STEVE WATSON
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Qantas Group Carpark

BCA Assessment Report

Report 2019/0208 R1.2 - Carpark

Prepared for Qantas Group
April 2019

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SWP Quality System

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Disclaimer:

This report is based on a desktop audit of preliminary documentation only.
Details contained in the report address issues of significance to broad BCA compliance relevant to this stage of design resolution.

This report is based on a review of the design documentation only. It represents a compliance report for "documentation to this point in time" and will be subject to amendment and expansion as project documentation develops

Executive Summary

Steve Watson & Partners has been commissioned by Qantas Airways Ltd (Qantas) to prepare this report in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the **SSD 10154** for the development of a new flight training centre at 297 King Street, Mascot.

DESCRIPTION OF SITE AND LOCALITY

The site is located at 297 King Street, Mascot and comprises land known as Lots 2 & 4 DP 234489, Lot 1 DP 202747, Lot B DP 164829 and Lot 133 DP 659434. The site is identified in Figure 1.

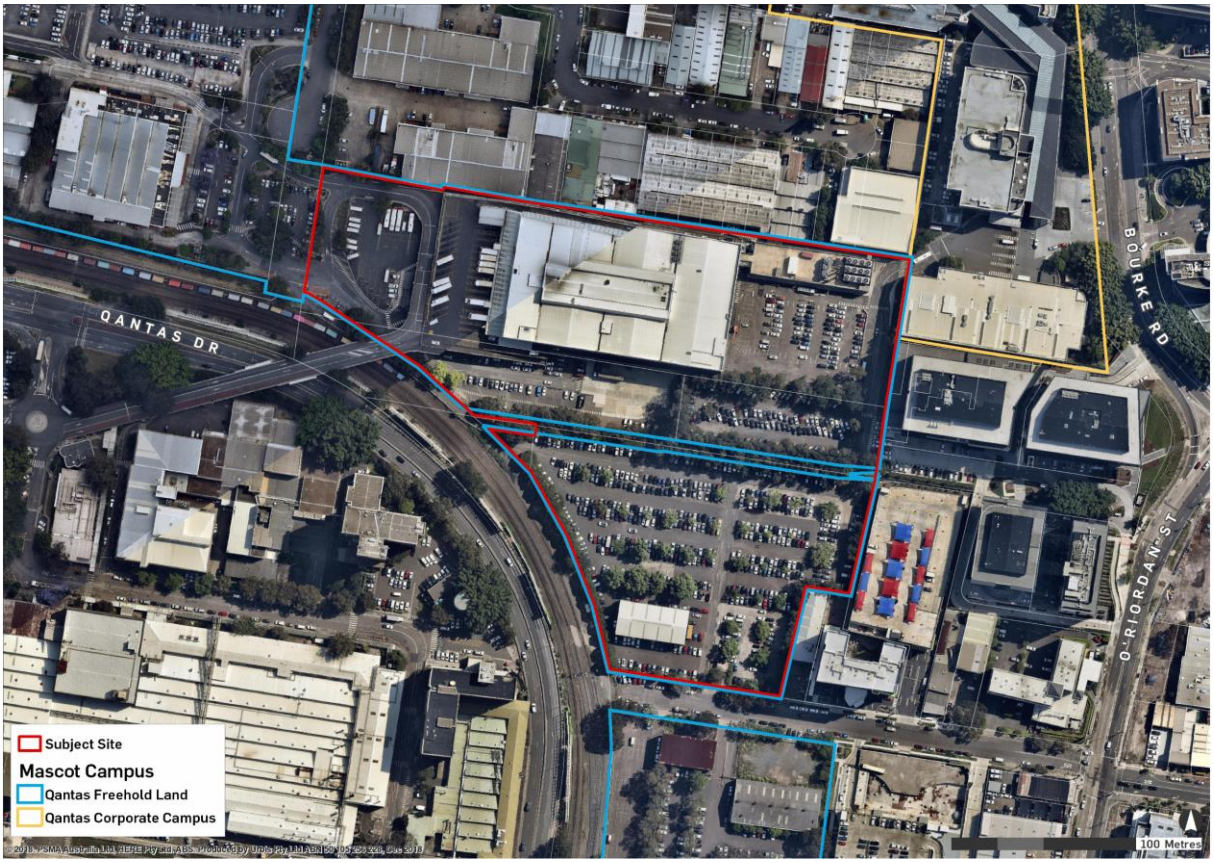


Figure 1 - The Site

Key features of the site are as follows:

- The site is approximately 5.417ha and is an irregular shape. It is approximately 240m in length and maintains a variable width of between approximately 321m in the northern portion of the site and approximately 93m along the King Street frontage (refer to Figure 1).
- The site possesses a relatively level slope across the site. An open Sydney Water drainage channel bisects the northern portion of the site in an east-west direction. There are some isolated changes in level immediately adjacent to this channel. A Site Survey Plan accompanies the application which details the topographic characteristics of the site.
- Multiple mature Plane Trees are scattered throughout the site. A variety of native and exotic tress and vegetation also exist around the perimeter of the site which help screen the site from surrounding uses.
- Site improvements include at-grade car parking for Qantas staff, an industrial shed to store spare aviation parts, a substation, a disused gatehouse, a Sydney Water Asset with two driveways over it, the Qantas catering facility and Qantas tri-generation plant.

- The site forms part of a larger land holding under the ownership of Qantas that generally extends between Qantas Drive to the west, Ewan Street to the south, Coward Street to the north, with the Qantas "Corporate Campus" fronting Bourke Road.
- Vehicular access to the site from the local road network is available from King Street. The site has intra-campus connections along the northern boundary in the form of two connecting driveways in the north-eastern and north-western corner of the site along the northern boundary which link it to the broader Mascot Campus.
- The site is located within the Bayside LGA.

Key features of the locality are:

- **North:** The site is bounded to the north low scale industrial development, beyond which is Coward Street. Further north of the site is the Mascot Town Centre which is characterised by transport-oriented development including high density mixed-use development focussed around the Mascot Train Station.
- **East:** The site is bordered to the east by commercial development including a newly completed Travelodge hotel which includes a commercial car park. Additional commercial development to the east includes the Ibis Hotel and Pullman Sydney Airport fronting O'Riordan Street.
- **South:** The site is bounded to the south by King Street, beyond which is Qantas owned at-grade car parking and other industrial uses. Further south is the Botany Freight Rail Line and Qantas Drive beyond which is the Domestic Terminal at Sydney Airport.
- **West:** The site is bordered to the west by the Botany Freight Rail Line and Qantas Drive, beyond which lies Sydney Kingsford Smith Airport and the Qantas Jetbase (location of the current Flight Training Centre).

Car Park

The proposed multi-deck car park will be located to the north-east of the flight training centre and adjacent the existing Qantas catering facility and tri-generation plant. The car park is 13 levels and will provide 2059 spaces for Qantas staff. Vehicle access to the car park will be provided via King Street, Kent Road and from Qantas Drive via the existing catering bridge.

Summary of BCA Parameters:

Building Use:	Carpark *(Open deck)*
Class of Occupancy	Class 7a
Type of Construction Required	Type A
Rise Storeys:	13
Number of Storeys:	13
Effective Height:	35.33m

The following are the main issues requiring early BCA resolution:

1. Viability of providing a fire control centre (Clause E1.8)
2. Viability of providing an emergency warning and intercom system (Clause E4.9)

The following are the main issues proposed to be addressed by the Fire Safety Engineer via a Performance Solution:

1. Extended travel distances to the nearest available exit (Clause D1.4)
2. Extended travel distances between available exits (Clause D1.5)
3. Fire hydrant coverage with two lengths of hose (Clause E1.3)
4. Fire hydrant number of outlets required to flow simultaneously based on AS 2419.1 – 2017 (Clause E1.3)

Section 10.3 contains key BCA items that will need to be addressed for inclusion into the documentation submitted for the Construction Certificate.

The design is capable of complying with the requirements of the relevant sections of the Environmental Planning Assessment Act 1979, the Environmental Planning and Assessment Regulations 2000 and the Building Code of Australia 2019. Compliance is subject to resolution of the identified areas of non-compliance and compliance with the recommendations provided 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.

Whilst not precluding the issue of a Construction Certificate, it is noted that many detailed design issues are not indicated on the drawings. These issues are designated “Compliance Readily Achievable” in the *“Status”* column of the assessment in Section 13 of the report and should be resolved prior to construction.

Table of Contents

1. Purpose

The purpose of this report is to provide an assessment of the design documentation against the current requirements of the BCA.

The assessment is undertaken for the purpose of, and to the extent necessary for, application for SEARs development consent.

2. Scope and Limitations

3.1. Scope

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

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 issue a construction certificate under Part 6 of The Act. 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 and the Premises Standards. 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.

3. National Construction Code 2019 –Volume 1: Building Code of Australia 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.

4. 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.

5. 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
New Work	EPAR 145	All new works must comply with BCA requirements

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. Methodology

7.1. Process adopted

The following method of assessment has been used in the preparation of this report:

1) Determine the basic assessment data for the building.
2) Assess the design of the building against the current Deemed-to-Satisfy requirements of Sections B, C, D, E, F, G, H and J of the BCA. Establish the status of each clause into the following categories:
    1. Clause is administrative information only **(Noted)**;
    2. Clause is or is not relevant to the proposed work **(Applicable or N/A)**
    3. The proposed work complies with the requirements of the clause **(Complies)**;
    4. Compliance with the requirements of the clause is unable to be determined from the documentation provided **(Compliance Readily Achievable)**. A recommendation in the "Comments" column will indicate what is required to achieve compliance. The design and construction teams are responsible to ensure compliance is achieved;
    5. Compliance with the requirements of the clause is unable to be determined from the documentation provided. Additional details or relevant information required to verify compliance (**Additional Details Required**);
    6. Proposed work does not comply with the requirements of the clause **(Does Not Comply)**. An indication will be given in the Comments field as to the nature of the issue and whether an alternative solution has been proposed to address the issue;

7. Proposed work is to be addressed on a performance basis via an Alternative Solution satisfying the relevant Performance Requirements. (**Performance Solution**);

3) Nominate the status of the design against each BCA requirement;

4) Provide comments against each BCA requirement as appropriate.

