NATIONAL CONSTRUCTION CODE REPORT

MIXED-USE DEVELOPMENT

118-120 STATION STREET PENRITH

PREPARED FOR JIM AITKEN

18 NOVEMBER 2020

DESIGN RIGHT
CONSULTING

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EXECUTIVE SUMMARY

This report has been prepared to identify the extent of compliance achieved by the assessment of the architectural documentation for the proposed development against the relevant provisions of the National Construction Code 2019 (NCC) Building Code of Australia, Amendment 1 and its adopted standards.

The proposed development consists of the construction of a new seven (7) storey mixed use building containing residential apartments with retail/commercial tenancy and two levels of basement carparking located at 118-120 Station Street Penrith.

This report will provide a NCC analysis to assist in the process of design development and to assist the consent authority in the determination of the Development Application relating to the works.

The application for Construction Certificate shall be assessed under the relevant provisions of the Environmental Planning & Assessment Act 1979 (As Amended) and the Environmental Planning & Assessment Regulation 2000.

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REPORT DETAILS

PROPOSED DEVELOPMENT

The proposed development consists of the construction of a new seven (7) storey mixed use building containing residential apartments with retail/commercial tenancy and two levels of basement carparking located at 118-120 Station Street Penrith.

LOCATION

The subject development is located at located at Lot 5 DP 112466, known as 118-120 Station Street Penrith.

The site is within the jurisdiction of Penrith City Council for the purposes of development approvals.

REFERENCED DOCUMENTS

The following documents have been reviewed, referenced and/or relied upon in the preparation of this report.

- National Construction Code 2019 (NCC) Building Code of Australia, Amendment 1
- Architectural Plans as prepared ADS Architects (Appendix 1)
- Environmental Planning and Assessment Act 1979

CURRENT LEGISLATION

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979. This Act requires that all new building works must be designed to comply with the NCC. However the existing features of an existing building need not to comply with the NCC unless an upgrade is required by other clauses of the legislation

The version of the NCC applicable to the development, is the version that in place at the time of the application of the Construction Certificate.

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REPORT PURPOSE

This report has been prepared to identify aspects of the proposed design that require further consideration and to identify aspects of the design that may be altered subsequent to the issue of a Development Consent

This report has been prepared on the basis of an assessment of compliance only and should not be construed as being design advice. Further detailed assessment and design documentation will need to be provided prior to the issue of a Construction Certificate

EXCLUSIONS AND LIMITATIONS

Except as mentioned in the report, the limitations and exclusions of this report are as follows -

- Structural adequacy;
- Fire resistance of primary structural elements;
- Design basis or operating capability of the installed electrical, fire, hydraulic or mechanical services;
- Compliance with the *Disability Discrimination Act 1992;*
- Local Government Act and Regulations
- Alternative Solution Reports

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NATIONAL CONSTRUCTION CODE ASSESSMENT

BUILDING DESCRIPTION

Use/Classification	Class 2 - Residential Class 6 - Retail Class 7a – Carpark/Loading Dock
Rise in Storeys	The development will have a rise of seven (7) storeys
Floor Area	The maximum floor areas for fire compartments are not applicable to the Class 2 part and Class 7a Sprinkler protected. Class 6- Max floor area- 5000m2 Class 6 portions do not exceed the maximum size of fire compartments in part C2.2 of the NCC 2019.
Volume	The maximum volume provisions for fire compartments are not applicable to the Class 2 and Class 7a Sprinkler protected. Class 6 - Max floor volume 30000 m3. Class 6 portions do not exceed the maximum size of fire compartments in part C2.2 of the NCC 2019.
Effective Height	The building will have an effective height greater than 12m. (20.29m)
Type of Construction (NCC)	The building requires Type A construction throughout
Climate zone	For the purpose of Section J the climate zone is 6

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STRUCTURE (SECTION B, NCC)

STRUCTURAL PROVISIONS

The development is to be designed so the structure will resist loads determined:

- AS 1170.0/1–2002, AS 1170.2–2011,
- AS 1170.3 – 2011,
- AS 2159-2009 - Piling — Design and installation
- AS 2870-2011 - Residential slabs and footings — Construction
- AS 3700-2011 - Masonry structures
- AS 4100-1998 - Steel structures
- AS/NZS 4600 - 2005 - Cold-formed steel structures.

Structural engineer's certification is to be provided confirming that their design meets all the relevant provisions of the NCC as well as all relevant structural standards at the Construction Certificate stage.

