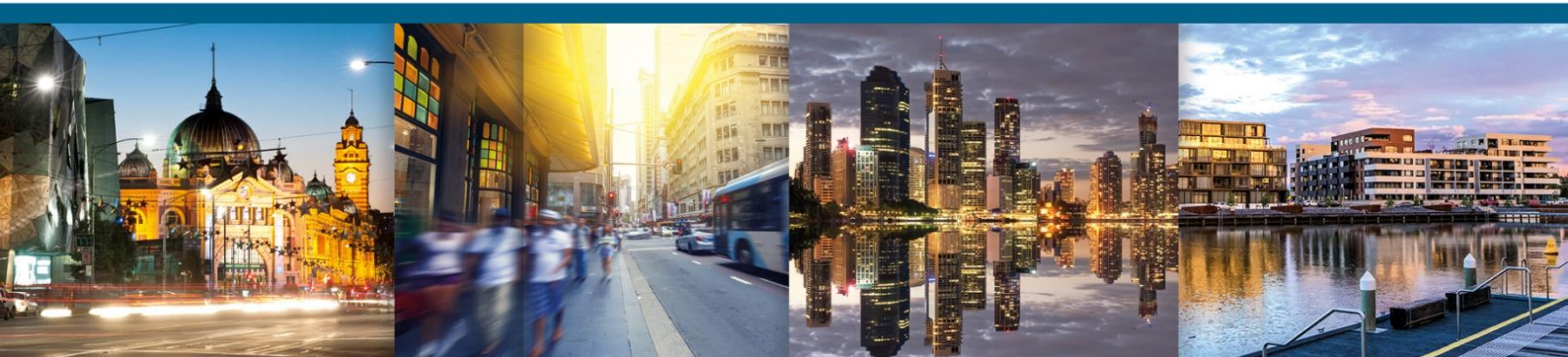




Manufacturer

2131 Castlereagh Road
Penrith

Preliminary BCA and Certification Assessment Report



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1. Introduction

This report presents the findings of a preliminary assessment of the proposed development at 2131 Castlereagh Road, Penrith against the Deemed-to-Satisfy (DtS) provisions of Building Code of Australia (BCA) 2019 Amendment 1.

It has been prepared by building regulations consultants and certifiers from Steve Watson and Partners for Aon Ari Property.

2. Purpose

The purpose of this report is to identify issues and omissions in the audited documentation that are required to be addressed to permit the lodgement and approval of an application for a Construction Certificate under Part 6 of the EP&A Act.

The scope of this assessment is limited to the design documentation referenced in Appendix A of this report.

3. Scope and Limitations

3.1 Scope

The scope of this assessment is limited to the the design documentation provided by SJB Architects.

3.2 Limitations

The following limitations apply to the assessment:

- The report considers matters of a significant nature only and should not be considered exhaustive.
- The plans are assessed to the extent necessary to apply for a development application. This means the design has been assessed to be capable of complying with the BCA without necessarily having all the detailed design completed at this stage.
- Details in regard to access for people with disabilities have been assessed to the extent of the deemed-to-satisfy provisions of the BCA/Premises Standard only. A detailed assessment against AS 1428 series, AS/NZS 2890.6 – 2009 and AS 4299 – 1995 is outside the scope of this report
- Generally, the assessment does not incorporate a detailed assessment of the requirements of the Australian Standards.
- Structural and services documentation have not been reviewed.
- Appraisals are limited to the provisions of the BCA. Other legislative requirements have not been considered. It does not address additional or specific requirements stipulated under other areas such as Safety in Design, Construction Safety, Disability Discrimination, Planning and Environment, Occupational Health and Safety, Health, Dangerous Goods, etc, which may impact on the design and use of the building. It is recommended that appropriate advice from suitably qualified consultants should be obtained for further information on these areas.



4. National Construction Code 2019 –Volume 1: Building Code of Australia 2019 Amendment 1 Class 2 to Class 9 Buildings

The National Construction Code (NCC) is a uniform set of technical provisions for the design and construction of buildings, structures and plumbing/drainage systems which is separated into 3 volumes. Volume 1 of the NCC is the Building Code of Australia (BCA) for Class 2 to 9 buildings which is the document to which the assessment in this report has been undertaken against. The BCA is legislated under The Act and specifies the Performance Requirements for the design and construction of Class 2 to 9 buildings that must be satisfied to achieve compliance. The Performance Requirements can only be satisfied by a Performance Solution, Deemed-to-Satisfy (DTS) solution or a combination of both.

5. Performance Solutions

The BCA is written in a performance format which allows performance-based buildings. This has allowed for innovation and variation from the prescriptive deemed-to-satisfy requirements of the BCA, whilst maintaining the principle levels of health, safety and amenity of building occupants.

Performance solutions are generally adopted when a nominated deemed-to-satisfy provision appears inappropriate for the design, or when a proposed design varies from the prescriptive requirements of the BCA. Subsequently, a performance solution supported by Fire Engineering analysis can determine whether a proposed design that varies from prescriptive requirements, will satisfactorily meet the performance provisions of the BCA. Ultimately, it is with the discretion of the relevant building surveyor whether to accept a deviation from the prescriptive code requirements.

Utilising the performance provisions may result in more economical and somewhat safer building, however alternative solutions may require additional on-going maintenance. It is in this instance that all parties, such as the building owner, insurance companies, proposed tenants, etc., are aware of this decision-making process and are kept informed of any additional requirements needed to maintain the level of safety.

6. Statutory Framework

The following table summarises the key statutory issues relating to fire safety and the BCA in relation to the certification of new building works.