7. Description of Proposed Development

The site is located at 297 King Street Mascot.

The proposed multi-deck car park will be located to the north-east of the flight training centre and adjacent the existing Qantas catering facility and tri-generation plant. The car park is 14 levels and will provide 2025 spaces for Qantas staff. Vehicle access to the car park will be provided via King Street, Kent Road and from Qantas Drive via the existing catering bridge.

8. Assessment Data Summary

The following basic assessment data has been drawn from the provisions of the BCA 2019* (Preview version).

9.1. Assumptions

Assumptions made in the preparation of this report are listed below:

1. The carpark has been assessed as **open-deck carpark**, which affords specific concessions under the BCA. To be considered an open deck carpark, each storey is required to be cross-ventilated by permanent unobstructed openings in at least 2 opposite sides, and-
    a. each side that provides ventilation is not less than 1/6 of the area of any other side; and
    b. the openings are not less than 1/2 of the wall area of the side concerned.

9.2. Interpretations

A number of issues within the BCA are recognised to be interpretive in nature. Where these issues are encountered, interpretations are made that are consistent with Standard Industry Practise and/or Steve Watson & Partners policy formulated in regard of each issue.

1. Levels has not been counted a storey. The green roof portion is considered open and occupies a small portion of the level 13 floor plate.

9. Key BCA Issues Requiring Resolution

10.1. Issues requiring BCA resolution.

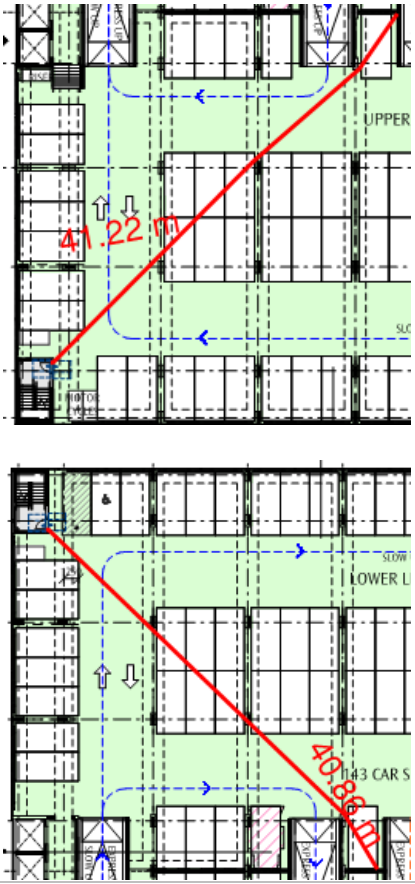
The following BCA issues need to be resolved early in the design stage.

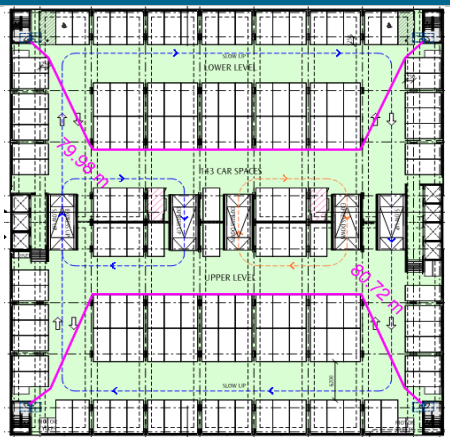
Item	DTS Clause	Description of Non-compliance	Requirement to Satisfy BCA
1.	E1.8	A fire control centre in accordance with Specification E1.8 is required to the building. Despite the requirements of Part E2 not applying to an open-deck carpark, an EWIS system is required under deemed-to-satisfy provisions of E4.9. The provision of fire control centre will be linked to the whether an EWIS system is installed.	Dry fire engineer to provide comments around the practical installation and limitations for installing an EWIS system/Fire control centre in the building. Fire engineer to advise any scope for performance solution.
2.	E4.9	Despite the requirements of Part E2 not applying to an open-deck carpark, the requirement for an EWIS system in a building over 25m in height does not provide a	Dry fire engineer to provide comments around the practical installation and limitations for installing an EWIS system

Item	DTS Clause	Description of Non-compliance	Requirement to Satisfy BCA
		concession to open-deck carparks. As such, an EWIS system is required under deemed-to-satisfy provisions.	in the building. Fire engineer to advise any scope for performance solution.

10.2. Performance solutions required – Fire Engineering

It is proposed that the following non-compliances be investigated as being via a performance solution from a suitably qualified fire engineer:

Item	Non-Compliance	DTS Clause	Description	Performance Requirement
1.	Extended travel distances to the nearest exit	D1.4	The following areas have been identified with exit travel distances exceeding 40m: 1. <u>All floors</u> - 42m from the central area of the carpark to the nearest exit. 	DP4, EP2.2
2.	Extended travel distances between alternative exits	D1.5	The following areas have been identified with distances between alternative exits exceeding 60m: 1. <u>All floors</u> - 81m between alternative exits on each split level;	DP4, EP2.2

Item	Non-Compliance	DTS Clause	Description	Performance Requirement
				
3.	Fire hydrant system - coverage	E1.3	It is proposed that fire hydrant coverage to the carpark will be provided via two lengths of hose (2 x 30m) from hydrants within fire stairs in lieu of a single 30m hose from additional internal floor locations to achieve coverage to AS 2419.1.	EP1.3
4.	Fire hydrant system – number of hydrants required to flow simultaneously	E1.3	The number of fire hydrants required to flow simultaneously will be based on Table 2.2.2(D) of AS 2419.1 – 2017 in lieu of Table 2.1 of AS 2419.1 – 2005. Table 2.2.2(D) of AS 2419.1 – 2017 contains specific requirements for open-deck carparks with large fire compartment sizes whereas AS 2419.1 – 2005 does not consider unique compartment size for an open-deck carpark. This is to be addressed via a performance solution by a fire engineer.	EP1.3

10.3. BCA Items requiring additional details or documentation during the course of design development

The following items have been identified which require further details or documentation to be provided to ensure compliance is achieved before issuing the Construction Certificate:

Item	DTS Clause	Description	Requirement to Satisfy BCA
1.	C1.1, Spec C1.1	Fire-resistance construction of building elements is to comply with Type A (Clause 3.9 Carpark concession) fire-resisting construction detailed in Specification C1.1 of the BCA.	An open-deck carpark may comply with Table 3.9 of Specification C1.1. FRL requirements in the table in the adjacent column. The building is located more than 3m from a fire-source feature (property boundary or adjacent building). As such, FRLs are not required for the external wall perimeter. FRLs will be required internally for the structure as per the Table 3.9 of Specification C1.1 Details of the proposed construction and how it will achieve the required FRL is to be provided. Certification from a structural engineer will be required for FRL's of all structural elements including existing structure.
2.	C1.9	The external walls and all their components are required to be non-combustible.	All materials used to the perimeter of the building is deemed the external wall and is required to be non-combustible construction. Of particular note, is the screening materials. Architect and Structural engineer to make provisions for this requirement in the design.

Item	DTS Clause	Description	Requirement to Satisfy BCA
			Details of all materials proposed and confirmation of meeting the requirements of the clause are to be provided. Ensure all façade materials have a current Certificate of Conformity or a current Certificate of Accreditation, or the like to determine their acceptance by the Fire Safety Engineer and Fire Brigade.
3.	D2.17	Balustrade compliance for the floor edge of the carpark	Details of the balustrade proposed for the carpark perimeter edge will need to be detailed for the Construction Certificate.
4.	D2.22	Re-entry provisions facilitating re-entry from within the stair back onto the floor.	Details of the proposed method of re-entry in accordance with this clause will be required for the Construction Certificate.
5.	Part D3	Requirements for access for people with disabilities	Access consultant to undertake DDA review of proposed design
6.	E1.3	Requirements for essential fire safety measures including: • Fire hydrants including radiant heat protection to the fire brigade booster assembly; • Fire hose reels; • Portable Fire Extinguishers; • Emergency lighting; • Exit signs	Detailed design and assessment to be provided by suitably qualified wet and dry fire, mechanical, electrical and hydraulic engineers.
7.	Section J	Energy efficiency requirements to new works	Detailed design and assessment to be provided by suitably qualified mechanical and electrical engineers.

10. 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 class 9a building that is proposed to have a total floor area of 2,000 square metres or more, or

(b) a building (other than a class 9a building) that is proposed to have:

(i) a fire compartment with a total floor area of more than 2,000 square metres, or

(ii) a total floor area of more than 6,000 square metres,

11. Statutory Fire Safety Measures

All fire/essential safety measures installed within the building are required 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.

12. 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 subject to resolution of the identified areas of non-compliance and compliance with the recommendations provided 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.