FIRE RESISTANCE AND STABILITY (SECTION C, NCC)

FIRE RESISTANCE

The building is to comply with Clause C1.1 and Clause 2 & 3 of Specification C1.1, for a building required to have Type A construction. Refer to Table 3 of Specification C1.1 for the specific Fire Resistance Levels [FRL's].

Structural: the ability to maintain stability and adequate load-bearing capacity as determined by AS 1530.4.
Integrity: the ability to resist the passage of flames and hot gases specified in AS 1530.4.
Insulation: The ability to maintain a temperature on the surface not exposed to the furnace below the limits specified in AS 1530.4.

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

Where lightweight fire rated construction is proposed for walls, the system must comply with Specification C1.8 of NCC and the manufactures tested specification. Furthermore, the system proposed must be consistent with sound and energy efficiency requirements with Part F5 and Part J of NCC.

Columns protected with lightweight fire rated construction that are subject to mechanical damage must be protected and/or internally filled in accordance with Clause C1.8(b) of NCC.

Any proposed Aluminium Composite Panels for the external walls must comply with the NCC and its required Standards and is to be reviewed and certified by the Certifying Authority at Construction Certificate stage.

COMPARTMENTATIONS AND SEPERATIONS

The key areas for consideration with regards to compartmentation and separation are as follows:

- Each sole occupancy unit within the building, being each individual room or suite of rooms, must be separated by construction achieving an FRL of not less than 90/90/90 for load bearing or -/60/60 for non-load bearing.
- The car parking/loading dock areas must be separated from the remainder of the building by construction having an FRL not less than 120/120/120.
- The retail areas must be separated from the remainder of the building by construction having an FRL not less than 180/180/180.
- The lift shaft must be constructed with an FRL not less than 120/120/120 to the carpark levels, 180/180/180 to retail level and 90/90/90 to the apartment levels.

Construction of firewalls and openings must comply with Part C2.7, C2.8 and Specification C1.1 of NCC.

Please note that intervening floors between different classes are required to have a potential increase in FRL, the greater FRL of the two is required in compliance with Clause C2.9 of NCC.

The proposed development is capable of achieving the required FRL's, and is to be confirmed by the structural engineer at the Construction Certificate phase.

PROTECTION OF OPENINGS

All openings that require protection will be address via the deemed to satisfy provisions contained within Part C3 of the NCC.

The openings within 3m of the north eastern boundary, ground floor (fire source feature) is to be protected in accordance with C3.4 or via an performance solution which is to be prepared and addressed at the Construction Certificate stage.

BOUNDING CONSTRUCTION

Bounding construction between residential sole occupant units (SOU), doorway, openings and external walls along the path of travel to an exit, from all levels is to comply with the provisions of Specification C1.1, and Clause C3.11 of NCC.

All entry doors to residential units must be protected by self-closing -/60/30 fire doors.

VERTICAL SEPARATION OF OPENINGS

Spandrel separation and horizontal slab construction of external openings are not required in accordance with Clause C2.6 of NCC as a Sprinkler system proposed throughout the building.

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FIRE HAZARD PROPERTIES

The wall and floor linings must achieve the fire hazard properties stipulated in NCC Specifications C1.10.

FIRE SEALING OF PENETRATIONS

All service penetrations must be sealed to the requirements of Clause C3.12 and C3.15 of NCC

Garbage room and garbage service shafts, (including walls, floors, ceilings. doors and shutters) must be protected in accordance with C3.12, C3.13 as per NCC.

PROTECTION OF EQUIPTMENT

The following equipment is to be fire separated with construction complying with Clause C2.12 (d) of NCC.

(i) lift motors and lift control panels; or
(ii) emergency generators used to sustain emergency equipment operating in the emergency mode; or
(iii) central smoke control plant; or
(iv) boilers; or
(v) a battery or batteries installed in the building that have a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours.

Separation of on-site fire pumps must comply with the requirements of AS 2419.1-2005.

ELECTRICAL SUPPLY SYSTEM

Electrical equipment is to be separated from the building in accordance with Clause C2.13 of NCC

Any substation and/or main switchboard is to be constructed to achieve a fire resistance level of 120/120/120 with the door being -/120/30 fire rated, unless higher FRL's required by electrical providers

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ACCESS & EGRESS (SECTION D, NCC)

NUMBER OF EXITS REQUIRED

The number of exits required is considered to comply with D1.2 of BCA on all above ground levels.

However, a single exit has been provided the on both basement levels, which does not comply as two exits are required as per D1.2 of the BCA.