Issue	Legislative reference	Comment
Existing building fire safety	EPAR 94	Council may require upgrading in some circumstances
Alts and adds – change in building use	143(1)	Fire safety to be upgraded in affected part of building. Structural adequacy to be signed off Category 1 fire safety provisions to be upgraded. (Hydrants, sprinklers, fire control centres, smoke detection, smoke hazard management, emergency lifts.)
Alts and adds – no change in use	EPAR 143(3)	No reduction in the level of safety permitted
New Work	EPAR 145	All new works must comply
Access to premises	Disability (Access to Premises - Buildings) Standards 2010	Upgrade of the “Affected Part” to provide access for people with disabilities



6.1 New Work

Clause 145 of the EPAR requires that all new work comply with the current requirements of the BCA.

This means that all works proposed in the plans are required to comply but that existing features of an existing building need not comply with the BCA unless required to under other clauses of the legislation.

6.2 Consent authority may require building to be upgraded

When determining a development application, a Consent Authority (Council) is required to assess fire safety in an existing building under Clause 94 of the EPAR.

The assessment must consider whether the measures contained in a building are inadequate

- (i) to protect persons using the building and facilitate their egress in the event of a fire or
- (ii) to restrict the spread of fire between buildings.

In determining a development application, the consent authority is to take into consideration whether it would be appropriate for the building to be brought into total or partial conformity with the BCA. Normally this discretionary power would only be enacted in the following circumstances:

- the proposed scope of works encompasses a large portion of the building so that a total building upgrade would not be considered an onerous requirement (ie ½ the total volume of the building including other works undertaken in the last 3 years) ;
- the upgrading measure(s) significantly increase the level of safety and are able to be cost-effectively incorporated into the proposed works so that they would not be considered an onerous requirement
- the existing level of safety is so deficient that the council consider a upgrade is necessary irrespective of the scope of works proposed.

6.3 No change of building use - structural strength and fire safety

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

6.4 Change of building use - structural strength and fire safety

If a change in use is involved under the application, Clause 143 (1) of the EPAR requires that the fire protection (egress), structural capacity and Category 1 Fire Safety provisions must be applicable to the new use of the building.

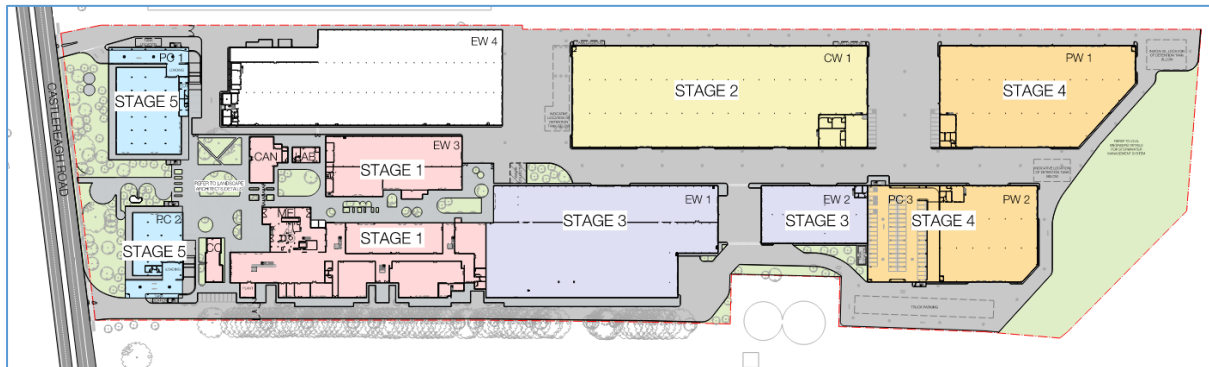
6.5 Access to premises

The Disability (Access to Premises – Buildings) Standards came into force via BCA2011 throughout Australia on 01 May 2011, and with it introduced a higher standard of access to that required by previous versions of the BCA. In prescribed circumstances, the legislation requires upgrade of access and facilities for persons with disabilities when building work is proposed. In particular, unless works are undertaken by a lessee who does not lease the entire building, proposed building work anywhere in the building could trigger a need for enhanced access at the main building pedestrian entry and from that entry to all areas of the building that are subject to the building work.

7. Description of Proposed Development

The proposed works involve proposed new buildings including carpark and warehouses, as well as alteration to existing warehouses:

- Stage 1 including alteration to existing Class 8 warehouse buildings EW1 and EW3
- Stage 2 including proposed new Class 8 warehouse CW1
- Stage 3 including alteration to existing Class 8 warehouse buildings EW1 and EW2
- Stage 4 including proposed new Class 8 warehouse PW1 and PW2, and proposed new Class 7a carpark PC3
- Stage 5 including proposed new buildings PC1 & PC2 consisting of Class 7a carpark & Class 7b warehouse



Summary of Construction Determination

BCA Classification	PC1: Class 7a and Class 7b PC 2: Class 7a and Class 7b Existing Warehouse 1 (EW1): Class 7b Existing Warehouse 3 (EW3): Class 7b CW1: Class 7b PW1: Class 7b PW2: Class 7b Proposed Carpark 3 (PC3): Class 7a
Number of storeys contained	Proposed Carpark 1 (PC1): 4 Storeys Proposed Carpark 2 (PC2): 4 Storeys Existing Warehouse 1 (EW1): 2 Storey (assume the Meltor platform and plant level only contains heating, ventilating or lift equipment, water tanks in accordance with C1.2) Existing Warehouse 2 (EW2): 2 Storey Existing Warehouse 3 (EW3): 2 Storeys CW1: 2 Storeys PW1: 2 Storeys PW2: 2 Storeys Proposed Carpark 3 (PC3): 5 Storeys