13. BCA 2019 – Clause by Clause Assessment

Clause	Description	Comment	Status
BCA Version			
BCA 2019	**BCA version** The BCA is generally updated every 3 years with amendments influencing health, safety and amenity features required within the building. Legislation typically allows future BCA changes to be ignored provided substantial progress on the design of the development has previously occurred.	This report assumes that the applicable BCA version is BCA 2019. In addition, requirements of the Premises Standards (PS) are covered as relevant.	Noted
Section A: General Provisions			
A1.0	**Interpretation** Under Schedule 3 of the BCA, an open-deck carpark is defined as below. **Open-deck carpark** means a carpark in which all parts of the parking storeys are cross-ventilated by permanent unobstructed openings in not fewer than 2 opposite or approximately opposite sides, and— (a) each side that provides ventilation is not less than 1/6 of the area of any other side; and (b) the openings are not less than ½ of the wall area of the side concerned.	The opening area of the sides of the carpark are to be at least 50% to ensure compliance with the requirements for an open-deck carpark. Details of the materials used at the façade edge of the building along with a detailed calculation from the architect to demonstrate at least 50% opens is to be provided. Preliminary advice and calculations from the architect confirm compliance can be met. Full documentation and calculations will be required for the Construction Certificate.	Compliance readily achievable
Part A5	**Suitability of materials** Every part of a building must be constructed in an appropriate manner to achieve the requirements of the BCA, using materials that are fit for the purpose for which they are intended.	The builder is responsible to adopt and install appropriate proprietary accredited building products and is to ensure that those products/assemblies are fit for the purpose they are intended and are installed in accordance with the manufacturer's specifications/ requirements for that system.	Compliance readily achievable
Part A6	**Classification and usage** Usage on each level of the building is as follows: **LEVEL** / **USE** / **CLASS** Lower ground to Level 13 / Carpark / 7a		Noted

Clause	Description	Comment	Status
Section B: Structure			
B1.1	**Resistance to actions** The resistance of the building must be greater than the most critical action effect resulting from different combinations of actions	Certification from a qualified structural engineer will need to be provided at Construction Certificate stage	Compliance readily achievable
B1.2	**Determination of individual actions** The magnitude of individual actions must be determined in accordance with Clause B1.2 of the BCA.	Certification from a qualified structural engineer will need to be provided at Construction Certificate stage	Compliance readily achievable
B1.3	-	No provisions	-
B1.4	**Determination of structural resistance of materials and forms of construction** The structural resistance of materials and forms of construction must be determined in accordance with the relevant Australian Standards in accordance with Clause B1.4 of the BCA.	Certification from a qualified structural engineer will need to be provided at Construction Certificate stage	Compliance readily achievable
B1.5	**Structural software** Structural software used in computer aided design of a building or structure that uses design criteria based on DTS provisions of the BCA must comply with the ABCB Protocol for Structural Software.	-	Noted
B1.6	**Construction of buildings in flood hazard areas**	-	N/A
Part B	**Structure and importance level** Assessment of the building structure will be required for dead, live, wind, earthquake, fire and other loads required by current day AS Codes. The design of the structure must be based on the appropriate 'Importance Level' under BCA Table B1.2a.	The building has an importance level 2 in accordance with Table B1.2a.	Compliance readily achievable
Section C: Fire Resistance			
Part C1 – Fire Resistance and Stability			
C1.1 **Spec C1.1**	**Type of construction required** **Type A Construction (3.9 Carpark concession)** BCA Type A fire resisting construction is required. The following fire ratings apply: **Building Element** **Required FRL**	An open-deck carpark may comply with Table 3.9 of Specification C1.1. FRL requirements in the table in the adjacent column. The building is located more than 3m from a fire-source feature (property boundary or adjacent building). As such,	Additional details required

<table>
<tr><th>Clause</th><th>Description</th><th>Comment</th><th>Status</th></tr>
<tr><td></td><td>
<table>
<tr><td>Wall;
<u>External wall</u>
• Less than 3m from a fire-source feature to which it is exposed
• 3m or more from a fire-source feature to which it is exposed
<u>Internal wall</u>
• Loadbearing, other than supporting only the roof (not used for carparking)
• Supporting only the roof (not used for carparking)
• Non-loadbearing
<u>Fire wall</u>
• From the direction used as a carpark
• From the direction not used as a carpark</td><td>60/60/60 (loadbearing)
--/60/60 (non-loadbearing)
--/--/--

60/--/--

--/--/-
--/--/--

60/60/60

Table 3 of Spec C1.1</td></tr>
<tr><td>Column;
• Supporting only the roof (not used for carparking) and 3m or more from a fire source feature to which it is exposed
• Steel column, other than one covered above and one that does not support part of a building that is not used as a carpark
• any other column not covered by above</td><td>--/--/--

60/--/-- or 26m^2/tonne

60/--/--</td></tr>
<tr><td>Beam;
• steel floor beam in continuous contact with a concrete floor slab
• any other beam</td><td>60/--/-- or 30m^2/tonne

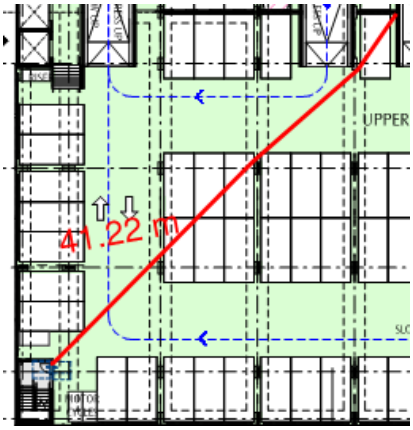
60/--/--</td></tr>
<tr><td>Fire-resisting lift and stair shaft (within carpark)</td><td>60/60/60</td></tr>
<tr><td>Floor slab and vehicle ramp</td><td>60/60/60</td></tr>
<tr><td>Roof (not used for carparking)</td><td>--/--/--</td></tr>
</table>
</td><td>FRLs are not required for the external wall perimeter.
FRLs will be required internally for the structure as per the Table 3.9 of Specification C1.1
Details of the proposed construction and how it will achieve the required FRL is to be provided. Certification from a structural engineer will be required for FRL's of all structural elements including existing structure.</td><td></td></tr>
<tr><td>C1.2</td><td>Calculation of rise in storeys
Effective Height / Calculation of rise in storeys.
Rise in storeys is a defined BCA term addressing the number of main building levels excluding basements.
Effective height is defined under the BCA as vertical distance between the floor of the lowest storey included in the calculation of rise in storeys and the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units).
These parameters influence the BCA provisions applicable to the building.</td><td>The following parameters apply:
Rise in storeys: 13 storeys
Effective Height: 35.33m
(L12 RL 39630 – LG RL 4330)</td><td>Noted</td></tr>
</table>

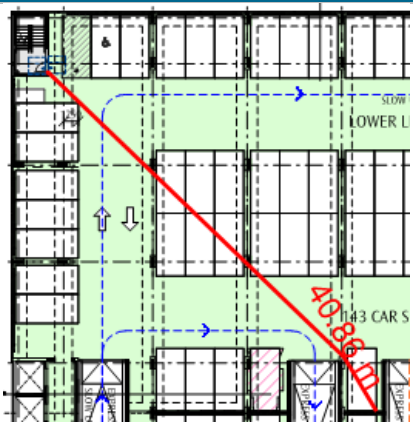
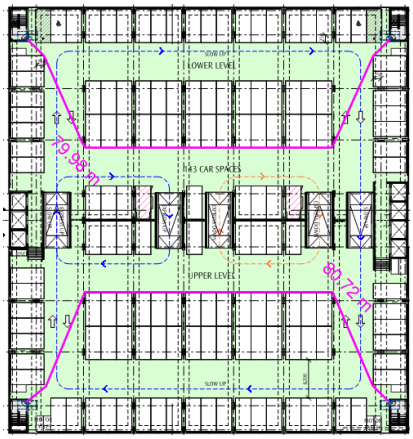
Clause	Description	Comment	Status
C1.3	**Buildings of multiple classification**		Noted
C1.4	**Mixed types of construction**		N/A
C1.5	**Two storey Class 2, 3 or 9c buildings**		N/A
C1.6	**Class 4 parts of buildings**		N/A
C1.7	**Open spectator stands and indoor sports stadiums**		N/A
C1.8	**Lightweight construction** .	Lightweight construction is not anticipated.	N/A
C1.9	**Non-combustible building elements** In a building of Type A or B construction the following building elements and their components must be non-combustible: i. External walls and common walls, including all components. ii. The flooring and floor framing of lift pits iii. Non-loadbearing internal wall that are required to be fire resisting. The following materials may be used where non-combustible materials are required:- • Plasterboard. • Perforated gypsum. • Fibrous-plaster sheeting to AS 2185. • Fibre-reinforced cement sheeting. • Pre-finished metal sheeting having a combustible surface finish not exceeding 1mm thickness and where the spread-of-flame index of the product is not greater than 0. • Sarking-type materials that do not exceed 1mm thickness and have a flammability index not greater than 5. • Bonded laminated materials where each lamina, including any core, is not combustible and each adhesive layer does not exceed 1mm thickness and the total thickness of the adhesive layers does not exceed 2mm and the spread of flame index and smoke development index of the bonded laminated material as a whole do not exceed 0 and 3 respectively. • Any product as determined by testing to AS 1530.1 • An appropriately BCA accredited product or system	All materials used to the perimeter of the building is deemed the external wall and is required to be non-combustible construction. Of particular note, is the screening materials. Architect and Structural engineer to make provisions for this requirement in the design. Details of all materials proposed and confirmation of meeting the requirements of the clause are to be provided. Ensure all façade materials have a current Certificate of Conformity or a current Certificate of Accreditation, or the like to determine their acceptance by the Fire Safety Engineer and Fire Brigade.	Additional details required
C1.10	**Fire hazard properties** *(NSW variation)* Floor materials, floor coverings and wall and ceiling lining materials need to comply with prescribed fire hazard properties. Refer to Appendix C1.10.	Compliance assumed and will require verification test data for all timber and other combustible linings and materials, including: • Carpets • Vinyls (walling and flooring) • Timber flooring and wall linings • Veneered wall panelling	Compliance readily achievable