The non-compliance with the Deemed To Satisfy provisions will be subject to an performance solution to address the relevant Performance Requirements of the BCA, as advised by the Client

EXIT TRAVEL DISTANCE

Exit travel distances to a required exit or a point of choice between exits does not comply with BCA Clause D1.4 in the following locations:

- Travel distance to a exit on both basement car parking levels exceeds 20m permitted (up to 40m). (Confirmation by Certifying Authority and Fire Engineer is required for support of this non-compliant travel distance prior to CC.)
- Travel distance to a exit on the ground floor loading dock exceeds 20m permitted (up to 30m).

The non-compliance with the Deemed to Satisfy provisions will be subject to an performance solution to address the relevant Performance Requirements of the BCA, as advised by the client.

Travel distance to an exit or point of choice concessions apply to this Class 2 parts of the building as a sprinkler system is to be provided as per Specification E1.5a.

TRAVEL VIA FIRE/NON FIRE ISOLATED EXITS

The fire-isolated stairway as a required exit must provide a continuous means of travel by its own flights and landings from every storey served to the level at which egress to a road or open space is provided.

The discharge and path of travel from descending fire stairs on the ground floor (Reserve Street) do not comply with D1.7 as it passes opening with 6m to the road that are unprotected.

This non-compliance with the Deemed To Satisfy provisions will be subject to an performance solution to address the relevant Performance Requirements of the BCA, as advised by the Client.

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DIMENSIONS OF EXITS

Exits and paths of travel to exits are to comply with D1.6 of NCC. Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm (note that all maintenance access, cat walks, etc. may comply with AS1657 in which case a 600mm clear width is required).

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm, with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 870 mm doors).

CONSTRUCTION OF STAIRWAYS

Goings and Risers

Goings and risers are to be designed to comply with the provisions of Clause D2.13 of NCC.

Landings

Landings are to be designed to comply with the provisions of Clause D2.14 of NCC.

Thresholds

Thresholds are to be designed to comply with the provisions of Clause D2.15 of NCC. Please note D2.15(c), which requires a threshold ramp complying with AS 1428.1-2009.

ELECTRICAL DISTRIBUTION BOARDS

Electrical distribution boards located in the path of travel to an exit must be enclosed in a non-combustible enclosure and sealed to prevent the escape of smoke.

EGRESS DOORS

All required exit doorways are either swinging or automatic doors complying with the provisions of NCC Clause D2.19.

All doors acting, as exits are required to swing in the direction of egress are also required to be provided with the appropriate hardware in accordance with Clauses D2.20 & D2.21 of the NCC.

BARRIERS TO PREVENT FALLS

Barriers must be provided for all areas where it is possible to fall more than 1m. Barriers are to be designed in accordance with Clauses D2.16 of the NCC.

Balustrades protecting a difference in levels of over 4m must not have horizontal elements between 150mm and 760mm of the floor that facilitate climbing.

HANDRAILS

Handrails are to be provided to stairways as required by Clause D2.17 of the NCC, including internal stairs within a residential SOU

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SIGNAGE

Signage must be provided to all fire safety doors (except those doorways providing access to sole occupancy units) and to doors leading from enclosed stairways as required Clause D2.23 and D3.6 of the NCC.

PROTECTION OF OPENABLE WINDOWS

Windows in bedrooms where the floor is more than 2 m above the surface beneath require restricted openings or protection in accordance with D2.24 of NCC.
All other parts of the buildings that are not part of the Class 2 portion of the building must also be protected with D2.24 of NCC.

ACCESS FOR PEOPLE WITH DISABILITIES.

The building will be capable of providing disabled access compliant with Part D3 of the NCC and Access to Premises Standards.

The proposed building is required to comply with the following:

- The Disability Discrimination Act 1992 (Commonwealth);
- The Disability (Access to Premises — Buildings), Standards 2010;
- Part D3 of NCC;
- Australian Standard AS 1428.1-2009.

Buildings and parts of buildings must be accessible as required by Table D3.1, unless exempted by D3.4, which requires access as follows:

Class 2 – Common areas.

From a pedestrian entrance required to be accessible to at least 1 floor containing sole-occupancy units and to the entrance doorway of each sole-occupancy unit located on that level.

To and within not less than 1 of each type of room or space for use in common by the residents, including a cooking facility, sauna, gymnasium, swimming pool, common laundry, games room, individual shop, eating area, or the like.