Summary of Construction Determination

Rise in storeys	<p>Proposed Carpark 1 (PC1): 4 Storeys</p> <p>Proposed Carpark 2 (PC2): 4 Storeys</p> <p>Existing Warehouse 1 (EW1): 2 Storey (assume the Meltor platform and plant level only contains heating, ventilating or lift equipment, water tanks in accordance with C1.2)</p> <p>Existing Warehouse 2 (EW2): 2 Storey</p> <p>Existing Warehouse 3 (EW3): 2 Storeys</p> <p>CW1: 2 Storeys</p> <p>PW1: 2 Storeys</p> <p>PW2: 2 Storeys</p> <p>Proposed Carpark 3 (PC3): 5 Storeys</p>
Type of construction required	<p>Proposed Carpark 1 (PC1): Type A Construction & Large Isolated Building</p> <p>Proposed Carpark 2 (PC2): Type A Construction & Large Isolated Building</p> <p>Existing Warehouse 1 (EW1): Type B Construction & Large Isolated Building</p> <p>Existing Warehouse 2 (EW2): 2 Storey: Type C Construction (assuming EW2, PC3 and PW2 do not form a large isolated building)</p> <p>Existing Warehouse 3 (EW3): Type C Construction & Large Isolated Building or Type B Construction</p> <p>CW1: Type C Construction & Large Isolated Building</p> <p>PW1: Type C Construction & Large Isolated Building or Type A Construction</p> <p>PW2: Type C Construction & Large Isolated Building or Type B Construction (assuming EW2, PC3 and PW2 do not form a large isolated building)</p> <p>Proposed Carpark 3 (PC3): Type A Construction & Large Isolated Building (assuming EW2, PC3 and PW2 do not form one large isolated building)</p>
Effective height	All buildings less than 25m in effective height
Floor area	To be provided by Architect

8. Relevant Authorities

Where an alternative solution is proposed to meet the performance requirements contained in any one or more of the Category 2 fire safety provisions referral to Fire and Rescue NSW under Clause 144 of the EP&A Regulations is required in either of the following types of buildings:

- a. A building that is proposed to have:



- a) A fire compartment with a total floor area of more than 2,000 square metres, or
- b) A total floor area of more than 6,000 square metres.

9. Statutory Fire Safety Measures

All fire/essential safety measures installed within the building are required to be certified upon completion of the project and prior to occupation of the building by the owner of the building, by issuing a Final Fire Safety Certificate under the Act.

The owner is also required under the Act to certify each of the Fire Safety Measures annually by issuing a Fire Safety Statement.

With performance solutions, additional or more frequent maintenance may result.

10. Conclusion

The design is capable of complying with the requirements of the relevant sections of the of the Act and EPAR and the BCA 2019 Amendment 1 subject to resolution of the identified areas of non-compliance within the report.

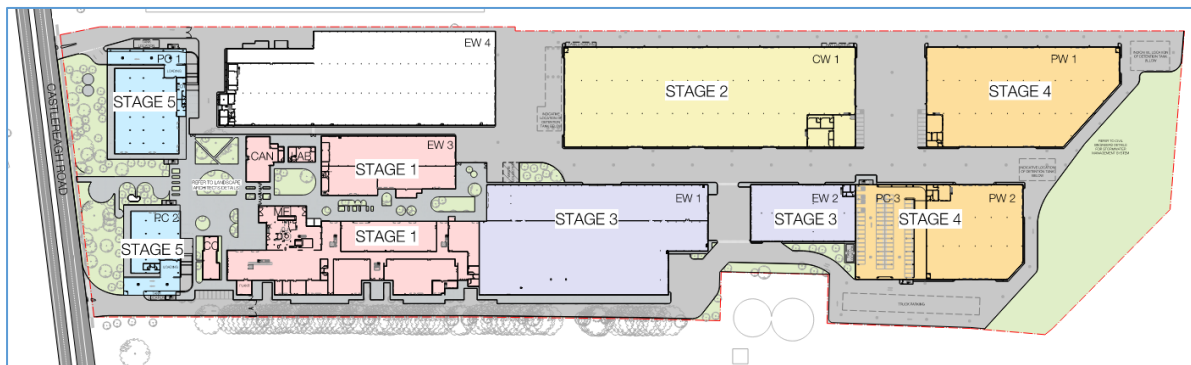
Further detailed regulatory reviews will need to be progressively undertaken as designs advance and become more resolved to ensure compliance is achieved.

11. Assessment

Section A: General Provisions

The development consists of the following phases:

- Stage 1 including alteration to existing Class 8 warehouse buildings EW1 and EW3
- Stage 2 including proposed new Class 8 warehouse CW1
- Stage 3 including alteration to existing Class 8 warehouse buildings EW1 and EW2
- Stage 4 including proposed new Class 8 warehouse PW1 and PW2, and proposed new class 7a carpark PC3
- Stage 5 including proposed new buildings PC1 & PC2 consisting of Class 7a carpark & Class 7b warehouse



Section B: Structure

The structural engineering design of the building will be required to comply with the structural provisions of Part B1 of the BCA. This requirement extends to existing elements which are having additional load applied, as well as all existing awnings.

Alteration to existing building under Stage 1 and Stage 3 scope of work requires design certification from a structural engineer to demonstrate that the existing structural elements supporting the new works will comply with the structural provisions of Part B1 of the BCA.

Section C: Fire Resistance

Refer to Appendix C for fire resisting requirement. Reduction in FRL needs to be addressed by fire engineered performance solution.

C1.9 Non-combustible Building Elements

All materials used within the external wall system (including insulation and coverings) are to be considered non-combustible in accordance with BCA Clause C1.9 for any buildings requiring Type A or Type B Construction. Existing and proposed wall materials will need to be assessed for compliance where works are being undertaken to modify the makeup of the external wall, including any addition to storeys for any buildings requiring Type A or Type B Construction.



C1.10 Fire Hazard Properties

Proposed floor coverings and any proposed wall and ceiling lining materials must comply with the fire hazard properties nominated in Specification C1.10 of the BCA.