Clause	Description	Comment	Status
		• Spray-on insulation material • Other combustible finishes • Carpark soffit insulation fire test reports, based on 'room fire testing' will be required to meet fire brigade consent conditions if applicable.	
C1.11	**Performance of external walls in fire**		N/A
C1.12	-	This clause has deliberately been left blank	-
C1.13	**Fire-protected timber: Concession**		N/A
C1.14	**Ancillary elements** An ancillary element must not be fixed, installed or attached to the internal parts or external face of an external wall that is required to be non-combustible unless it is non-combustible or as specified under this clause.		Compliance readily achievable
Part C2 – Compartmentation and Separation			
C2.1	**Application of Part**	Clauses C2.2, C2.3 and C2.4 do not apply to an open deck carpark.	Noted
C2.2	**General floor area and volume limitations**	Does not apply to an open deck carpark.	N/A
C2.3	**Large isolated buildings**	Does not apply to an open deck carpark.	N/A
C2.4	**Perimeter vehicular access**	Does not apply to an open deck carpark.	N/A
C2.5	**Class 9a and 9c buildings**		N/A
C2.6	**Vertical separation of openings in external walls**	Does not apply to an open deck carpark.	N/A
C2.7	**Separation by fire walls**	No fire walls are proposed or required.	N/A
C2.8	**Separation of classifications in the same storey**	The building is a single BCA classification.	N/A
C2.9	**Separation of classifications in different storeys**	The building is a single BCA classification.	N/A
C2.10	**Separation of lift shafts** The lift shafts are required to have an FRL of 60/60/60. The required emergency lift (refer to Clause E3.4) is required to be within lift shaft achieving an FRL of 120/120/120. Openings for lift landing doors and services must be protected in accordance with the DTS provisions of Part C3 of the BCA	Details of lift FRL's are to be provided for the Construction certificate by the Structural Engineer.	Compliance readily achievable
C2.11	**Stairways and lifts in one shaft**	The lift and stairs is within separate shafts	Complies
C2.12	**Separation of equipment** Equipment that comprises of the following must be separated from the remainder of the building by construction with an FRL as required under Specification C1.1 but not less than 120/120/120: • boilers or battery system (having a total voltage exceeding 12 volts and a storage capacity of 200kWh or more);	It is animated that no equipment will be present requiring separation in accordance with this clause. Services consultant to provide final confirmation.	Compliance readily achievable

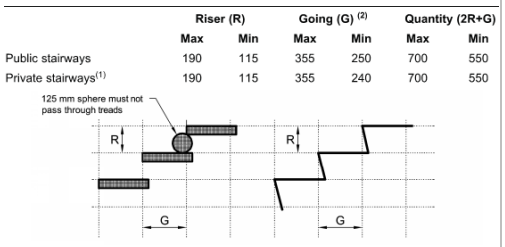
Clause	Description	Comment	Status
	• lift motor rooms; and • emergency generators sustaining emergency equipment operating in emergency mode		
C2.13	**Electricity supply system** A substation located within a building or main switchboard, which sustains emergency equipment, must be separated from the remainder of the building by 2hr fire rated construction. Switchboards sustaining emergency equipment must be constructed so that emergency equipment switchgear is separated from non-emergency equipment switchgear by metal partitions designed to minimise the spread of faults.	Details of whether a substation is required to serve the building is to be provided. If so, confirm location of substation.	Compliance readily achievable
C2.14	**Public corridors in Class 2 & 3 buildings**		N/A
Part C3 – Protection of Openings			
C3.1	**Application of Part**	The deemed-to-satisfy provision of Part C3 do not apply to the following. A carpark: • service penetrations through; and • openings formed by a vehicle ramp in a floor used as a carpark providing the connected floors comply as a single fire compartment for the purpose of all other requirements of the Deemed-to-Satisfy Provisions of Section C, D and E.	Noted
C3.2	**Protection of openings in external walls** Openings in the external walls of the building are to be protected in accordance with C3.4, being fire rated windows, external sprinklers or the like, if: • less than 3m to side or rear boundary, • less than 6m from the far boundary of a road or lane, • Less than 6m from another building on the same allotment. Openings that require protection should not occupy more than $^1/_3$ of the storey in which they occur.	The building is located more than 3m from a boundary and 6m from another building on the allotment.	N/A
C3.3	**Separation of external walls and associated openings in different fire compartments**	The building is a single fire compartment.	N/A
C3.4	**Acceptable method of protection** Window openings that are required to be protected are to be protected by internal or external wall wetting sprinklers with windows that are automatic closing or permanently fixed in the closed position, -/60/- fire windows that are automatic closing or permanently fixed closed or -/60/60 automatic closing fire shutters. Doorways are to be protected by internal or external		Noted

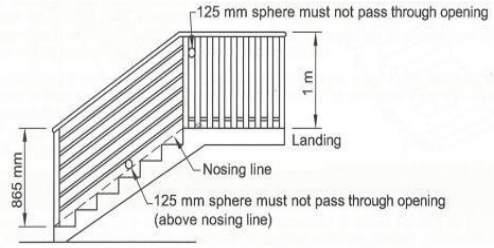
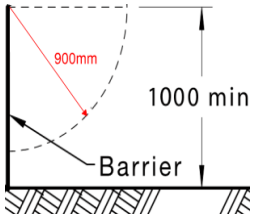
Clause	Description	Comment	Status
	wall wetting sprinklers used with doors that are self-closing or automatic closing, or -/60/30 self-closing or automatic closing fire doors. Other openings, excluding voids, to be protected with internal or external wall wetting sprinklers or construction having an FRL not less than -/60/-		
C3.5	**Doorways in fire walls**	No fire walls are proposed or required.	N/A
C3.6	**Sliding fire doors**	No fire walls are proposed or required.	N/A
C3.7	**Protection of doorways in horizontal exits**	No fire walls are proposed or required.	N/A
C3.8	**Openings in fire isolated exits** -/60/30 self-closing fire doors are required to doorways providing access to fire isolated stairways. Alternatively automatic-closing operation initiated by the activation of a smoke detector, or any other detector deemed suitable in accordance with AS 1670.1 if smoke detectors are unsuitable in the atmosphere, installed in accordance with the relevant provisions of AS 1670.1 and located not more than 1.5 m horizontal distance from the approach side of the doorway. A window or other opening in the external wall of the fire isolated exit is to be protected in accordance with Clause C3.4 if it is within 6m of, and exposed to, a window or other opening in the wall of the same building.	A door schedule indicating compliance is required to be provided.	Compliance readily achievable
C3.9	**Service penetrations in fire isolated exits** Service penetrations other than electrical wiring for essential service installations, pressurisation ducts with an FRL of -/120/60, or water pipes for fire services are not permissible.		Compliance readily achievable
C3.10	**Openings in fire isolated lift shafts** Openings in lift shafts are to be protected by -/60/- fire doors complying with AS1735.11 and are set to remain closed except when discharging or receiving passengers or goods. Lift indicator panels are to be backed by construction having an FRL of not less than -/60/60 if it exceeds 35,000mm^2 (175 X 200 mm).	Certification from the lift supplier is required for the installation of the new lift	Compliance readily achievable
C3.11	**Bounding construction: Class 2, 3, 4 and 9 buildings**		N/A
C3.12	**Openings in floors for services** Service penetrations through the carpark gain a concession not to be fire rated.		N/A
C3.13	**Openings in shafts** Service penetrations through the carpark can a concession not to be fire rated.		N/A
C3.14	**-**	This clause has deliberately been left blank	-
C3.15	**Openings for service installation** Services penetrations through a building elements (other than an external wall or roof) that are required to have an FRL with respect to integrity or	Any system used must be a certified system and installed in accordance with the tested method. Specifications of the	Compliance readily achievable

Clause	Description	Comment	Status
	insulation or a resistance to the incipient spread of fire, must comply with a tested system or with Specification C3.15. Methods and materials used are to be identical to tested prototypes and in accordance with AS4072.1 and AS1530.4, and having achieved the required FRL or resistance to the incipient spread of fire or other specified method. Ventilation and air-conditioning systems are to be installed in accordance with AS/NZS 1668.1. **Note**: Service penetrations through the carpark gain a concession not to be fire rated.	methods of fire sealing need to be provided.	
C3.16	**Construction Joints** Construction joints in elements required to have a fire resistance with respect to integrity and insulation must be protected.	Construction joints are to be installed in accordance with a tested prototype in accordance with AS1530.4.	Compliance readily achievable
C3.17	**Columns protected with lightweight construction to achieve an FRL**		N/A
Section D: Access and Egress			
Part D1 - Provision for Escape			
D1.1	**Application of Part**		Noted
D1.2	**Number of exits required** A minimum of two exits is required from each storey in a building having an effective height of 25m or more	Each storey is served by four exits.	Complies
D1.3	**When fire-isolated stairways and ramps are required** Every stair in a Class 5 to 9 building must be fire isolated unless it does not connect or pass through more than 3 consecutive floors in a sprinkler protected building, or 2 storeys in a non-sprinkler protected building.	Fire stairs are nominated as exits	Complies
D1.4	**Exit travel distances** No point on the floor must be more than 20m to an exit or a point in which travel in different directions to 2 exits is available, in which case, the maximum distance to 1 exit cannot exceed 40m.	**The following areas have been identified with exit travel distances exceeding 40m**: 1. All floors - 42m from the central area of the carpark to the nearest exit. 	Performance solution

