5 Commercial / Class 7a Carpark (Lower Ground Floor) and the Class 3 Serviced Apartments / Class 6 Retail areas (Ground Floor) in Building A & B is required to achieve a minimum FRL of 120/120/120 mins,
   - The floor between the Class 6 Retail (Ground Level) and the Class 5 Commercial areas (Level 1) is required to achieve a minimum FRL of 180/180/180 for Building A, whereas the floor between the Class 3 levels there above in Building B are only required to achieve a minimum FRLs of 90/90/90 mins.
   - The floor between the Class 5 Commercial areas (Level 4) and the Class 2 Residential sole occupancy units (Level 5) in Building A is required to achieve a minimum FRL of 120/120/120 mins.

8. BCA cl. C2.12 – Separation of Equipment: Any emergency generators, lift motor equipment, boilers of battery storage enclosures are required to be fire separated from the remainder of the building by construction having a minimum FRL of 120/120/120. Doors to the enclosure are to be self-closing -/120/30 fire doors.

   Note: Comms/server rooms containing batteries that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours are also required to comply with this clause.

9. BCA cl. C2.13 – Electricity Supply Systems: Any electrical substations, electrical conductors, or main switchboards that sustain emergency equipment operating in emergency mode are required to be fire separated from the remainder of the building by construction having a minimum FRL of 120/120/120. Doors to the enclosure are to be self-closing -/120/30 fire doors. Additionally, there is to be a suitable portable fire extinguisher located in or adjacent to the room.

10. BCA cl. C2.14 – Public Corridors in Class 2 and 3 Buildings: Corridors serving the Service Apartments and Residential Sole Occupancy Units exceed 40m in length in both Building A and Building B and as such are required to be provided with smoke walls and doors complying with BCA Spec C2.5. This will amongst other things necessitate a 400mm bulk head reservoir and dual swing doors with smoke seals to facilitate egress.

11. BCA cl. C3.2 – Protection of Openings in External Walls: Any openings within the external walls that are located within 3m of a side or rear allotment boundary or 6m from the far boundary of an adjoining roadway, (which are deemed fire source features) will be protected externally in accordance with Clause C3.4.

12. BCA cl. C3.4 – Acceptable methods of protection: Any openings required to be fire rated in clause C3.2 above can 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/--.

13. BCA cl. C3.8 – Openings in Fire Isolated Exits: The doors to the fire isolated exits are required to be self-closing --/60/30 fire doors.

    Any windows proposed in the ***external walls*** of the fire stairs are also required to be protected in accordance with C3.4 or achieve an FRL of -/90/90 accordingly.

14. BCA cl. 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.

15. BCA cl. 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 35000mm^2 they must be backed by construction with a rating of not less than --/60/60.

16. BCA cl. C3.11 – Bounding Construction: Internal walls bounding common areas are required to achieve necessary FRL's and any openings situated within them are must not reduce the fire resisting performance of the wall.

    The doors to each sole occupancy unit are to be self-closing -/60/30 fire doors. Other doors that open from rooms into public areas are to be self-closing -/60/30 fire doors.

Where the corridors in Building A along the louvered balconies do not comply with the D2.5 provisions, the walls bounding the units are considered internal walls and need to comply with the above – Note: D2.5 will require permanently fixed openings and not adjustable louvers or the like - Architect to confirm at CC stage.

17. BCA cl. C3.13 – Openings in Shafts: Openings to a 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.

18. BCA cl. 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.

19. BCA cl. C3.16 – Construction Joints: Any construction joints must be fire rated as per the ratings of the building elements within which they are installed.

20. BCA cl. and Spec. C1.1 – Fire Resisting Construction: All new building elements will need to comply with the Fire Resistance Levels (FRL's) detailed in Table 3 of BCA Specification C1.1 for Type A Construction.

    Refer to notes below and Appendix 1 containing Table 3 of BCA Specification C1.1 at the rear of this report.

    Note 1: Details demonstrating compliance with the FRL requirements are to be included on the CC plans, accompanied by certification from the architect & structural engineer that confirms that the equivalent fire rating to those listed below (in accordance with Table 3 of Spec. C1.1):

    Note 2: The concession granted under Sub-Clause 3.5 of Specification C1.1 does not necessitate the roof of the building to have an FRL, ***due to the building being sprinkler protected throughout and the roof being non-combustible construction throughout.***

    Note 3: Where a combustible material is used as a finish or lining to an external 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 4: External walls and common walls must be non-combustible construction.

    Note 5: All fire resisting walls are to be non-combustible and achieve an FRL in both directions.

    Note 6: All internal fire resisting walls are to extend to the underside of the floor next above, the underside to a non-combustible roof or if on the top storey a ceiling with an incipient spread of fire. All load bearing internal walls including loadbearing shaft walls are to be concrete or masonry.

    Note 7: The walls to fire rated shafts must achieve the fire rating from both directions i.e. from inside and outside the shaft. Services shafts are required to be enclosed at the top of the shaft with fire rated construction having an FRL similar to the shaft.

    Note 8: 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.

    Note 9: Fire isolated stairs and lift shafts are required to be enclosed at the top of the shaft with fire rated construction having an FRL similar to the shaft (also in both directions).

Section D – Access and Egress:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section D of the BCA subject to the following:

21. BCA cl. D1.2 – Number of Exits Required: A minimum number of 2 exits for use of occupants are required from the basement car parking level due to the vertical rise for egress being greater than 1.5m.

    Furthermore, even though the building does not exceed an effective height of 25m, 2 or more exits are provided from all above ground levels to facilitate population numbers and egress travel distances.