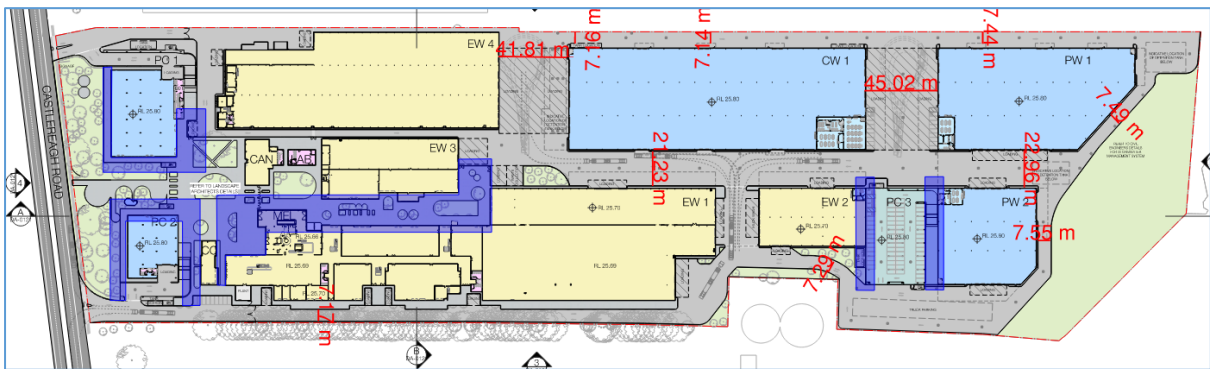
C1.14 Ancillary Elements

Any external attachments, including awning materials and signage, are to be considered non-combustible in accordance with BCA Clause C1.14 for any buildings requiring Type A or Type B Construction. Existing and proposed wall materials will need to be assessed for compliance where works are being undertaken to modify the makeup of the external wall, including any addition to storeys for any buildings requiring Type A or Type B Construction.

C2.3 Large Isolated Buildings

The following buildings as a large isolated buildings do not have vehicular access with unobstructed width of 6m and lack of vehicular access needs to be addressed by fire engineered performance solution.

- PC1
- PC2
- EW1
- PC3

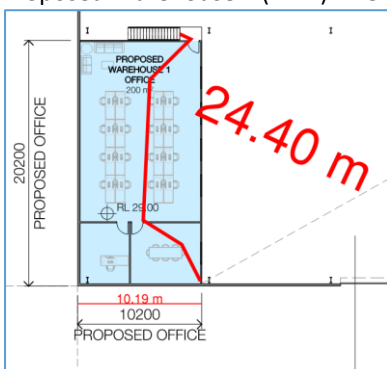


Section D: Access and Egress

D1.4 Exit Travel Distances

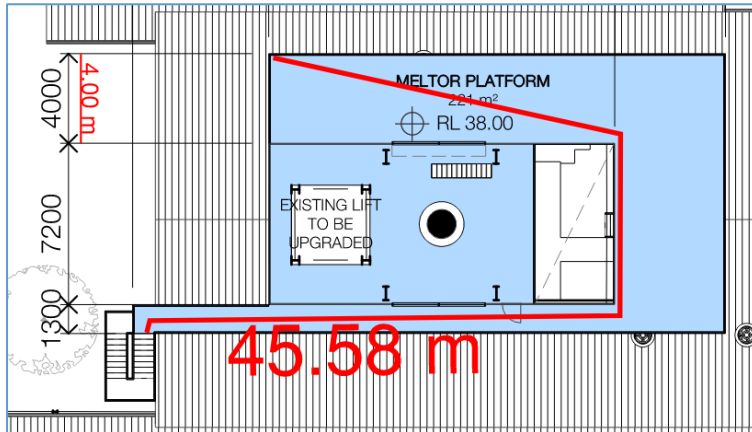
The following areas have been identified with distances exceeding 20m to a single exit

Proposed Warehouse 1 (PW1) – Level 1 – 25m to a single exit:



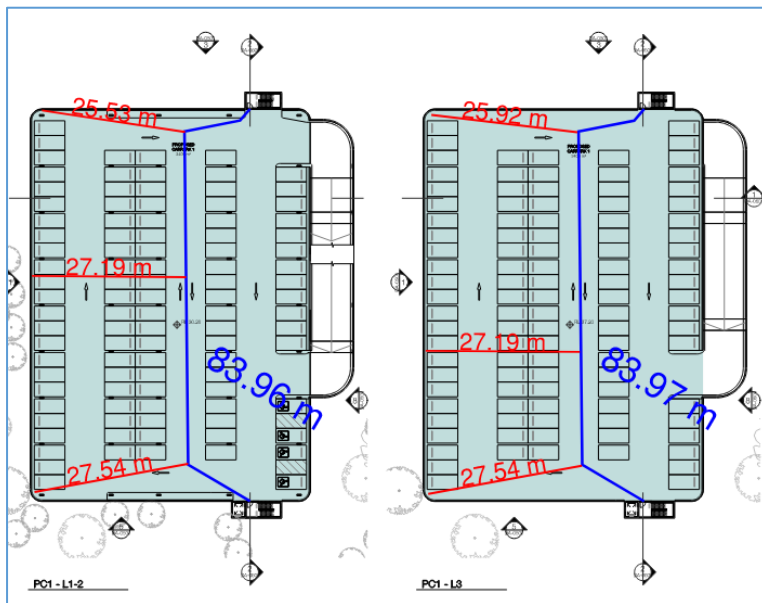


Meltor Platform – 46m to an exit in lieu of 20m - Confirmation is required from fire engineer:

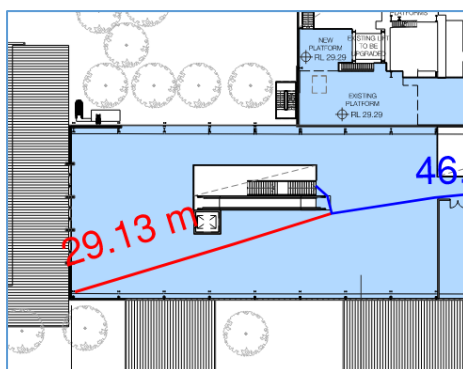


The following areas have been identified with distances exceeding 20m to a point of choice:

Proposed Carpark PC1 – Level 1, 2-3 – 28m in lieu of 20m



EW1 – Proposed Mezzanine – 30m in lieu of 20m

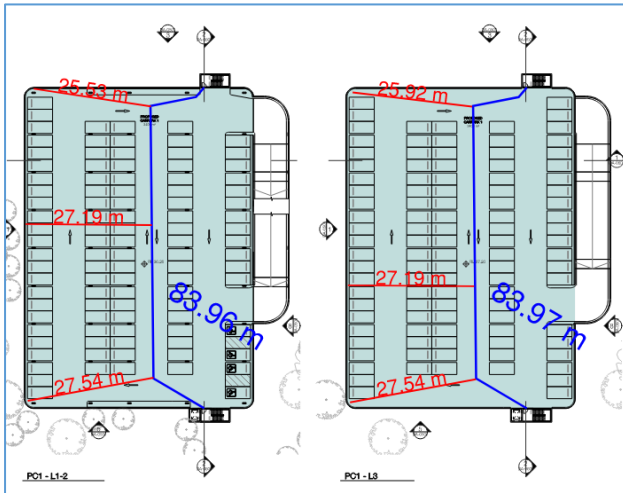




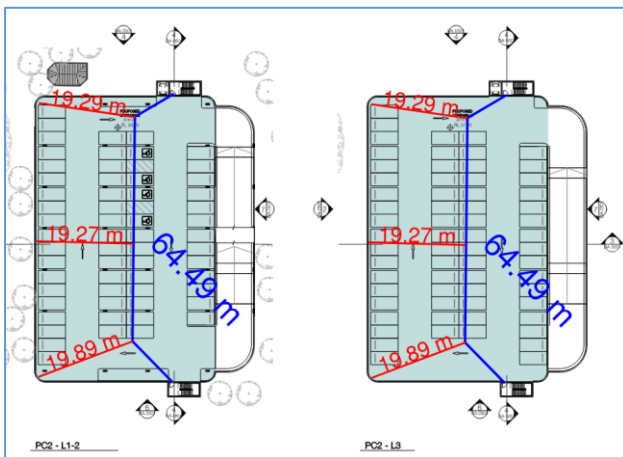
D1.5 Distance Between Alternative Exits

The following areas have been identified with distance between alternative exits exceeding 60m

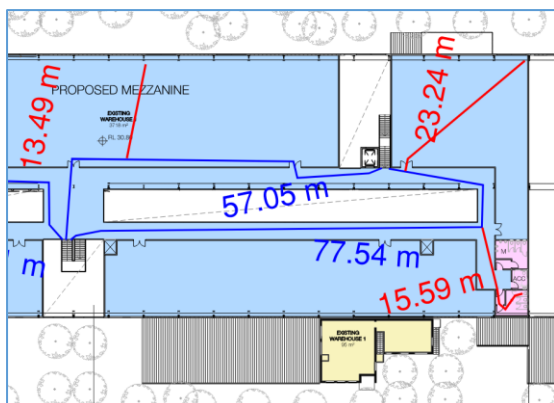
Proposed Carpark PC1 – Level 1, 2-3 – 84m in lieu of 60m



Proposed Carpark PC2 – Level 1, 2-3 – 65m in lieu of 60m

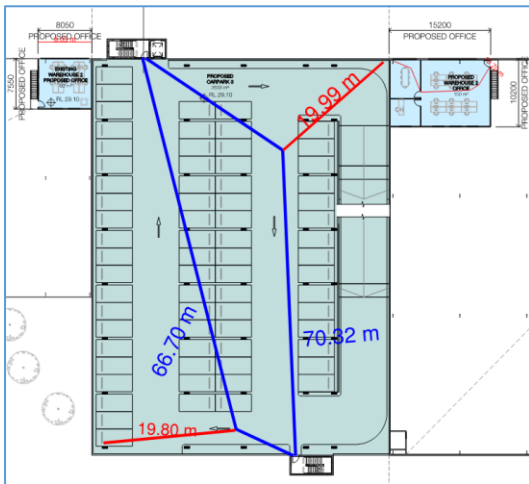


EW1 – Proposed Mezzanine – 78m in lieu of 60m

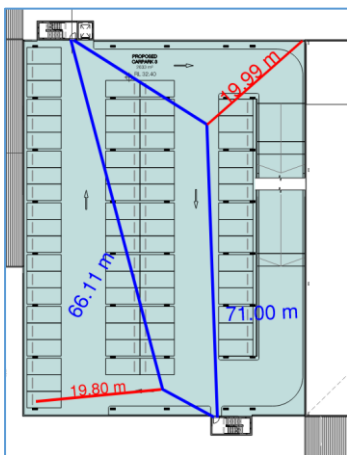




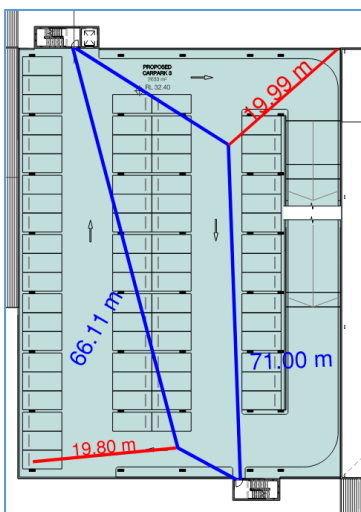
Proposed Carpark PC3 – Level 1 – 71m in lieu of 60m