Clause	Description	Comment	Status
		 This is to be addressed via a performance solution by a fire engineer.	
D1.5	**Distance between alternative exits** The following travel distance limits apply: • ≤ 60m travel distance between alternative exits and not less than 9m between alternative exits; • Exit paths to alternative exits should not converge at any point to be less than 6m apart.	The following areas have been identified with distances between alternative exits exceeding 60m: 2. <u>All floors</u> - 81m between alternative exits on each split level;  This is to be addressed via a performance solution by a fire engineer.	Performance solution
D1.6	**Dimensions of exits and paths of travel to exits**	Each storey contains 4 exits which cater for up to 440 persons.	Complies
D1.7	**Travel via fire-isolated exits** Fire-isolated stairways must provide independent egress from each storey served and discharge directly to a road or open space or alternately a covered area only as permitted under this clause. Where a fire stair discharge pathway to a roadway passes within 6m of an external wall of the same building, the part of the building is required to have an FRL of 60/60/60 and any openings protected internally in accordance with C3.4 for a height of 3m above the ground.	Access to all fire stairs are from general circulation areas. All fire stairs serve each storey and discharge to open space/roadway. The path of travel from all fire stair discharge points to a roadway allow for a distance greater than 6m.	Complies
D1.8	**External stairways or ramps in lieu of fire-isolated exits**		N/A

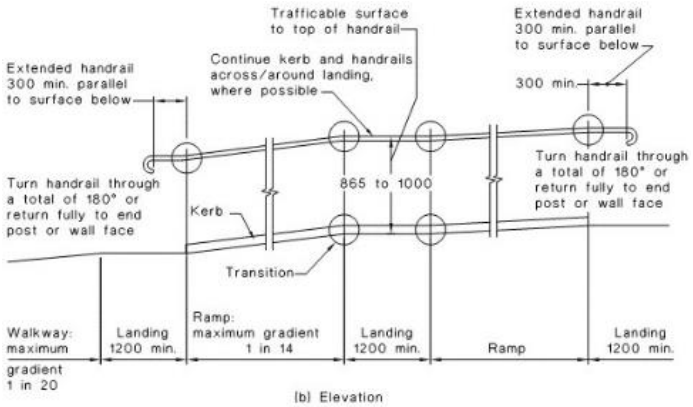
Clause	Description	Comment	Status
D1.9	**Travel by non-fire-isolated stairways or ramps**		N/A
D1.10	**Discharge from exits** An exit must not be blocked nor be capable of being blocked at its point of discharge. Exits leading to open space must have a path of travel to a roadway of 1m.	Bollards will be required to protected door swings from the discharge point of fire stairs.	Compliance readily achievable
D1.11	**Horizontal exits**		N/A
D1.12	**Non-required stairways, ramps or escalators**		N/A
D1.13	**Number of persons accommodated**	Under D1.13 of the BCA, a carpark population ratio is calculated at 30m^2 per person. Based on an average floor area of 4357m^2 per level, the population per floor for BCA purposes is 146 persons	Noted
D1.14	**Measurement of distances**		Noted
D1.15	**Method of measurement**		Noted
D1.16	**Plant rooms, lift machine rooms and electricity network substations: Concession** A ladder may be used in lieu of a stairway as an exit from: a) a plant room with a floor area not more than 100m^2, or b) all but one point of egress from a plant room with a floor area not more than 200m^2.		Compliance readily achievable
D1.17	**Access to lift pits** Access requirements apply to lift pits over 3m in depth.	Lift consultant to confirm.	Compliance readily achievable
Part D2 – Construction of Exits			
D2.1	**Application of Part**		Noted
D2.2	**Fire isolated stairways and ramps** Fire resisting shafts must 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		Compliance readily achievable
D2.3	**Non fire isolated stairways and ramps**		N/A
D2.4	**Separation of rising and descending stair flights**		N/A
D2.5	**Open access ramps and balconies**		N/A
D2.6	**Smoke lobbies**		N/A
D2.7	**Installations in exits and paths of travel** Electrical meters and motors, distribution boards and telecommunication boards must not be accessed from fire isolated exits and, if located in corridors leading to exits, should occur in non-combustible or fire protective smoke sealed enclosures. No openings to ducts conveying hot products of combustion permitted in required exits. Gas or fuel services not permitted in required exits.	Install non-combustible linings to the internal walls, ceiling and doors of relevant cupboards and install smoke seals to the doors.	Compliance readily achievable

Clause	Description	Comment	Status
	Electric or services equipment in paths of travel to exits must be within a non-combustible and smoke sealed enclosure.		
D2.8	**Enclosure of space beneath stairs and ramps**	Enclosures under stairs not shown	N/A
D2.9	**Width of required stairways and ramps**		N/A
D2.10	**Pedestrian ramps**		N/A
D2.11	**Fire-isolated passageways**		N/A
D2.12	**Roof as open space**		N/A
D2.13	**Going and risers** To provide safe passage, stairways must comply with the following: • minimum 2 risers / maximum 18 in each flight; • risers 115mm min 190 mm max - going 250mm min 355mm max - 2R+G 550mm min 700mm max; • Adjacent risers, or between adjacent goings a variation no greater than 5mm is permitted and the largest and smallest riser within the flight or the largest and smallest going within a flight is not to exceed a variation of 10mm; • Under the requirements of AS1428.1-2009 open riser are not permitted; • All treads to be fitted with non-slip finish or non-skid strips; • Treads are required to have a surface or nosing strip with a slip-resistance classification not less than listed in Table D2.14 when tested in accordance with AS 4586  Riser (R) / Going (G) [2] / Quantity (2R+G) Max / Min / Max / Min / Max / Min Public stairways: 190 / 115 / 355 / 250 / 700 / 550 Private stairways[1]: 190 / 115 / 355 / 240 / 700 / 550 	Further details of the stairs will need to be provided to confirm compliance	Compliance Readily Achievable
D2.14	**Landings** Ramps Surfaces, stair tread surfaces or nosing strips, and stair landing surfaces, or landing nosing strips to a flight below, must achieve slip-resistance classifications to AS4586-2013 as follows: **Application** / **Dry Surface Conditions** / **Wet Surface Condition** 1:14 or steeper ramps: P4 or R11 / P5 or R12 Ramps of 1:14 to 1:20: P3 or R10 / P4 or R11 Tread or Landing Surface: P3 or R10 / P4 or R10 Nosing Strip or Landing Strip: P3 / P4	Certification / test reports on the slip resistance of the surfaces will need to be provided on constructed elements.	Compliance readily achievable

Clause	Description	Comment	Status
D2.15	**Thresholds** Steps should not occur at doorways without a threshold landing except as follows: • In a building required to be accessible and the doorway opens to a road or open space and is provided with a threshold ramp or step ramp in accordance with AS1428.1, • Or in any other case a single 190mm step is permitted at doors leading to a road or open space, external stair landing or external balcony.	Note that where access for people with disabilities is required it is not permitted to have a step at the threshold of a doorway	Compliance readily achievable
D2.16	**Barriers to prevent falls** Requirements apply to the provision and design of barriers at locations where a person could fall 1m or more. Generally, 125mm maximum gap size limits apply between balusters or rails and a 1m minimum height applies, with alternate dimensions permitted in fire isolated stairs and industrial areas.  Where the level of the surface below is 4m or more, a balustrade or other barrier must not facilitate climbing of horizontal elements between 150mm and 760mm above the floor. Climbable elements cannot be located within 900mm of the top rail of each balustrade where the fall is greater than 4m. This measurement is taken in an arc as seen in the extract below  	Details of the balustrade proposed for the carpark perimeter edge will need to be detailed for the Construction Certificate.	Additional details required
D2.17	**Handrails** Handrails to exits including parts of fire isolated exit serving an area required to be accessible to people with disabilities must comply with Clause 12 of AS1428.1, viz: • Handrails not to obstruct circulation space • 30-50mm diameter • 865-1000mm above nosing line of stairs • 865-1000mm above ramps and landings • Consistent height throughout • 50mm grip clearance and no obstructions to handhold • Continuous at internal (return) landings	Handrail details to be confirmed by the access consultant Handrails are to be provided in compliance with Clause D3.3 and include the following- **Fire Isolated Stairways and Ramps** In Fire Isolated Stairways & Ramps a handrail is required to be installed to at least one side of stair flights and located not less than 865mm above the nosing's of stair treads and the floor surfaces of landings **Consistent Handrail Heights for all stairways** The height of the top of the handrail, measured at a height of between 865mm –	Compliance readily achievable

Clause	Description	Comment	Status
	• Provided with handrail extensions and 180 degree curled ends	1000mm vertically from the stair nosing shall be consistent throughout the ramp (or stairs) and any landings. All stairs including fire stairs are required to be designed to comply with Clause 12 of AS1428.1 – 2009	