22. BCA cl. D1.3 – When Fire Isolated Exits are Required: Given that all proposed exit stairs will pass through 3 or more consecutive storeys in the building they are required to be contained within a fire rated shaft achieving minimum FRL's in line with those applicable to each Class as per BCA Specification C1.1.

    The shafts are to also be enclosed with a fire rated lid achieving same FRL of the shaft, and the lid is to be designed and constructed to provide fire ratings in both directions. Furthermore there are to be no access panels for maintenance of services within the stair and the only access panels permitted are for roof access where the panel will need to be fire rated also.

23. BCA cl. D1.4 – Exit Travel Distances: **Class 2 & 3 part -** The exit travel distances from the entrance doorway of the residential sole occupancy units must not be more than 6 metres to a single exit; or a point of choice where travel to two alternative exits is available. Exit travel distances from a room not within an SOU and/or from the entrance door of a sole occupancy unit to an exit serving a storey at the level of egress to a road or open space only must not be more than 20 metres.

    Class 5, 6 & 7a part - The exit travel distances in the Commercial, Retail and Carpark areas are required to be not more than 20 metres to a single exit, or a point where travel in different directions to two or more exits is available. Where there is a point of choice of two exits, all points on the floor are required to be within 40 metres to one of the exits.

    In this regard it is noted that from a review of the current proposal, the following excessive distances have been identified which will require further consideration in design or addressed (where appropriate) under fire engineered alternative solution at the CC stage;

    - Egress from the furthest **Class 2 SOU** entry door in Building A (Level 4 at the Sth-west side) to a point of choice where travel in different directions is available is approx.7m in lieu of 6m.
    - Egress from **Class 2 SOU** entry doors in Building A (Level 4 & 5 at the Nth-west & Sth-west sides) to a point of choice where travel in different directions is available is approx.7m in lieu of 6m.
    - Egress from the **Class 5 Commercial** spaces in Building A may be readily compliant with an open floor plan however future fitout works could potentially exacerbate compliance limitations. As such it is understood that fire engineering may be considered as part of the base building approval to allow for flexibility with future fitouts.
    - Egress from the **Class 7a Carpark** (Lower Ground at the Nth-west end) is approximately 60m in lieu of 40m to the nearest exit.

    In this regard it is understood that the client will engage the services of an Accredited Fire Safety Engineer to prepare an Alternative Solution report to justify the above at the CC stage.

24. BCA cl. D1.5 – Distances Between Alternative Exits: **Class 2 & 3 part -** Distance between alternative exits must be no less than 9m or no greater than 45m, whereas the distance between alternative exits in the **Class 5, 6 & 7a part** must be no less than 9m or no greater than 60m.

    Similarly to the above it is noted from a review of the current design that the following excessive distances have been identified which will require further consideration in design or addressed (where appropriate) under fire engineered alternative solution at the CC stage;

    - Egress between alternative exits from **Class 2 & 3 SOU** areas are approximately 85m in Building A in lieu of the maximum permissible 45m (when measured back through the point of choice).

    - Egress from the **Class 5 Commercial** spaces in Building A may be readily compliant with an open floor plan, however future fitout works could potentially exacerbate compliance limitations. As such it is understood that fire engineering will be considered as part of the base building approval to allow for flexibility with future fitouts.

    - Egress between alternative exits from the **Class 7a Carpark** areas (B2, B1 & Lower Ground) is approximately 80m (worst case) in lieu of 60m.

    In this regard it is understood that the client will engage the services of an Accredited Fire Safety Engineer to prepare an Alternative Solution report to justify the above at the CC stage.

25. BCA cl. D1.6 – Dimensions of Exits and Paths of Travel to 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 stairs.

    Numbers of persons accommodated are considered compliant with respect to aggregate exit width provisions available as per the requirements of BCA Clause D1.6 and Table D1.13 accordingly (as applicable to the Class 5, 6 and 7a parts only).Compliance with this clause is readily achievable and details are to be provided on the Construction Certificate drawings.

    Note: 1.0m clear egress paths need to be considered adjacent to the eastern fire exits in the basement carpark levels.

26. BCA cl. D1.7 – Travel Via Fire Isolated Exits: A fire stair is required to discharge directly to the road or open space unless otherwise (within the confines of the building) where the subject area needs to be open for at least 2/3 of its perimeter, and be within 20m to a road or open space. Alternatively the stair may also discharge to a covered area (outside the confines of the building) if the clear height is 3m and the road or open space is within 6m.

    Additionally, upon discharge, occupants must not pass within 6m of the external walls/windows of the building unless otherwise protected with an FRL of 60/60/60 mins (notwithstanding any other stricter requirements of Spec C1.1 for external walls) and the openings are to be internally sprinkler protected. Consideration to window transom / mullion design is to be given to ensure the wall wetting operations are not 'null and voided'' due to lack of coverage.

    Access into a fire stair must be from a public lobby, airlock or the like and can only be directly from an SOU only if it occupies the entire storey.

It is noted that from a review of the current design the following matters have been identified which will require further consideration in design or addressed (where appropriate) under fire engineered alternative solution at the CC stage;

- Occupants discharging from the stair serving Building A (Eastern fire stair at the Ground Level) necessitated passing within 6-metres of the eastern facades of the building, as such these facades are required to be fire rated, with any openings internally protected.

- The commercial tenancy on the lower ground floor opens directly into the western fire stair serving Building B and will therefore need to be either provided with an air lock or addressed under an alternative solution at the CC stage.