Where a ramp complying with AS 1428.1 or a passenger lift is installed—

a) to the entrance doorway of each sole-occupancy unit; and
b) to and within rooms or spaces for use in common by the residents, located on the levels served by the lift or ramp

Class 6 - To and within all areas normally used by the occupants.

Class 7a – To and within any level containing accessible carparking spaces

A separate Access report by has been provided on this project.

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SERVICES AND EQUIPMENT (SECTION E, NCC)

HYDRANT SYSTEMS

The building will be provided with a hydrant system in accordance with the provisions of Clause E1. 3 of the NCC and AS 2419.1- 2005.

Location of the booster assembly unit will require to be protected and it is not located on the main address of Station Street, this will be subject to an performance solution to address the relevant Performance Requirements of the BCA.

The design of the service will be subject to review by a hydraulic consultant and confirmed compliance prior to the issue of the Construction Certificate stage.

HOSE REEL SYSTEMS

The car parking levels, and retail tenancies will be provided with a fire hose reel system in accordance with the provisions of Clause E1.4 of the NCC and AS 2441-2005.

Locations of fire hose reels are required to be located 4m from an exit.

The design of the service will be subject to review by the hydraulic services consultant.

PORTABLE FIRE EXTINGUISHERS

Fire extinguishers will be provided in accordance the provisions of Clause E1.6 of the NCC and AS2444 - 2001.

Portable fire extinguishers provided for the apartments must be an ABE type fire extinguisher, a minimum size of 2.5 kg, distributed outside a sole-occupancy unit to serve only the storey at which they are located and positioned so that the travel distance from the entrance doorway of any sole-occupancy unit to the nearest fire extinguisher is not more than 10m.

SPRINKLER PROTECTION

The entire building will be protected by a sprinkler system throughout complying with Clause E1.5 and Spec E1.5 of the NCC and AS2118.1.

Location of sprinkler booster assembly and sprinkler pump room not provided on the plans at this stage.

The design of the service will be subject to review by the hydraulic/fire consultant.

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SMOKE HAZARD MANAGEMENT

The building will be provided with a smoke management system in accordance with the provisions of Table E2.2a and Specification E2.2a of the NCC.

The building will require:

- Class 2: An automatic smoke detection and alarm system in accordance with Clause 3 and 4 of Specification E2.2a and AS 3786-1993/2014.
- Class 6: An automatic smoke detection and alarm system complying with Specification E2.2a
- Class 7a: Carpark requires mechanical ventilation system on the ground floor in accordance with AS 1668.2 and Clause 5.5 of AS/NZS 1668.1.
- Occupancy warning system compliant with clause 7 of Specification E2.2a and AS 1670.1-2015 to be provide throughout the entire building.

The design of the service will be subject to review by a fire services consultant.
Evidence with compliance with E2.2 of NCC is required prior to the issue of the Construction Certificate.

EMERGENCY LIGHTING.

Emergency lighting will be provided throughout the building in accordance with Clauses E4.2 & E4.4 of the NCC and AS2293.1 - 2005.

The design of the service will be subject to review by the electrical services consultant.

EXIT SIGNS.

Exit signs will be provided throughout the building in accordance with Clauses E4.5, E4.6 & E4.8 of the NCC and AS2293.1- 2005

The design of the service will be subject to review by the electrical services consultant.

LIFTS

A stretcher facility in all the lift will be required in accordance with Clause E3.2 of the NCC, as the building has an effective height of greater than 12m.

A sign must be provided in accordance with Clause E3.3 of the NCC warning against the use of lifts in a fire.

The proposed lifts shall also comply with all requirements nominated by AS1735.12 and Clause E3.6 of the NCC, with regards to facilities for people with disabilities.

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HEALTH AND AMENITY (SECTION F, NCC)

DAMP & WEATHERPROOFING.

Adequate measures will be employed to ensure compliance Part F1 of the NCC is achieved in terms of damp and weatherproofing.

SANITARY & OTHER FACILITIES.

Facilities will be provided in accordance with the provisions of Clause/Table F2.3 of the NCC.

All sanitary compartments that have proposed in-swinging doors are required to be 1.2m from the WC pan, or lift off hinges are provided as per F2.5 of NCC.

Sanitary facilities for persons with a disability serving the retail tenancies and community function area are to be designed accordance with the provisions of AS1428.1 – 2009.

CEILING HEIGHT

The following minimum building ceiling heights must be maintained.