Ramps

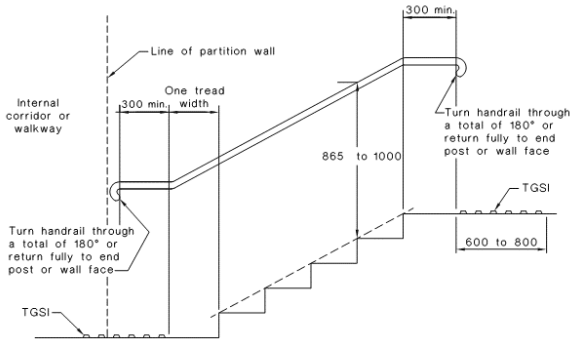


(b) Elevation

DIMENSIONS IN MILLIMETRES

FIGURE 14 RAMP HANDRAILS

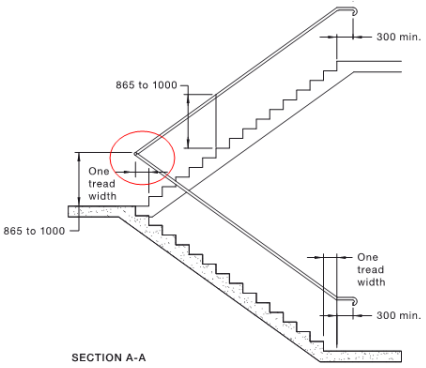
Stairways



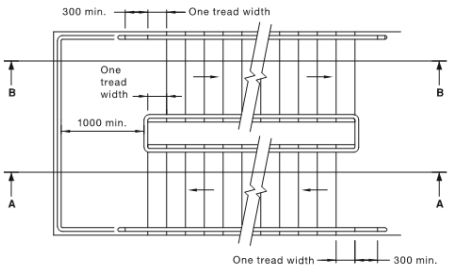
SECTIONAL VIEW

DIMENSIONS IN MILLIMETRES

FIGURE 26(B) STAIRWAY LOCATION AND HANDRAIL EXTENSIONS AT END OF STAIRWAY OTHER THAN AT LINE OF BOUNDARY



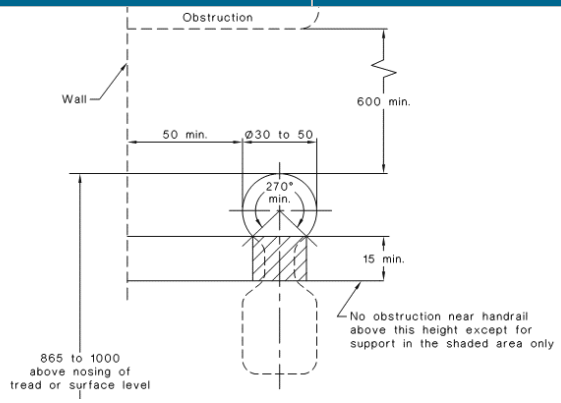
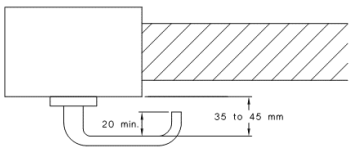
SECTION A-A



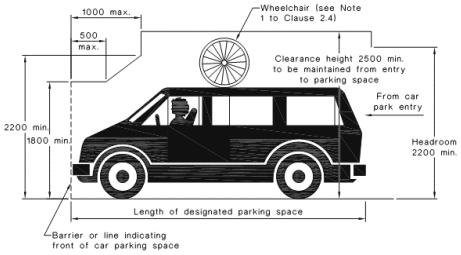
(a) Plan

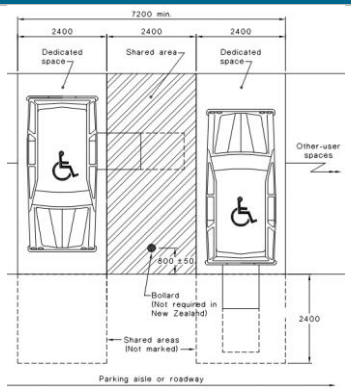
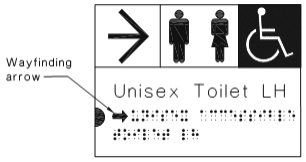
DIMENSIONS IN MILLIMETRES

Handrail Profile

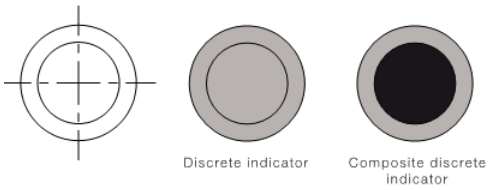
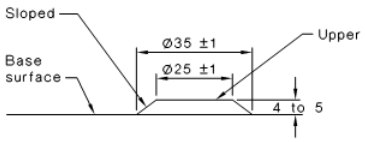
Clause	Description	Comment	Status
			
D2.18	**Fixed platforms, walkways, stairways and ramps**	No plant rooms with AS 1657 access proposed.	N/A
D2.19	**Doorways and doors** Must not be revolving door, roller shutter or tilt door. Can be fitted with a sliding door if it leads directly to open space and can be opened manually under a force of not more than 110N and be fitted with a fail-safe device if the door is power operated.	All exit doors are proposed swinging doors. No doorways in the path of travel to an exit.	Complies
D2.20	**Swinging doors** Defined exit doors that serve a part of a building with a floor area over 200m^2 must swing outward in the direction of exit travel. Must not encroach more than 500mm into the required width of the stair or 100mm when fully open and swing in the direction of travel.	Exit doors to and from fire stairs swing in the direction of egress.	Complies
D2.21	**Operation of latch** Exit doors should be provided with "free handle" egress via a downward or pushing action and, if serving an area accessible to people with disabilities, must have non-slip "D" pull handles with 35-45mm hand clearances.  (a) Isometric view  (b) Plan view	Door schedule to indicate compliance.	Compliance readily achievable
D2.22	**Re-Entry from Fire-Isolated Exits** Fire isolated stair doors must facilitate re-entry from within the stair back onto the floor on every 4th level at all times and on all levels in the event of a fire alarm. Doors of fire-isolated exits must not be locked from the inside of a fire-isolated exit, unless:	Details of the proposed method of re-entry in accordance with this clause will be required for the Construction Certificate.	Additional details required

Clause	Description	Comment	Status
	Option 1 • All doors are fitted with a fail-safe device that automatically unlocks the door upon activation of a fire alarm; **AND** • On at least every fourth storey, the doors are not able to be locked at all and are sign posted stating re-entry is available at that level. Option 2 • All doors are fitted with a fail-safe device that automatically unlocks the door upon activation of a fire alarm; **AND** • An intercommunication or audible/visual alarm system is provided within the stair to assist persons who may accidentally be locked within the stair.		
D2.23	**Signs on doors** Signage in capital letters not less than 20mm high to be provided on doors as follows i. An automatic door held open by an automatic hold-open device: **FIRE SAFETY DOOR - DO NOT OBSTRUCT** ii. for a self-closing door **FIRE SAFETY DOOR** **DO NOT OBSTRUCT** **DO NOT KEEP OPEN** iii. for a door discharging from a fire-isolated exit **FIRE SAFETY DOOR - DO NOT OBSTRUCT**	Under Clause 183 of the Environmental Planning and Assessment Regulation 2000 a notice is to be displayed in a conspicuous location adjacent to a doorway providing access to but not within a fire isolated stairway, passageway or ramp. The words "**OFFENCES RELATING TO FIRE EXITS**" are to be provided in letters at least 8mm high and the remaining words are to be at least 2.5mm high. The notice is to state the following: **OFFENCES RELATING TO FIRE EXITS** It is an offence under the Environmental Planning and Assessment Act 1979 (a) to place anything in or near this fire exit that may obstruct persons moving to or from this exit, or (b) to interfere with or obstruct the operation of any fire doors, or (c) to remove, damage or otherwise interfere with this notice.	Compliance readily achievable
D2.24	**Protection of openable windows**	No windows present in the external wall.	N/A
D2.24	**Timber stairways: Concession**		N/A
NSW D2.101	**Doors in the path of travel in an Entertainment Venue**		N/A
Part D3 – Access for People with Disabilities			
D3.1	**General building access requirements** Access is generally required for persons with a disability throughout all areas unless specifically exempted.	Access is to and within any level containing accessible carparking. Access consultant to provide report detailing compliance to Part D3 of the BCA and AS 1428.1 – 2009.	Additional details required
D3.2	**Access to buildings** External access to the building for people with a disability must be provided: • From main pedestrian entry points at the allotment boundary.	Access consultant to provide report detailing compliance to Part D3 of the BCA and AS 1428.1 – 2009.	Compliance readily achievable

Clause	Description	Comment	Status
	• Through the principle pedestrian entrance. • Through at least 50% of all pedestrian entries. • From accessible car parking spaces. • For buildings over 500m², so that an accessible entry occurs within 50m of any non-accessible entry. • From any another accessible building on the site.		
D3.3	**Parts of the building to be accessible** All parts of the building must be accessible to people with a disability except for areas where access would be inappropriate due to the particular use or areas that would pose a health or safety risk to people with a disability. A fire isolated stairway must comply with Clause 11(f) and (g) of AS 1428.1. Every passenger lift must comply with Clause E3.6. Access ways must have passing spaces and turning spaces complying with AS 1428.1. Pile height or pile thickness of carpets shall comply with the requirements of this Clause and AS 1428.1.	Access consultant to provide report detailing compliance to Part D3 of the BCA and AS 1428.1 – 2009.	Compliance readily achievable
D3.4	**Exemptions** Certain areas may not need to be accessible if the area is deemed inappropriate because of the particular use or the area would pose a health or safety risk for people with disabilities.	Access consultant to provide report detailing compliance to Part D3 of the BCA and AS 1428.1 – 2009. Any areas exempted from access to be detailed and justified in the access report.	Noted
D3.5	**Accessible car parking** The accessible parking spaces must comply with AS/NZS 2890.6 – 2009. General requirements are: • 2.4m x 5.4m. • 2.2m head clearance for access and egress routes to and from accessible car spaces. • 2.5m head clearances over accessible car spaces. • Flat even surfaces. • Designated and sign posted for disabled users. 	Access consultant to provide report detailing compliance to AS/NZS 2890.6 – 2009.	Compliance readily achievable

Clause	Description	Comment	Status
			
D3.6	**Signage** Braille and tactile signage complying with Specification D3.6 and incorporating the international symbol of access or deafness in accordance with AS1428.1 must identify every accessible sanitary facility and space with a hearing augmentation system. Every doorway required to be provided with an exit sign under Clause E4.5 is to be provided with braille and tactile signage that states "**EXIT**" and identify the floor level "**LEVEL #**".  Signage must be provided within a room containing hearing augmentation identifying the type of hearing augmentation, the area covered in the room and if receivers are being used and where the receivers can be obtained. Signage identifying ambulant accessible sanitary facilities in accordance with AS 1428.1 must be located on the door of the facility.    Where the pedestrian entrance is not accessible, directional signage in accordance with AS 1428.1 must be provided to direct a person to the location of the nearest accessible pedestrian entrance. Where a bank of sanitary facilities is not provided with an accessible unisex sanitary facility, directional signage must be placed at the location of the sanitary facilities that are not accessible, to direct a	Signage details must be in accordance with AS1428.1 - 2009 and Specification D3.6 of the BCA.	Compliance readily achievable