27. BCA cl. D1.10 – Discharge from Exits: Upon egress occupants must have suitable paths of travel including compliant stairways and ramps (where required) between the building and the Roadway. Graded surfaces must not be steeper than 1:8 and any ramps will require handrails.

28. BCA cl. 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
            (B) Marked on the landing side with letters not less than 35mm high "DANGER LIFTWELL – ENTRY OF UNAUTHORISED PERSONS PROHIBITED – KEEP CLEAR AT ALL TIMES'.

29. BCA cl. D2.4 – Separation of Rising and Descending Stairs: If a stairway serving as an exit is required to be fire isolated, there must be no direct connection between a flight rising from a storey below the lowest level of access to a road or open space and a flight descending from storeys above. Separation between the flights must be non-combustible and smoke proof in accordance with cl. 2 of BCA Spec C2.5.

    In this regard we note that there is no connection between rising and descending stairways in the building.

30. BCA cl. D2.2 – Fire Isolated Stairway: The fire isolated stairs are 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.

31. BCA cl. D2.5 – Open Access Ramps and Balconies: Where it is proposed to rely on the open nature of the balconies / corridors for smoke hazard management, the balconies / corridors need to meet the DTS provisions of this clause or be assessed as public corridors with all walls considered internal and all openings protected accordingly.

32. BCA cl. D2.7 – Installations in Exits and Paths of Travel: Services or equipment comprising electricity meters, distribution boards, central telecommunication distribution boards/equipment, electrical motors etc installed in a corridor or the like leading to a required exit are to be enclosed with non-combustible construction or appropriate fire-protection covering and doorways suitably sealed against smoke spread from the enclosure.

33. BCA cl. D2.9 – Width of Stairs: All minimum clear widths of stairways are required to be measured clear of all obstructions, including handrails, kerbs, balustrades and the like – refer to D1.6 for minimum required exit dimensions.

34. BCA cl. D2.10 – Pedestrian Ramps: Any pedestrian ramps must have a non-slip finish and if required to be accessible comply with AS1428.1-2009.

35. BCA cl. D2.11 – Fire Isolated Passageway: Fire isolated passageways are to achieve the same FRL of the stairs they are serving and must contain no access panels within the passageway.

36. BCA cl. 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 treads and meet the provisions of AS1428.1-2009.

    The following will apply in relation to the construction of all stairways:

    - Stairway must have not more than 18 and not less than 2 risers in each flight.
    - Goings and risers within the stair flights must be constant throughout.
    - Goings and risers are to be in accordance with BCA Table D2.13 i.e :

	Riser (R)	**Going (G)**	**Quantity (2R+G)**
Maximum	190	355	700
Minimum	115	250	550

37. BCA cl. D2.14 – Landings: A review of the plans has confirmed that landings are compliant throughout.

38. BCA cl. D2.15 – Thresholds: Doors (other than those inside the Class 3 SOU's) must not have a ramp or step closer to the door that the width of the door leaf except where opening to open space, where the change in level may be a maximum of 190mm.

39. BCA cl. D2.16 - Balustrades or other barriers: Balustrades throughout are to comply with the provisions of this clause.

    - 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.

- Louvered structures utilised as barriers .must ensure they are structurally adequate complying with AS1170 and having no gaps capable of openings to permit a sphere of 125mm diameter through them.

40. BCA cl. D2.17 – Handrails: Handrails are required to all new stairs and are to have a minimum height of 865-mm above the stair nosing and 1.0m above landings greater than 500mm. The handrails must also be continuous and comply with AS1428.1-2009.

41. BCA cl. D2.19 – Doorways and Doors: Any inclusion of 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.

42. BCA cl. D2.20 – Swinging Door: All hinged exit doors are required to swing in the direction of egress. A review of the drawings revealed the following areas where further attention is required;

    - Building A – Fire passageway at Ground Floor Level is to have its door re-swung outwards.
    - Building A – Commercial spaces exceeding 200msq need outward swinging doors.
    - Building A – Commercial and Retail spaces less than 200msq may have inward swinging doors if they are the only exit and are provided with hold open devices.
    - Building A – Doors discharging from the western fire stair serving the basement levels.

43. BCA cl. D2.21 – Operation of Latch: A door in a required exit or in a path of travel to an exit must be readily openable from the side facing a person seeking egress, by a single hand downward action or pushing action on a device located between 900mm and 1100mm above finished floor level. The hardware is to also comply with Section 13 of AS1428.1-2009 (as applicable to the use).

44. BCA cl. 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". Where they are proposed to be held open they are to state "Fire Safety Door - Do Not Obstruct" (on both sides of the door).

    In addition, the discharge doors from the fire stairs are to also have signage located on either side of the door stating "Fire Safety Door – Do Not Obstruct". All signage is to have lettering not less than 20-mm in height.

    Statutory fire exit signage "Offences Relating to Fire Stairs" is also to be erected adjacent each fire door on the outside.

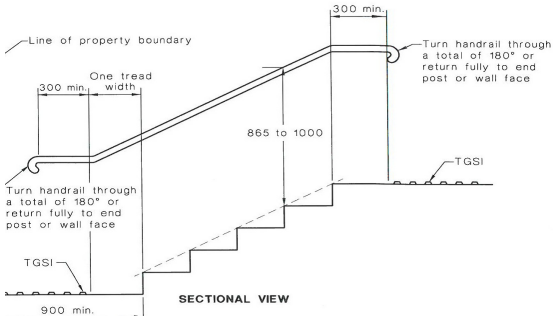
45. BCA Part D3 – Access for People with a Disability: With regards to Access for people with disabilities we note access is required throughout and is to comply with Part D3 and AS1428.1-2009. In this regard details are to be provided with the CC application. The following key matters are noted;

    - Access from the street to each of the principal pedestrian entrance/s is to be provided in accordance with AS1428.1-2009.