- Common kitchen, laundry or the like – 2.1m
- Corridor, passageway or the like – 2.1m
- Bathroom, shower, sanitary compartment or the like – 2.1m
- Habitable rooms including common areas – 2.4m
- Stairways – 2.0m
- Car parking areas – 2.2m
- Disabled car parks – 2.5m including a 2.3m path of travel height

VENTILATION

The building is required to be provided with ventilation in accordance with the provisions of Clause F4.5 of the NCC. Ventilation may be provided by a natural means or a mechanical system complying with AS 1668.2- 1991.

LIGHTING

Natural lighting to sole occupancy units and artificial lighting must be provided throughout the building in accordance with F4.2 and F4.4 of the NCC and AS/NZS1680.0-1998.

Artificial lighting may be provided throughout the remained of the building in accordance with the provisions of Clause F4.4 of the NCC and AS1680.1.

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SOUND INSULATION

The floor separating the residential units and separating the sole occupancy units from public areas must achieve a sound insulation rating of Rw+Ctr (airborne) of not less than 50 and an Ln,w+Ci (impact) not more than 62.

Walls separating units must achieve a sound insulation rating of Rw+Ctr (airborne) of not less than 50.

Walls separating units from plant rooms, lift shafts, stairways corridors or other public areas must have an insulation rating of Rw (airborne) not less than 50.

Walls separating a bathroom, sanitary compartment, laundry or kitchen in one sole occupancy unit from a habitable room in another or separating a unit from a lift shaft must be of discontinuous construction.

The doorway separating to sole occupancy unit from the public area must have an Rw not less than 30

Soil, waste & stormwater services must be separated by construction having an Rw+Ctr (airborne) not less than

- 40 if the room is a habitable room
- 25 if the room is a non-habitable room

ANCILLARY PROVISIONS (SECTION G, NCC)

CLEANING OF WINDOWS

As per NSW Clause G1.101 a building must provide for a safe manner of cleaning any windows located 3 or more storeys above ground level.

This is satisfied where—

i. the windows can be cleaned wholly from within the building; or
ii. provision is made for the cleaning of the windows by a method complying with the Work Health and Safety Act 2011 and regulations made under that Act.

OCCUPIABLE OUTDOOR AREAS

The occupiable outdoor area on the level 6 is required to comply with Part G6 of the NCC 2019. Confirmation of compliance is required at the Construction Certificate stage.

ENERGY EFFICIENCY CONSTRUCTION (SECTION J, NCC)

Please be advised that the development requires to comply with of Part J of the NCC 2019. It is recommended at the time of obtaining a Construction Certificate that a separate report is provided by an Energy Efficiency Consultant.

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RECOMMENDATIONS

Subsequent to our assessment of the proposed development, it is recommended that the following matters are to be addressed to comply with the NCC utilising either as the 'deemed to satisfy' provisions or via an alternate solution under the performance requirements (as advised by the client):

- The openings within 3m of the north eastern boundary, ground floor (fire source feature) is to be protected in accordance with C3.4 or via an performance solution which is to be prepared and addressed at the Construction Certificate stage.
- Two exits are not provided in the on both basement levels as noted as per D1.2 of BCA
- Travel distances to a required exit or a point of choice between exits does not comply with D1.4 of NCC.
- The discharge and path of travel from descending fire stairs on the ground floor do not comply with D1.7.
- The building will be provided with a hydrant system in accordance with the provisions of Clause E1.3 of the NCC and AS 2419.1- 2005.
- The entire building will be protected by a sprinkler system throughout complying with Clause E1.5 and Spec E1.5 of the NCC and AS2118.1.

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CONCLUSION

It is the opinion of this office that, on satisfaction of the above recommendation, the proposed building is capable of achieving compliance with the requirements of the National Construction Code 2019 (NCC) Building Code of Australia, Amendment 1, and relevant adopted standards without undue modification to the design or appearance of the building.

Whilst the above recommendation have been made as a means of achieving compliance with the various provisions of NCC Performance Requirements their acceptability has not been verified at this time. It will be necessary for the design to be reviewed by an appropriately qualified person prior to the issue of a Construction Certificate for the works.

ALEKS STOJCEVIC
DIRECTOR

DESIGN RIGHT CONSULTING PTY LTD 18 November 2020.