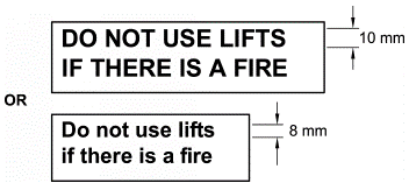
Clause	Description	Comment	Status
	person to the location of the nearest accessible unisex sanitary facility.		
D3.7	**Hearing augmentation**		N/A

D3.8	**Tactile indicators (TGSIs)**
	Tactile indicators are to be provided to all stairways, ramps and escalators must be provided to warn people who are blind or have a vision impairment that they are approaching:
	• a stairway, other than a fire-isolated stairway,
	• an escalator, passenger conveyor or moving walk,
	• a ramp other than a fire-isolated ramp, step ramp, kerb ramp or swimming pool ramp, or
	• in the absence of a suitable barrier an overhead:
	  ○ obstruction less than 2 m above floor level, other than a doorway
	  ○ an access way meeting a vehicular way adjacent to any pedestrian entrance to a building, excluding a pedestrian entrance serving an area referred to in D3.4, if there is no kerb or kerb ramp at that point
	Tactile ground surface indicators must comply with sections 1 and 2 of AS/NZS 1428.4.1
	 
	
	(a) Plans of individual truncated cones
	 
	
	(b) Elevation of individual truncated cone
		Refer to access consultant's report.	Compliance readily achievable

D3.9	**Wheelchair seating spaces in Class 9b assembly buildings**		N/A
D3.10	**Swimming pools**		N/A
D3.11	**Ramps** On an access way a series of connected ramps must not have a combined vertical rise of more than 3.6m. A landing for a step ramp must not overlap a landing of another step ramp or ramp.	Refer to access consultant's report.	Compliance readily achievable
D3.12	**Glazing on an accessway** On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1.		N/A

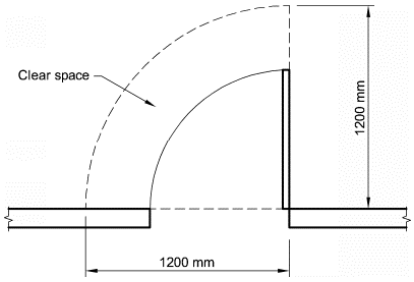
Clause	Description	Comment	Status
Section E: Services and Equipment			
Part E1 – Fire Fighting Equipment			
E1.1	-	This Clause has deliberately been left blank	
E1.2	-	This Clause has deliberately been left blank	
E1.3	**Fire hydrants** The building required to be provided with a fire hydrant system in accordance with AS 2419.1. Fire hydrant cover is required throughout to AS2419.1 from hydrants located externally, within fire stairs or at other approved locations.	Hydraulic drawings and design certification to be provided at Construction Certificate stage by a competent fire safety practitioner. Details of the proposed fire brigade booster assembly achieving a radiant heat protection wall achieving an FRL of 90/90/90 for a distance of 2m each side and 3m above the upper hose connections is required.	Additional details required
		It is proposed that fire hydrant coverage to the carpark will be provided via two lengths of hose (2 x 30m) from hydrants within fire stairs in lieu of a single 30m hose from additional internal floor locations to achieve coverage to AS 2419.1	Performance solution
		The number of fire hydrants required to flow simultaneously will be based on Table 2.2.2(D) of AS 2419.1 – 2017 in lieu of Table 2.1 of AS 2419.1 – 2005. Table 2.2.2(D) of AS 2419.1 – 2017 contains specific requirements for open-deck carparks with large fire compartment sizes whereas AS 2419.1 – 2005 does not consider unique compartment size for an open-deck carpark. This is to be addressed via a performance solution by a fire engineer.	Performance solution
E1.4	**Fire hose reels** Fire hose reel coverage to AS2441-2005 is required throughout the carpark. Hose reels are to be located within 4m of fire stair doorways. Where coverage is not achieved with hose reels located adjacent to the fire stairs additional hose reels are permitted to be located along the paths of travel to achieve coverage.	Hydraulic drawings and design certification to be provided at Construction Certificate stage by a competent fire safety practitioner.	Compliance readily achievable
E1.5	**Sprinklers**	Sprinklers are not required to an open-deck carpark including one over 25m in effective height where it is a separate building. **Note:** An open-deck carpark within a multi-classified building greater than 25m requires sprinklers throughout the whole building. Therefore any future change to the building that introduces another BCA classification within any part of the building will trigger	N/A

Clause	Description	Comment	Status
		sprinklers throughout. Whilst ever the building is solely open-deck carpark no sprinklers are required.	
E1.6	**Portable fire extinguishers** Portable Fire Extinguishers are required be installed to Table E1.6 and AS 2444 requirements.		Compliance readily achievable
E1.7	-	This Clause has deliberately been left blank	
E1.8	**Fire control centre**	A fire control centre in accordance with Specification E1.8 is required to the building. Despite the requirements of Part E2 not applying to an open-deck carpark, an EWIS system is required under deemed-to-satisfy provisions of E4.9. The provision of fire control centre will be linked to the whether an EWIS system is installed. Dry fire engineer to provide comments around the practical installation and limitations for installing an EWIS system/Fire control centre in the building. Fire engineer to advise any scope for performance solution.	Does not comply
E1.9	**Fire precautions during construction** Fire services are required during construction, including fire hydrants and hose reels which must be active and operational after the building reaches a construction stage effective height of 12m. When the building reaches 12m effective height: • All required hydrants and hose reels must be operational on every storey covered by a roof or floor slab over, except for the two uppermost storeys. • Any required booster connections must be installed.	Further discussion required with builder to determine that this is included in their program. BCA compliance with respect to fire services during construction can be problematic as hydrants with required pressures and flows and booster connections often cannot be achieved at the required time. A temporary fire protection system, possibly with temporary boosters and no fire pumps, may need to be agreed with the fire brigade. This needs to be put in place early in the construction programme and may require liaison with the builder and his fire services contractor.	Compliance Readily achievable
E1.10	**Provisions for special hazards**		N/A
Part E2 – Smoke Hazard Management			
E2.1	**Applicable of Part**	The provisions of Part E2 do not apply to an open-deck carpark.	N/A
E2.2	**General requirements - Smoke Hazard Management (NSW variation)**	The provisions of Part E2 do not apply to an open-deck carpark. Note: Refer to Clause E4.9 for separate requirements for EWIS.	N/A
E2.3	**Provisions of special hazards**	No special hazards identified.	N/A
Part E3 – Lift Installations			
E3.1	**Lift installations** Electric and electrohydraulic lifts must comply with the design requirements of BCA Specification E3.1.	Certification of the lift design to be provided	Compliance readily achievable

Clause	Description	Comment	Status
E3.2	**Stretcher facility in lifts** Emergency lifts are required to accommodate a stretcher of 2m x 0.6m x 1.4m high. The lift must serve every level to which lift access is provided.	Certification of lift design to be provided	Compliance readily achievable
E3.3	**Warning against use of lift in fire** Warning signage is required at lift doors advising that lifts should not be used in the event of a fire.	Signage to be installed stating. 	Compliance readily achievable
E3.4	**Emergency lifts** The building having an effective height over 25m requires emergency lifts. Where more than two passenger lifts serve a storey, two emergency lifts must be provided, and these must be in separate shafts if multiple lift shafts occur. The following requirements apply to an emergency lift: • Must serve all storeys served by a passenger lift. • Must be contained in a 120/120/120 fire rated shaft.	Certification of lift design to be provided	Compliance readily achievable
E3.5	**Landings**		Complies
E3.6	**Passenger lifts** Every passenger lift must be one of the types identified in Table E3.6a, have accessible features in accordance with Table E3.6b and not reply on a constant pressure device for its operation if the lift car is fully enclosed.		Compliance readily achievable
E3.7	**Fire service control** All lifts will require fire service controls being: • A fire service control switch is required for each lift or lift group. • A lift car fire service drive control is required for each lift.	Certification of lift design to be provided.	Compliance readily achievable
E3.8	**Residential care buildings**		N/A
E3.9	**Fire service recall control switch** The fire service control switch must be located at the landing nominated by the appropriate authority and, when activated, must return all lifts to the nominated floor. If a lift car drive control has been activated, it shall override the landing fire service control switch.	Certification of lift design to be provided	Compliance readily achievable
E3.10	**Lift car fire service drive control switch** The lift car service drive control must be activated from within the lift car. The switch is to be located between 600mm and 1500mm above the lift car floor and be labelled '**FIRE SERVICE**" in indelible white lettering on red background. The "**OFF**" and "**ON**" positions are to be identified.	Certification of lift design to be provided	Compliance readily achievable