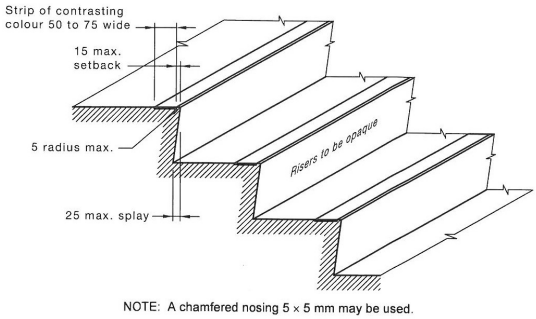
      In this regard the entrance off Great Western Highway connecting Building B is via a stairway and will therefore need to be the subject of further review form the accessibility consultant and addressed under an Alternative Solution at the CC stage.

    - External accessible paths / thoroughfares providing access to the building to be noted with gradients.

- All doors 'to an within' are required to have a clear width of not less than 850mm and comply with the circulation space requirements under AS 1428.1 - 2009.
- Access is required to all SOU entry doors in Buildings A and B as well as to all commercial and retail entry doors – circulation space and corridor widths to be considered throughout.
- Circulation space is to be provided to all doorways in accordance with Section 13 of AS1428.1-2009. Widths of accessways are to also comply with this section.
- Where an entry door is proposed to have multiple door leaves (except an automatic opening door) *one of the door leaves* must have a clear width of not less than 850mm.
- The door thresholds to external areas cannot contain any step or change in level exceeding 3mm.
- 30% luminance contrasts are to be provided to all new doorways e.g. contrasting between door leaf & jamb; or door leaf & wall; or architrave & wall; or door leaf & architrave and/or door jamb & adjacent wall.
- Turning bays are required within 2m of the end of each accessway and at maximum 20m intervals, achieving 1540mm widths and 2070mm lengths.
- All frameless glass panels or fully glazed doors on an accessway are to be clearly marking in accordance with AS 1428.1/AS1288. In this instance, all frameless glass panel or fully glazed doors, including glazing capable of being mistaken for a doorway or opening, shall be marked with a full width solid non transparent contrast line not less than 75mm wide is required to be located between 900mm and 1000mm above floor level.
- Every accessible stairway in the building is required to satisfy requirements under Clause 11 of AS 1428.1 – 2009. This includes, contrast stair nosing's between 50 and 75mm deep across the full width of the path of travel. The strip may be set back 15mm from the front of the nosing and must possess a minimum luminance contrast of 30% to the background. The strip must not extend down the riser more than 10mm. This includes the fire exit stairs.
- Handrails are required to both sides with 300mm extensions and full 180 degree turn downs in accordance with Section 11 of AS1428.1-2009.
- Tactile indicators are to be provided to all stairs in a building required to be accessible. In addition, tactile indicators will need to be provided to an accessway meeting a vehicular way adjacent to a pedestrian entry if there is no kerb or kerb ramp.

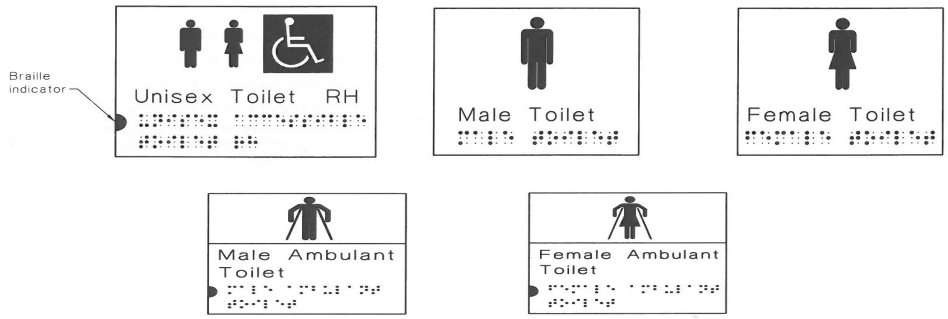


Stair Handrail / TGSI Details



Stair Nosing Details

- External and internal surfaces are to comply with Section 7 of AS1428.1-2009.
    - Walking surfaces to be slip resistant and certification in respect to the slip resistance of any tiles and vinyl will be required at the Occupation Certificate stage to verify compliance with AS/NZS 4586.
    - Any proposed carpets within the building are to have a pile height or pile thickness not exceeding 11mm and the carpet backing thickness shall not exceed 4mm (total thickness shall not exceed 15mm).
- Accessible sanitary facilities to comply with Section 15 of AS1428.1-2009.
- Ambulant facilities are required to comply with Section 16 of AS1428.1-2009.
- Braille tactile signage is to be provided to all sanitary facilities and ambulant facilities. In addition, the signage to the accessible toilet facilities is to also identify the facility for left and right handed use.



In addition to the above we note that based on a total of 87 services apartments in **Building B**, a minimum of five (5) accessible units need to be provided to comply with BCA cl. D3.1 & AS1428.1-2009.

It is also advised that Council DCP will most likely require adaptable housing provisions to be considered in the design in accordance with AS4299 and as such pre/post adaptation plans will need to accompany the CC Submission.

It is understood that Morris Goding Accessibility Consulting have been engaged to provide an accessibility compliance report to ensure all aspects of the BCA, DDA, AS1428.1-2009 & AS4299 have been appropriately addressed.