Proposed Carpark PC3 – Level 2-3 – 71m in lieu of 60m



Proposed Carpark PC3 – Level 4 – 71m in lieu of 60m



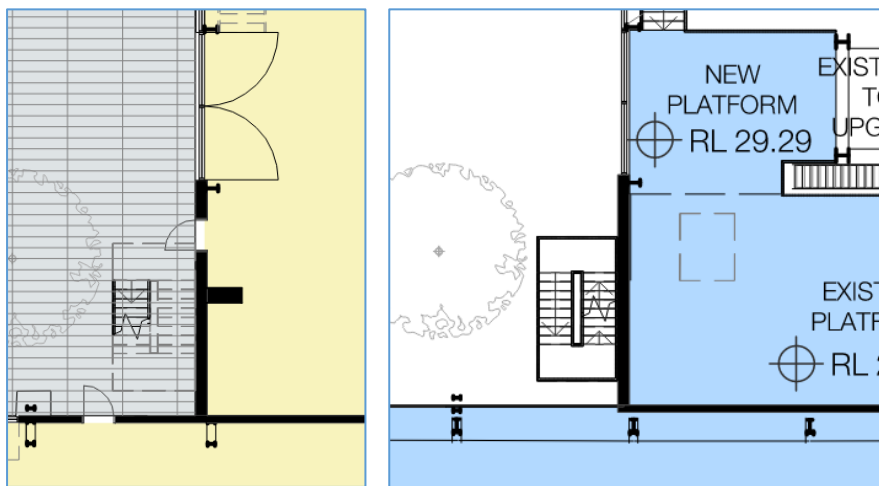
D1.8 External Stairways or ramps in lieu of fire isolated exits

The external stairways serving the Meltor platform as the required exit needs to be non-combustible throughout and protected as follows if it is within 6m of, and exposed to any part of the external wall of the building:

The part of the external wall of the building to which the exit is proposed must have:

- An FRL of not less than 60/60/60
- No openings less than 3m from the exit
- Any openings 3m or more but less than 6m from the exit protected with C3.4, and if wall wetting sprinklers are used, they are located internally

Departure from D1.8 needs to be addressed via fire engineered performance solution and confirmation from fire engineer is required.



D2.7 Installations in Exits and Paths of Travel

Any new electrical meters, distribution boards (telecommunications or electrical) in the path of travel must be contained within a non-combustible enclosure with the doorways fitted with smoke seals in accordance with Clause D2.7 of the BCA.

D2.13 Going and Risers

The construction of the new stairways including goings, risers and slip resistance classification is to comply with Clause D2.13 of the BCA. Landings at the top and bottom of the stairway is to comply with Clause D2.14 of the BCA.

D3 Access for people with a Disability

Access for people with disabilities is to be provided throughout all new and affected areas in accordance with the provisions of Part D3 of the BCA, AS1428.1 – 2009 and the Access to Premises (2010) Act. Certification from an Access Consultant is to be provided at Construction Certificate

All existing lifts are required to be assessed for compliance by an access consultant, in order to demonstrate compliance to AS1735.12.



Section E: Services and Equipment

Each building is to be provided with its own independent fire system. No fire services are permitted to extend between building, and each building is to independently meet compliance.

E1.3 Fire Hydrants

The buildings are required to be served by a fire hydrant system complying with Clause E1.3 of the BCA and AS 2419.1 – 2005.

E1.4 Fire Hose Reels

The buildings are required to be served by fire hose reels complying with Clause E1.4 of the BCA and AS 2441 – 2005.

E1.5 Sprinklers

This report has been prepared on the assumption that an AS 2118.1 fire suppression system will be provided to all existing and proposed large isolated buildings. Existing buildings will also be subject to further analysis through the design development phase in terms of compliance with fire suppression requirement.

E1.6 Portable Fire Extinguishers

All buildings will require portable fire extinguishers complying with Clause E1.6 of the BCA and AS 2444 – 2001.

E2.2 General Requirement (Smoke Hazard management)

Class 7a and 7b building which exceeds 18,000m² in floor area or 108,000m³ in volume must be provided with:

1. If the ceiling height of the fire compartment is not more than 12m:
 - a. An automatic smoke exhaust system in accordance with Specification E2.2b, or
 - b. Automatic smoke-and-heat vents in accordance with Specification E2.2c
2. If the ceiling height of the fire compartment is more than 12m, an automatic smoke exhaust system in accordance with E2.2b

E4.2 Emergency Lighting Requirements

All buildings will require emergency lighting in accordance with Clauses E4.2 & E4.4 of the BCA and AS 2293.1 – 2018.

E4.5 Exit Signs

All buildings will require exit signage in accordance with Clauses E4.5, E4.6 & E4.8 of the BCA and AS 2293.1 – 2018.



Section F: Health and Amenity

FP 1.4 Weatherproofing

Where the building is being extended or externally modified, details demonstrating compliance with part F1 of the BCA, including compliance with FP1.4 (weatherproofing) is to be provided.

F2.3 Facilities in Class 3 to 9 Buildings

Sanitary Facilities are required to be provided in accordance with BCA Clause F2.3. If the proposed population of the building is unknown and unable to be provided by the applicant, BCA Clause D1.13 may be used to calculate total population of the building.

F4.8 Restriction on Location of Sanitary Compartments

F4.9 Airlocks

Under Clause F4.8 and F4.9 a doorway from a room must not open directly into a fire-isolated-stairway unless it is from:

- a public corridor, public lobby or the like; or
- a sole occupancy unit occupying all of a storey; or
- a sanitary compartment, airlock or the like

F2.4 Accessible Sanitary Facilities

An accessible unisex sanitary compartment is required in accordance with Clause F2.4 of the BCA and AS 1428.1 – 2009. A male and female sanitary compartment suitable for a person with an ambulant disability is required in accordance with AS 1428.1 – 2009.