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APPENDIX A – DOCUMENTATION

The following documentation was used in the assessment and preparation of this report:

Dwg No.	Tittle	Drawing Scales	Current Issue
0000	Title Sheet	1:1, 1:100	04 - WIP
0301	Demolition Plan	1:100	03 - WIP
0302	Site Management and Sediment Plan	1:200	04 - WIP
0303	Consolidation Plan	1:100	02 - WIP
0401	Site Plan	1:100	04 - WIP
1101	LOWER BASEMENT FLOOR	1:100	05 - WIP
1102	UPPER BASEMENT FLOOR	1:100	05 - WIP
1201	GROUND FLOOR	1:100	05 - WIP
1301	FIRST FLOOR	1:100	04 - WIP
1302	SECOND FLOOR	1:100	04 - WIP
1303	THIRD FLOOR	1:100	04 - WIP
1304	FOURTH FLOOR	1:100	04 - WIP
1305	FIFTH FLOOR	1:100	04 - WIP
1306	SIXTH FLOOR	1:100	04 - WIP
1401	ROOF	1:100	04 - WIP
1501	North & South Elevations	1:100	04 - WIP
1502	East & West Elevations	1:100	04 - WIP
1601	Section 01 & 02	1:100	04 - WIP
1602	Section 03	1:100	05 - WIP
1603	Detail Section		02 - WIP
3001	TYPICAL ACCESSIBLE UNIT CONFIGURATION	1:200, 1:50	04 - WIP
3021	GROUND FLOOR - GFA	1:100	04 - WIP
3022	FIRST FLOOR - GFA	1:100	04 - WIP
3023	SECOND FLOOR - GFA	1:100	04 - WIP
3024	THIRD FLOOR - GFA	1:100	04 - WIP
3025	FOURTH FLOOR - GFA	1:100	04 - WIP
3026	FIFTH FLOOR - GFA	1:100	04 - WIP
3027	SIXTH FLOOR - GFA	1:100	04 - WIP
3041	NOTIFICATION PLANS 1/2	1:100	04 - WIP
3042	NOTIFICATION PLANS 2/2	1:200	04 - WIP
3061	GROUND FLOOR - BASIX	1:100	02 - WIP
3062	FIRST FLOOR - BASIX	1:100	02 - WIP
3063	SECOND FLOOR - BASIX	1:100	02 - WIP
3064	THIRD FLOOR - BASIX	1:100	02 - WIP
3065	FOURTH FLOOR - BASIX	1:100	02 - WIP
3066	FIFTH FLOOR - BASIX	1:100	02 - WIP
3067	SIXTH FLOOR - BASIX	1:100	02 - WIP
6001	FINISHES SCHEDULE 1/2	1:100	01
6002	FINISHES SCHEDULE 2/2	1:100	01
8001	SHADOW DIAGRAMS	1:500	04 - WIP

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APPENDIX B – DRAFT PROPOSED FIRE SAFETY SCHEDULE

ESSENTIAL FIRE SAFETY MEASURES	STANDARD OF PERFORMANCE
Access panels, Doors and Hoppers to Fire-resisting shafts	BCA 2019 Clause C3.13
Automatic fail safe devices	BCA 2019 Clause C3.4, D2.21, AS 1670.1-2015
Automatic fire detection and alarm system	BCA 2019 Spec E2.2a, AS 1670.1-2015 , AS 3786-2014
Automatic fire suppression system (sprinkler)	NCC 2019 Clause E1.5, AS 2118.1-1999
Emergency lighting	BCA 2019 Clause E4.2 & E4.4, AS 2293.1-2005
Exit signs	BCA 2019 Clause E4.5 & E4.8, AS 2293.1-2005
Fire dampers	AS 1668.1- 2015
Fire doorset	BCA 2019 Clause C2.12, C2.13, C3.4, C3.6, C3.8, C3.11, AS 1905.1-2015
Fire Engineering	Fire Engineer Guidelines (TBA)
Fire hose reel systems	BCA 2019 Clause E1.4, AS 2441-2005
Fire hydrant systems	BCA 2019 Clause E1.3, AS 2419.1-2005
Fire seals (protecting openings in fire resisting components of the building)	BCA 2019 Clause C3.15
Lightweight fire rated construction	BCA 2019 Clause C1.8, BCA Spec C1.8
Mechanical air handling system	AS 1668.1-2015, AS 1668.2-2012
Paths of travel, stairways, passageways or ramps	BCA 2019 Part D1 & D2
Portable fire extinguishers	BCA 2019 Clause E1.6, AS 2444-2001
Warning and operational signage (e.g. stairway notices)	BCA 2019 Clause D2.23 & E3.3, EP&A Act Form 15B

APPENDIX C - FIRE RESISTANCE LEVELS

The table below represents the Fire resistance levels required in accordance with NCC 2019:

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

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