Section E – Essential Fire Safety Measures:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section E of the BCA subject to the following:

Refer to **Appendix 2** for a table of the relevant Essential Fire and Other Safety Measures which is to be read in conjunction with the following;

46. BCA cl. E1.3 – Fire Hydrants: A Hydrant system is required to be installed in accordance with AS 2419.1 – 2005 given the total floor area of the building exceeding 500msq.

    Any required Fire Hydrant Booster assembly that is required must be affixed to the external wall and protected by a radiant heat shield that has an FRL of 90/90/90 located 2 metres either side and 3 metres above the outlets.

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

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

Note: The drawings do not currently denote location of fire services and it is understood that the design is currently being finalised.

We request that these are forwarded to our office upon completion to determine whether an application to the Fire & Rescue NSW is required for any exemptions or whether deviations need addressing under an Alternative Solution report from an Accredited Fire Safety Engineer - addressing BCA Performance Requirements (EP1.3).

47. BCA cl. 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 and/or to any fire compartment exceeding 500msq.

    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, if floor coverage cannot be achieved supplementary Fire Hose Reels can be located remote from exits to cover shortfalls. Also, installations 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.

    Note: Further consideration with respect to location and coverage within the basement and on the ground floor will need to be given.

48. BCA cl. E1.5 – Sprinklers: Given the basement level car park will accommodate more than 40 vehicles, and the atrium proposal which connects more than 3 storeys in Building A, the development throughout it is required to be sprinkler protected in accordance with AS2118.1-1999 throughout. The fire services consultant will need to note enhances sprinkler requirements associated with Atriums.

    Additionally the sprinkler valve room must have direct access to the street or be addressed under an alternative solution.

    Sprinklers and wall wetting systems must be provided with independent stop valves.

    We request that details of the location of the booster assembly, valve set and pump rooms are forwarded to our office once complete to determine whether an Alternative Solution report from an Accredited Fire Safety Engineer will be required to address BCA Performance Requirements (EP1.4).

49. BCA cl. E1.6 – Portable Fire Extinguishers: Portable fire extinguishers are to be installed in accordance with clause E1.6 and AS 2444.

50. BCA cl. E1.8 – Fire Control Rooms: The building will not have an effective height greater than 25m, or a class 6, 7, 8 and 9 parts with a floor area exceeding 18,000msq. As such a fire control centre/room is not required.

51. BCA cl. 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 affective 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. Hydraulic engineer and contractors to be advised of these requirements for consideration during construction.

    Fire services design consultant contractor to take note of the above requirements during construction.

52. BCA cl. E2.2 – Smoke Hazard Management: The mechanical ventilation systems in the building are required to be designed in accordance with AS/NZS 1668.2 (A/C systems) incorporating smoke dampers where air handling ducts penetrate any building elements separating fire - compartments served. i.e. any shared A/C equipment via fire separated areas must have fire / smoke dampers installed.

    The mechanical ventilation system is also required within the basement level in accordance with AS/NZS 1668.1 & 2. Manual override controls required at the FIP and carpark entry.

    A smoke detection and alarm system is required throughout **the building** as per Clause 4 of Specification E2.2a of the BCA and the relevant provisions of AS 1670.1 – 2004. Smoke control / exhaust system required by Specification G3 are to be in accordance with AS1668.1.

    The system will be requiring a fire indicator panel (FIP) located at the building main entry (registered address) & same entry that the fire hydrant booster is located at and a building occupant warning system is required to be installed throughout all areas.

53. BCA cl. E3.2 – Stretcher Lift: Given the building has an affective height of greater than 12 metres, Stretcher Lifts are required to serve each storey. As such the lift is required to have a clear space of not less than 600mm wide x 2000mm long x 1400mm high. The lift design does not appear to comply in respect to being a minimum of 2000mm long or 1400-mm wide.

54. BCA cl. E3.3 – Warning Against use of Lifts in Fire: Signage "DO NO USE LIFT IF THERE IS A FIRE" is to be provided near the lift call button in letters not less than 10-mm in height.

55. BCA cl. E3.4 – Emergency Lifts: Although the building does not require an emergency lift due to the effective height being less than 25m and there being no Class 9a uses proposed at this stage, we suggest that consideration for the installation of an emergency lift be considered in Building A to allow for future changes in use should this be desired.

56. BCA cl. E3.6 – Facilities for People with Disabilities: As the lifts are required to be provided for disabled access they must be compliant with a lift specified under Table E3.6a (as appropriate) and the provisions of AS1735.12 as follows:

    - Have complying handrails.
    - Have minimum internal floor dimensions of 1400 x 1600mm.
    - Have doors with a minimum clear.
    - Be fitted with a series of door opening sensory devices / passenger protection devices.
    - Upper lift landing door requirements.
    - Have lift and landing control buttons.
    - Appropriate lighting provisions.
    - Audible and visual indications, and
    - Emergency hands free communication devices.

    Lift supplier to provide design certification in accordance with BCA E3.6 and relevant AS1735 standards.

57. BCA cl. E3.7 – Fire Service Control: The lifts serving storeys above an affective height of 12 metres must be provided with fire service controls. Confirmation is required from the Lift Contractor.

58. BCA cl. E4.2 – Emergency Lighting: Emergency Lighting is required in the building in accordance with AS 2293.1 -2005.

59. BCA cl. E4.5 – Exit Signs: Exit signs are required to be installed in the building in accordance with AS 2293.1 -2005.

60. BCA cl. E4.6 – Directional Exit Signs: Directional exit signs are required to be installed in the building where the exits are not readily apparent to occupants in accordance with AS 2293.1 -2005.

61. BCA cl. E4.9 – Sound Systems and Intercom Systems for Emergency Purposes: To be installed throughout given the atrium provisions.