F3.1 Height of Rooms and Other Spaces

Minimum ceiling heights are to be 2.4m except where 2.1m is permitted in corridors, passageways, bathrooms, sanitary compartments, storerooms or the like.

F4.4 Artificial Lighting

Artificial lighting is required to all rooms that are frequently occupied, all accessible spaces, all corridors and circulation spaces and path of egress in accordance with AS/NZS 1680.0 – 2009.

F4.6 Ventilation of Rooms

Ventilation will be required to all rooms occupied by a person for any purpose by means of natural ventilation complying with Clause F4.6 of the BCA or mechanical ventilation/air-conditioning complying with AS 1668.2 – 2012

Section J: Energy Efficiency

The buildings are to be designed to achieve compliance with the relevant provisions of Part J1 to J8 respectively. Key compliance items include:

- Roof and ceiling construction will be required to achieve compliance with Clause J1.3;
- External wall construction will be required to achieve compliance with Clause J1.5;
- Building sealing will be required to windows and doors in accordance with the relevant sections Part J3;



-
- Air-conditioning and mechanical ventilation systems will need to be designed in accordance with the relevant sections of Part J5;
 - Artificial lighting and power will need to be designed in accordance with the relevant sections of Part J6;
 - Heated water supply system for food preparation and sanitary facilities to be designed and installed in accordance with Part B2 of the Plumbing Code of Australia; and
 - Facilities for energy monitoring in accordance with Clause J8.3.



Appendix A – Referenced Documentation

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

Drawing No.	Title	Issue	Date	Drawn By
DA-0001	COVER	9	08/03/2021	SJB Architects
DA-0101	SITE LOCATION	8	01/03/2021	SJB Architects
DA-0102	EXISTING SITE PLAN	9	08/03/2021	SJB Architects
DA-0103	SITE PLAN	9	08/03/2021	SJB Architects
DA-0104	SITE ANALYSIS	9	08/03/2021	SJB Architects
DA-0105	SITE STAGING	9	08/03/2021	SJB Architects
DA-0111	OVERALL G-L1	9	08/03/2021	SJB Architects
DA-0112	OVERALL L2-4	9	08/03/2021	SJB Architects
DA-0121	OVERALL ELEVATIONS & SECTIONS	8	01/03/2021	SJB Architects
DA-0201	PROPOSED CARPARK 1	8	01/03/2021	SJB Architects
DA-0202	PROPOSED CARPARK 2	8	01/03/2021	SJB Architects
DA-0203	EW1 & 3 - GROUND - PART 1	9	08/03/2021	SJB Architects
DA-0204	EW1 & 3 - LEVEL 1 - PART 1	9	08/03/2021	SJB Architects
DA-0205	EW1 & 3 - GROUND - PART 2	8	01/03/2021	SJB Architects
DA-0206	EW1 & 3 - LEVEL 1 - PART 2	8	01/03/2021	SJB Architects
DA-0207	CW1 - GROUND	9	08/03/2021	SJB Architects
DA-0208	CW1 - LEVEL 1	9	08/03/2021	SJB Architects
DA-0209	PW1 - GROUND	8	01/03/2021	SJB Architects
DA-0210	PW1 - LEVEL 1	8	01/03/2021	SJB Architects
DA-0211	PW2 & PC3 - GROUND	8	01/03/2021	SJB Architects
DA-0212	PW2 & PC3 - LEVEL 1	8	01/03/2021	SJB Architects
DA-0213	PW2 & PC3 - LEVEL 2-3	8	01/03/2021	SJB Architects
DA-0214	PW2 & PC3 - LEVEL 4	8	01/03/2021	SJB Architects
DA-0220	EW1 Meltor Platform	2	01/03/2021	SJB Architects
DA-0221	EW1 Meltor Basement	2	01/03/2021	SJB Architects
DA-0501	PC1 & PC2 ELEVATIONS	8	01/03/2021	SJB Architects
DA-0502	EW1 ELEVATIONS	8	01/03/2021	SJB Architects
DA-0503	EW3 ELEVATIONS	8	01/03/2021	SJB Architects
DA-0504	CW1 ELEVATIONS	8	01/03/2021	SJB Architects
DA-0505	PW1 ELEVATIONS	8	01/03/2021	SJB Architects
DA-0506	PW2 & PC3 ELEVATIONS	8	01/03/2021	SJB Architects
DA-0601	PC1 & PC2 SECTIONS	8	01/03/2021	SJB Architects
DA-0602	EW1 & EW3 SECTIONS	9	08/03/2021	SJB Architects



Drawing No.	Title	Issue	Date	Drawn By
DA-0603	CW1 SECTIONS	9	08/03/2021	SJB Architects
DA-0604	PC3 & PW1 & PW2 SECTIONS	8	01/03/2021	SJB Architects
DA-2401	Signage Details	4	01/03/2021	SJB Architects
DA-2501	Demolition Plans	9	08/03/2021	SJB Architects
DA-2502	Meltor Demolition	2	01/03/2021	SJB Architects
DA-3012	Finishes Board	6	01/03/2021	SJB Architects