BCA SECTION F – HEALTH & AMENITY:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section F of the BCA subject to the following:

62. BCA cl. F1.1 – Stormwater Drainage: Stormwater drainage must be installed as per AS 3500.3 -2003.

63. BCA cl. F1.5 – Roof coverings: A roof must be covered with
    1. concrete roof tiles complying with AS 2049 and fixed as per AS 2050.
    2. cellulose cement corrugated sheeting compiling with AS/NZS 2908.1 and installed as per AS/NZS 1562.2.
    3. metal roof sheeting comply with AS 1562.1
    4. plastic roof sheeting complying with AS/NZS 4256 parts 1, 2 3 and 5 and AS/NZS 1562.3.
    5. ashphalt shingles complying with ASTM D3018-90 class A.

64. BCA cl. F1.6 – Sarking: Sarking must be installed to roof and walls for weatherproofing as per AS/NZS 4200.1 and 2 - 1994.

65. BCA cl. F1.7 – Waterproofing of Wet Areas: Wet areas in the building are required to comply with AS 3740-2004.

66. BCA cl. 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 class 3 sole occupancy unit and must be graded to permit drainage to a floor waste.

67. BCA cl. F1.13 – Glazed Assemblies: Glazed assemblies in an external wall of a building are required to comply with AS 2047 requirements for resistance to water penetration. All other glazing installations are to comply with AS1288-2006 and full height glazing is to be toughened glass and provided with permanent decals/motifs.

68. BCA cl. F2.1 – Facilities in Residential Buildings: It is understood that each Class 2 & 3 sole occupancy unit in Building A & B will be provided with a kitchen sink with facilities for cooking, a bath or shower, a closet pan and washbasin. All SOU's (with the exception of the 32m^2 studio apartments) will also be provided with a washtub and a space for a washing machine and drier.

69. BCA cl. F2.3 – Facilities in class 3 to 9 buildings: Our assessment of the building indicates that an adequate number of sanitary facilities have been provided to accommodate the minimal population numbers as determined by BCA cl. D1.13.

70. BCA cl. F2.4 – Facilities for People with Disabilities: The Class 3 Services Apartments require access to one (1) communal accessible sanitary facility which is available at the Ground Floor.

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

    Additionally, Ambulant facilities need to be provided at each bank of toilets and are to comply with Section 16 of AS1428.1-2009.

Facilities located within the basement adjacent to the bicycle facilities need further review at the CC stage.

71. BCA cl. 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.

72. BCA cl. F3.1 – Height of Rooms: The floor to ceiling heights in the Class 2 & 3 Residential/ Services Apartment parts of the building must not be less than 2.4 metres in habitable rooms and 2.1 metres in kitchens, laundries, and bathrooms. Notwithstanding, **SEPP 65** requirement are applicable, and higher ceiling heights and commitments made under the Statement of Environmental Effect will need to consider compliance accordingly.

    Ceiling heights in the Class 5 and 6 parts are to achieve 2.4m and the floor to ceiling height in car parking areas must be not less than 2.2 metres to comply with BCA minimum requirements and AS2890.1 & AS2890.6 the carparking design standards.

73. BCA cl. F4.1 – Provision of Natural Light: Natural light is required to be provided to all habitable rooms in accordance with F4.2. Note: The definition of Habitable Room includes a bedroom, living/dining room, kitchen, study, theatre room etc. A design statement will be required at the CC stage.

74. BCA cl. 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.

75. BCA cl. 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.

76. BCA cl. F4.12 – Kitchen local exhaust ventilation: Any new mechanical exhaust to accommodate a commercial kitchen would need to be installed in accordance with AS 1668.1 – 1998 and AS 1668.2 – 1991.

    Consideration to the fact that dampers cannot be installed to kitchen exhausts ducts is to be noted and as such the fire rated shaft throughout the building (including plant rooms) would require 180/180/180 FRL construction throughout.

77. BCA Part F5 - Determination of Impact Sound Insulation Ratings: A report from an acoustic consultant is to be submitted prior to the issue of the Construction Certificate to confirm the design complies with the requirements of Part F5.

78. BCA cl. F5.3 - Determination of Impact Sound Insulation Ratings: The walls within the Class 2 & 3 parts of the building that are required to have an impact sound insulation rating must be of discontinuous construction.

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

79. BCA cl. F5.4 – Sound Insulation Rating of Floors: The floors separating the sole occupancy units in the Class 2 & 3 parts of the building as well as between the class 2 & 3 and other classes are required to have an airborne sound insulation rating of not less than 50 and an impact sound pressure level of not more than 62.

80. BCA cl. F5.5 – Sound Insulation Rating of Walls: A wall separating a sole occupancy unit from another part of the building must have an Rw + Ctr airborne of not less than 50 where separating sole-occupancy units. Where separating units from a bathroom, sanitary compartment, laundry, kitchen in another sole occupancy unit or a plant room/ lift shaft/other classification have an Rw (airborne) not less than 50 and be provided with discontinuous construction as per clause F5.3b. the door assembly between the SOU and the public corridors need to achieve and Rw of not less than 30.

    Acoustic engineer to provide an acoustic compliance report at the CC application stage.

81. BCA cl. F5.6 – Sound Insulation rating of Services: Where a duct, soil, waste or water supply pipe passes through more than one sole occupancy unit, the duct or pipe must be separated from the rooms of a sole occupancy unit by construction having an airborne sound insulation rating of not less than 40 if the adjoining room is habitable or 25 if it is a kitchen or non-habitable room.

82. BCA cl. F5.7 – Sound Insulation of Pumps: A design certificate is to be provided from an Acoustic Consultant confirming that the proposed design meets the requirements of part F5.

BCA SECTION G – HEALTH & AMENITY:

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section G of the BCA subject to the compliance with the following:

83. BCA cl. 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 e.g. roof anchors etc.

84. BCA Part G3 – Atrium Construction: The central Atrium in Building A connects 4 consecutive storeys and as such is to comply with the provisions of Part G3 of the BCA. The Atrium necessitates fire and smoke control system considerations and fire services consultants are to consider the provisions under Specification G3.8.

    Given that compliance with the all the Atrium applicable provisions is impractical with the current design, it is understood that the design of the Atrium will also necessitate fire engineering to address the following:

    - Interconnection of fire compartments (consecutive storeys) via the atrium well; and
    - Reduced / omission of fire rated bounding walls to the atrium well;
    - Size of the atrium well.
    - Other deviations identified during design development.

In this regard it is understood that the client will engage the services of an Accredited Fire Safety Engineer to prepare an Alternative Solution report to justify the above at the CC stage.

BCA SECTION J – ENERGY EFFICIENCY

The proposed development will generally satisfy the DTS provisions & Performance Requirements of Section J of the BCA subject to the compliance with the following:

85. BCA Section J Energy Efficiency: The Class 2 Parts of the building will be subject to the Building Sustainability Index (BASIX) which will require the recommendations on the certificate to be ***clearly demonstrated on the Construction Certificate drawings.*** In addition, the DTS requirements of **NSW Variations of Section J(A)** (Energy Efficiency) of the BCA will need to apply to the proposed Class 2 parts of the development.

    The Class 3 services apartments are not subject to compliance with the provisions of the Building Sustainability Index (BASIX). Notwithstanding, the DTS requirements **NSW Variations of Section J(B)** (Energy Efficiency) of the BCA will need to apply.

    The proposed Class 5, 6 & 7a parts of the building will be subject to the Energy Efficiency requirements under this section. In this regard the applicable requirements include J1 – Building Fabric, J2 – External Glazing, J3 – Building Sealing, J5 – Air Conditioning and Ventilation Systems, J6 – Artificial Lighting and Power, J7 – Hot Water Supply and J8 – Access for Maintenance.

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

C. SUMMARY OF COMPLIANCE ISSUES

The following matters at this point in time may need to be the subject to further consideration for design changes or be subject to Alternative Solutions prepared by suitably qualified and Accredited Fire Safety Engineer at the Construction Certificate application Stage.

- Item No. 4 above – (BCA cl C2.2): Alternative Solution required to justify oversized fire compartments created by the Atrium well in the **Building A** part is required – addressing BCA Performance Requirements CP1, CP2 & EP2.2.
- Item No.6 above – (BCA cl. C2.8): Confirmation that the ground floor will in the **Building A** part will adopt the higher Class 6 FRL's throughout the Ground Floor level to negate the need for a fire wall between classifications.
- Item No.10 above – (BCA cl. C2.14): Smoke doors required to the corridors in **Buildings A & B** to limit total length of corridor to less than 40m.
- Item No.16 above – (BCA cl. C3.11): Confirmation as to whether the corridors to the Residential Apartments in the **Building A** part will comply with BCA cl. D2.5 or be assessed as Public corridors under BCA cl. C3.11.
- Item No.23 above – (BCA cl. D1.4): It is understood that the travel distances identified for the Class 2 and 3 parts in **Buildings A and B** will be considered, and that the excessive distances to the exits and point of choice for the other areas will be the subject of an Alternative Solution – addressing BCA Performance Requirements DP4 & EP2.2.
- Item No.24 above – (BCA cl. D1.5): Alternative Solution required to justify excessive egress travel distances in the Residential Apartments within the **Building A** parts between alternative exits – addressing BCA Performance Requirements DP4 & EP2.2.

- Item No.26 above – (BCA cl. D1.7): Confirmation that the glazing to the eastern façade of the retail tenancy in the **Building A** part will be internally drencher protected at the Ground Floor Level, and that an air lock will be provided between the commercial space and the western fire stair in the **Building B** part.

- Item No. 42 above – (BCA cl. D2.20): Directional swing of doorways throughout to be in the direction of egress or addressed under an Alternative Solution at the CC stage – addressing BCA Performance Requirements DP2 & DP4.

- Item No. 45 above – (BCA Part D3): Turning and Passing bays required throughout all parts of the building. Access from Great Western Highway to **Building B** to be subject of an Alternative Solution and al other aspects addressed by Accessibility Compliance Report at CC stage. Any Alternative Solution will need to address BCA Performance Requirements DP1.

- Item No. 46 above – (BCA cl. E1.3): Location of fire hydrant booster assembly & pump room are to be shown on CC drawings to determine whether any deviations are requiring further consideration. Where the locations do not comply, an Alternative Solution will be required to justify these at the CC stage – addressing BCA Performance Requirements EP1.3.

- Item No. 48 above – (BCA Spec E1.5): Location of fire sprinkler booster assembly, valve set & pump room in the basement level are to be addressed under an Alternative Solution at the CC Stage – addressing BCA Performance Requirements EP1.4.

- Item No.52 – (BCA Spec. E2.2): CC drawings to note location of Fire Indicator Panel.

- Item No.70 above – (BCA cl. F2.4): Accessible and Ambulant sanitary facilities required in the basement level bank of toilets.

- Item No. 84 above (BCA Part G3): Atrium construction to be the subject of an Alternative Solution at the CC stage – addressing BCA Performance Requirements CP1, CP2 & EP2.2. Consideration for the location of the required Emergency generator for Stand-by Power supply to also be considered.