Appendix B – Schedule of indicative proposed statutory Fire Safety Measures

Measure	Standard of Performance
Automatic Fire Suppression Systems (<i>Sprinklers</i>) Note: Extent of sprinkler protection for existing buildings to be determined at Construction Certificate Stage	BCA2019 Amendment 1 Specification E1.5 and AS 2118.1 – 2017
Building Occupant Warning System	BCA2019 Amendment 1 Clause 7 of Specification E2.2a and AS 1670.1 – 2018
Emergency Lighting	BCA2019 Amendment 1 Clause E4.2, E4.4 and AS/NZS 2293.1 – 2018
Exit Signs	BCA2019 Amendment 1 Clause E4.5, NSW E4.6, E4.7, E4.8 and AS/NZS 2293.1 – 2018
Fire Alarm Monitoring System	BCA2019 Amendment 1 Clause 8 of Specification E2.2a and AS 1670.3 – 2018
Fire Dampers	BCA2019 Amendment 1 Clause C3.15 and AS 1668.1 – 2015 (AS 1682.1 – 2015 and AS 1682.2 – 2015)
Fire Doors	BCA2019 Amendment 1 Specification C3.4 and AS/NZS 1905.1 – 2015
Fire Hydrants Systems	BCA2019 Amendment 1 Clause E1.3 and AS 2419.1 – 2005
Fire Seals Protecting Opening In Fire Resisting Components of the Building	BCA2019 Amendment 1 Clause C3.15, Specification C3.15, AS 1530.4 – 2014, AS 4072.1 – 2005 and installed in accordance with the tested prototype.
Hose Reel System	BCA2019 Amendment 1 Clause E1.4 and AS 2441 – 2005
Lightweight Construction	BCA2019 Amendment 1 Specifications C1.8, Clause A2.3 and AS 1530.4 – 2014
Mechanical Air Handling System (<i>Carpark Mechanical Ventilation System</i>)	BCA2019 Amendment 1 Table E2.2a, Clause 5.5 of AS/NZ 1668.1 – 2015 and fans with metal blades suitable for operation at normal



Measure	Standard of Performance
	temperature may be used and the electrical power and control cabling need not be fire rated
Mechanical Air Handling System (<i>Automatic Smoke Exhaust System</i>)	BCA2019 Amendment 1 Specification E2.2b
Perimeter Vehicle Access For Emergency Vehicles	BCA2019 Amendment 1 Clause C2.4
Portable Fire Extinguishers	BCA2019 Amendment 1 Clause E1.6 and AS 2444 – 2001
Smoke And Heat Vents	BCA2019 Amendment 1 Specification E2.2c and AS 2665 – 2001 and NSW H101.22
Wall Wetting Sprinkler And Drencher Systems	BCA2019 Amendment 1 Clause C3.4, Specification G3.8
Warning And Operational Signs	BCA2019 Amendment 1 Clauses C3.6, D1.17, NSW D2.19, D2.23, E3.3, G4.3 and NSW H101.8 and Specifications D1.12, E1.8 and G3.8
Fire Engineering Report	TBA



Appendix C – Fire-resistance levels

The below table contain the fire-resistance levels (FRL) required under Specification C1.1 of the BCA.

Type A Construction: FRL of Building Elements				
Building element	Class of building - FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5, 9 or 7a	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated within it) or other external building element, where the distance from any fire-source feature to which it is exposed is-				
For loadbearing parts-				
less than 1.5m	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 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



Type B Construction: FRL of Building Elements				
Building element	Class of building - FRL: (in minutes)			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	5, 9 or 7a	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 1.5m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 TO LESS THAN 3 M	90/60/30	120/ 90/60	180/120/90	240/180/120
3 TO LESS THAN 9 M	90/30/30	120/ 30/30	180/90/60	240/90/60
9 TO LESS THAN 18 M	90/30/-	120/30/-	180/60/-	240/60/-
18 M OR MORE	- / - / -	- / - / -	- / - / -	- / - / -
For non-loadbearing parts-				
less than 1.5 m	-/90/90	- /120/120	- /180/180	- /240/240
1.5 TO LESS THAN 3 M	-/60/30	- / 90/60	- /120/90	- /180/120
3 m or more	- / - / -	- / - / -	- / - / -	- / - / -
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire-source feature to which it is exposed is-				
Less than 18m	90/ - / -	120/ - / -	180/ - / -	240/ - / -
18 m or more	- / - / -	- / - / -	- / - / -	- / - / -
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	60/60/60	120/ - / -	180/ - / -	240/ - / -
Non-loadbearing	- /60/60	- / - / -	- / - / -	- / - / -
Between or bounding sole-occupancy units-				
Loadbearing	60/60/60	120/ - / -	180/ - / -	240/ - / -
Non-loadbearing	- /60/60	- / - / -	- / - / -	- / - / -
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES AND COLUMNS				
	60/ - / -	120/ - / -	180/ - / -	240/ - / -
ROOFS	- / - / -	- / - / -	- / - / -	- / - / -



Type C Construction: FRL of Building Elements				
Building element	Class of building - FRL: (in minutes)			
	<i>Structural adequacy/Integrity/Insulation</i>			
	2, 3 or 4 part	5, 9 or 7a	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-				
less than 1.5m	90/90/90	90/90/90	90/90/90	90/90/90
1.5 TO LESS THAN 3 M	-/-/-	60/60/60	60/60/60	60/60/60
3 M OR MORE	-/-/-	-/-/-	-/-/-	-/-/-
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire-source feature to which it is exposed is-				
less than 1.5 m	90/-/-	90/-/-	90/-/-	90/-/-
1.5 or less than 3 m	-/-/-	60/-/-	60/-/-	60/-/-
3 m or more	-/-/-	-/-/-	-/-/-	-/-/-
COMMON WALLS and FIRE WALLS	90/90/90	90/90/90	90/90/90	90/90/90
INTERNAL WALLS-				
Bounding public corridors, public lobbies and the like-				
	60/60/60	-/-/-	-/-/-	-/-/-
Between or bounding sole-occupancy units-				
	60/60/60	-/-/-	-/-/-	-/-/-
Bounding a stair if required to be rated-				
	60/60/60	-/-/-	-/-/-	-/-/-
ROOFS	-/-/-	-/-/-	-/-/-	-/-/-