D. CONCLUSION

In view of the above assessment it is considered that the proposed building design is capable of complying with the requirements of the BCA2012.

Detailed achievement of compliance, including preparation of any required fire engineered alternative solutions, can be appropriately addressed prior to the issue of the Construction Certification in accordance with the relevant provisions of the Environmental Planning & Assessment Act 1979.

We trust that the above submission is of assistance to the Dept of Planning and we are satisfied that any design modifications required to the building in order to satisfy the fire and life safety and health and amenity requirements of the BCA2012 will not necessitate the need for submission of further applications for modifications under Section 75J of the Environmental Planning & Assessment Act 1979.

Should you wish to discuss any of the above matters in greater detail please do not hesitate to contact the undersigned on 02 9211 7777.

Kind Regards,

Steven Rodriguez
Building Regulations Consultant
Blackett Maguire + Goldsmith Pty Ltd

APPENDIX 1:

TABLE 3 OF SPECIFICATION C1.1 FIRE RESISTANCE LEVELS

BUILDING ELEMENT	Class 3 (SOU's)	Class 6 (Retail)	Class 5 & 7a (Carpark)
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 load bearing parts-			
Less than 1.5m	90/90/90	180/180/180	120/120/120
1.5 to less than 3m	90/60/60	180/180/120	120/90/90
3m or more	90/60/30	180/120/90	120/60/30
For non-load bearing parts-			
Less than 1.5m	--/90/90	--/180/180	--/120/120
1.5 to less than 3m	--/60/60	--/180/120	--/90/90
3m or more	--/--/--	--/--/--	--/--/--
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire source feature to which it is exposed is –			
Less than 3m	90/--/--	180/--/--	120/--/--
3m or more	--/--/--	--/--/--	--/--/--
COMMON WALLS & FIRE WALLS	90/90/90	180/180/180	120/120/120
INTERNAL WALLS			
Fire Resisting lift and stair shafts –			
Loadbearing	90/90/90	180/120/120	120/120/120
Non-loadbearing	--/90/90	--/120/120	--/120/120
Bounding public corridors, public hallways and the like –			
Loadbearing	90/90/90	180/--/--	120/--/--
Non-loadbearing	--/60/60	--/--/--	--/--/--
Between or bounding SOU's –			
Loadbearing	90/90/90	180/--/--	120/--/--
Non-loadbearing	--/60/60	--/--/--	--/--/--
Ventilating, pipe, garbage, and the like shafts not used for the discharge of hot products of combustion –			
Loadbearing	90/90/90	180/120/120	120/90/90
Non-loadbearing	--/90/90	--/120/120	--/90/90
OTHER LOADBEARING INTERNAL WALLS & COLUMNS	90/--/--	180/--/--	120/--/--
FLOORS	90/90/90	180/180/180	120/120/120
ROOFS	Refer to Notes	Refer to Notes	Refer to Notes

APPENDIX 2:

FIRE SAFETY SCHEDULE

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
Access Panels, Doors & Hoppers	BCA Clause C3.13 & AS 1530.4 - 2005
Alarm Signalling Equipment	AS1670.3 – 2004
Automatic Fail Safe Devices	BCA Clause D2.21
Automatic Fire Detection & Alarm System	BCA Spec. E2.2a & AS 1670.1 - 2004.
Automatic Fire Suppression Systems (throughout)	BCA Spec. E1.5 & AS 2118.1-1999
Building Occupant Warning System (throughout) activated by the Sprinkler System and detections system	BCA Spec E1.5, Clause 8 and/ or Clause 3.22 of AS 1670.1 – 2004
Emergency Lifts	BCA Clause E3.4 & AS 1735.2 - 2001
Emergency Lighting	BCA Clause E4.4 & AS 2293.1 - 2005
Emergency Evacuation Plan	AS 3745 - 2002
Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS 2293.1 - 2005
Fire Blankets	AS 3504 - 1995 & AS 2444 – 2001
Fire Dampers	BCA Clause C3.15, AS 1668.1 - 1998 & AS 1682.1 & 2 - 1990
Fire Doors	BCA Clause C2.12, C2.13, C3.2, C3.4, C3.8, 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
Lightweight Construction	BCA Clause C1.8 & AS 1530.3 – 1999
Mechanical Air Handling Systems (automatic shutdown in class 7a part)	BCA Clause E2.2, AS/NZS 1668.1 - 1998 & AS 1668.2 – 1991
Paths of Travel	EP & A Regulation Clause 186
Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
Required Exit Doors (power operated)	BCA Clause D2.19(b)
Stand By Power	BCA Specification G3
Sound System and Intercom System for Emergency Purposes (throughout)	BCA Clause E4.9, BCA Spec G3 & AS 1670.4 – 2004 & AS 4428.4 - 2004
Smoke Control/Exhaust Systems (Atrium)	BCA Spec E2.2b, BCA Spec G3 and AS1668.1-1998
Smoke Dampers	BCA Spec E2.2a
Smoke & Heat Alarms	BCA Spec E2.2a & AS3786-1993 and/or AS1670.1-2004
Wall-Wetting Sprinklers	BCA Clause C3.4, D1.7, Spec G3 & AS 2118.2 – 1995
Warning & Operational signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 - 2005, BCA Clause D2.23, E3.3
Fire Engineered Alternative Solutions(TBC)	Fire Engineered Alternative Solutions(TBC)

Notes: The standards of performances nominated above may vary as a result of the proposed fire engineered Alternative Solutions.