Clause	Description	Comment	Status
Part E4 – Emergency Lighting, Exit and Warning Systems			
E4.1	-	This clause has been intentional left blank	-
E4.2	**Emergency lighting requirements** Emergency lighting is to be provided in: • Every fire-isolated stairway. • Every passageway, hallway, corridor or the like, that is part of the path of travel to an exit. • In every room having a floor area more than 100m^2 that does not open to a corridor or space that has emergency lighting or to a road or open space. • In any room having a floor area more than 300m^2.	Design drawings and certification from an electrical engineer will be required.	Compliance readily achievable
E4.3	**Measurement of distances**		Noted
E4.4	**Design and operation of emergency lighting** Emergency lighting must comply with to AS2293.1	Design drawings and certification from an electrical engineer will be required.	Compliance readily achievable
E4.5	**Exit signs** Exit signs are to be provided in accordance with Clause E4.5 of the BCA.	Exit signs must be clearly visible to person approaching the exit and must be installed on, above or adjacent to; 1. A door providing direct egress from a storey to a stairway, passageway or ramp serving as a required exit. 2. A door from an enclosed stairway, passageway or ramp at every level of discharge to a road or open space. 3. A door serving as or forming part of a required exit in a storey required to be provided with emergency lighting.	Compliance readily achievable
E4.6	**Direction signs** *(NSW variation)* Where an exit is not readily apparent then exit signs with directional arrows must be installed in appropriate positions in corridors, hallways, lobbies and the like indicating the direction to a required exit		Compliance readily achievable
E4.7	**Class 2 and 3 buildings and Class 4 parts: Exemptions**		N/A
E4.8	**Design and operation of exit signs** Required exit signs must comply with AS 2293.1, photo luminescent exit signs with Specification E4.8, and are to be clearly visible at all times when the building in occupied by any person having the legal right of entry to the building.	Design drawings and certification from an electrical engineer will be required.	Compliance readily achievable
E4.9	**Emergency warning and intercom systems** An emergency warning and intercom system complying with AS 1670.4 is required in a building with an effective height of more than 25m.	Despite the requirements of Part E2 not applying to an open-deck carpark, the requirement for an EWIS system in a building over 25m in height does not provide a concession to open-deck carparks. As such, an EWIS system is required under deemed-to-satisfy provisions.	Does not comply

Clause	Description	Comment	Status
		Dry fire engineer to provide comments around the practical installation and limitations for installing an EWIS system in the building. Fire engineer to advise any scope for performance solution.	
Section F: Health and Amenity			
Part F1 – Damp and Weatherproofing			
F1.0	**Water proofing of external walls**	Does not apply to an open deck carpark.	N/A
F1.1	**Stormwater drainage** Stormwater drainage must comply with AS/NZS 3500.3.	Hydraulic drawings and design certification to be provided at Construction Certificate stage.	Compliance readily achievable
F1.2	-	This clause has deliberately been left blank	-
F1.3	-	This clause has deliberately been left blank	-
F1.4	**External above ground membranes** External waterproofing membrane systems for roofs, decks, balconies and the like must comply with AS4654 Parts 1 and 2.		Compliance readily achievable
F1.5	**Roof coverings**	No roof covering proposed.	N/A
F1.6	**Sarking**	No solid external wall proposed.	N/A
F1.7	**Water proofing of wet areas in buildings** Water proofing of wet areas within the building is to comply with AS 3740.		Compliance readily achievable
F1.8	-	This clause has deliberately been left blank	-
F1.9	**Damp-proofing**	Does not apply to an open deck carpark.	N/A
F1.10	**Damp-proofing of floors on the ground** A vapour barrier in accordance with AS2870 is to be provided beneath the ground floor slab.		Compliance readily achievable
F1.11	**Provision of floor wastes**		N/A
F1.12	**Subfloor ventilation**		N/A
F1.13	**Glazed assemblies**	Does not apply to an open deck carpark.	N/A
Part F2 – Sanitary and Other Facilities			
F2.1	**Facilities in residential buildings**		N/A
F2.2	**Calculation of number of occupants and fixtures**		Noted
F2.3	**Facilities in Class 3 to 9 buildings** Toilet facilities are required in appropriate numbers based on the number of persons accommodated.	The building is proposed to be private carpark for Qantas. No employees are based within the building therefore no sanitary facilities are required under the BCA. It is noted that provision has been made for sanitary facilities on the ground floor.	N/A
F2.4	**Accessible sanitary facilities** Though sanitary facilities are not required to the building, provisions has been made on ground floor	An accessible and ambulant facility are evident on plan. Access consultant to provide comment in relation to compliance.	Compliance readily achievable
F2.5	**Construction of sanitary compartments** Where clear space between closet pan and doorway	All hinged doors that swing inward to sanitary facilities and do not comply with	Compliance readily

Clause	Description	Comment	Status
	is less than 1.2m, doors must open outwards, slide or be readily removable from outside.	achieving a 1200mm clearance to pan are required to be installed with lift-off hinges 	achievable
F2.6	**Interpretation: Urinals and washbasins**	Each 600mm length of a continuous urinal trough is counted as 1 urinal.	Noted
F2.7	*(NSW variation – Deleted)*	-	-
F2.8	**Waste management**		N/A
F2.9	**Accessible adult change facilities**		N/A
Part F3 – Room Heights			
F3.1	**Height of rooms and other spaces** • General floor areas – 2.1m • Corridor, passageways or the like – 2.1m; • Bathroom, sanitary compartment, store room or the like – 2.1m; and • Above a stairway, landing or the like – 2m measured vertically above nosing of stairway treads or floor surface of landing.	Details of ceiling heights will need to be confirmed for the Construction Certificate.	Compliance readily achievable
Part F4 – Light and Ventilation			
F4.1	**Provision of natural light**		N/A
F4.2	**Methods and extent of natural lighting**		N/A
F4.3	**Natural Light borrowed from adjoining room**		N/A
F4.4	**Artificial lighting** An artificial lighting system is required in accordance with the requirements of this clause and AS/NZS 1680.0.	Design details and certification from an electrical engineer is required	Compliance readily achievable
F4.5	**Ventilation of rooms**	Refer to Clause F4.11 Note: The building is proposed to be naturally ventilated as required as an open-deck carpark.	N/A
F4.6	**Natural ventilation**		N/A
F4.7	**Ventilation borrowed from adjoining room**		N/A
F4.8	**Restriction on position of sanitary compartments**		Complies
F4.9	**Airlocks**		N/A
F4.10	**-**	This clause has intentionally been left blank	-
F4.11	**Carparks**	Does not apply to an open deck carpark.	N/A
F4.12	**Kitchen local exhaust ventilation**		N/A

Clause	Description	Comment	Status
Part F5 – Sound Transmission and Insulation			N/A
Part F6 – Condensation Management			N/A
Section G: Ancillary Provisions			
Part G1- Minor Structures and components			
G1.1	**Swimming pools**		N/A
G1.2	**Refrigerated chambers, strong rooms and vaults**		N/A
G1.3	**Outdoor play spaces**		N/A
NSW G1.101	**Provision for cleaning windows** A safe manner of cleaning windows is to be provided as windows are located 3 or more storeys above ground level.	No windows are proposed in the external wall.	N/A
Part G2 - Boilers, pressure vessels, heating appliances, fire places, chimneys and flues			N/A
Part G3 - Atrium Construction			N/A
Part G4 - Construction in Alpine Areas			N/A
Part G5 - Construction in Bushfire Prone Areas			N/A
Part G6 – Occupiable Outdoor Areas			N/A
Section H: Special Use Buildings – Auditoriums, Public Halls, Public Transport Buildings			
Part H1 - Class 9b Buildings			N/A
NSW Part - H101 Entertainment Venues other than Temporary Structures and Drive-In Theatres			N/A
NSW Part - H102 Temporary Structures			N/A
NSW Part - H103 Drive-In Theatres			N/A
Part H2 - Public Transport Buildings			N/A
Part H3 - Farm Building and Farm Sheds			N/A
NSW Section J: Energy Efficiency Energy Efficiency for buildings requires buildings to reduce greenhouse gas emissions by efficiently using energy. A building's services must have features that facilitate the efficient use of energy. The discipline of Energy Efficiency with the BCA has become a specialised field where compliance with BCA Section J is to be certified with the issue of a Certificate of Compliance – Design from the relevant Services Engineer/Consultant. The purpose of this section is to provide a brief explanation of which areas are to achieve compliance with BCA Section J – Energy Efficiency during design and construction. The BCA should be referenced for exact requirements, clarification and further explanation.			
Section J	**Energy efficiency measures** Energy efficiency measures are prescribed for the following building elements to limit energy consumption:- • Building fabric • Building sealing	Compliance assumed, although further information is required to confirm compliance. A performance based BCA JV3 assessment may be adopted for the project if compliance with BCA deemed to satisfy provisions are problematic.	Compliance readily achievable

Clause	Description	Comment	Status
	• Air movement. • Air-conditioning and ventilation systems. • Artificial lighting and power • Hot water supply • Access for maintenance		
NSW Subsection J(B) Energy Efficiency - Class 3 and Class 5 to 9 Buildings			
NSW J(B)1 - Compliance with BCA Provisions. Class 3 and Class 5 to 9 buildings must comply with all of the provisions of the national **Section J** that are applicable to the relevant classifications, except as varied by **NSW J3.1** Application of Part.			**Noted**
Part J0 - Energy Efficiency			
J0.1	**Application of Part**	A transitional period applies in which the Section J requirements of BCA 2016 Amendment 1 may be apply in lieu of BCA 2019 until 30 April 2020.	Noted
J0.2	**Heating and cooling loads of sole-occupancy units of a Class 2 building or a Class 4 part**		N/A
J0.3	**Ceiling fans**		N/A
J0.4	**Roof thermal breaks**		N/A
J0.5	**Wall thermal breaks**		N/A
Part J1 - Building Fabric			
J1.1	**Application of Part**	The open deck carpark does not contain an envelope by BCA definition therefore the requirements of Part J1 do not apply.	N/A
J1.2	**Thermal construction – general**		N/A
J1.3	**Roof and ceiling construction**		N/A
J1.4	**Roof lights**		N/A
J1.5	**Walls and glazing**		N/A
J1.6	**Floors**		N/A
Part J2 - This Part has deliberately been left blank			
Part J3 - Building Sealing			
J3.1	**Application of Part**	The open deck carpark does not contain an envelope by BCA definition therefore the requirements of Part J1 do not apply.	N/A
J3.2	**Chimneys and flues**		N/A
J3.3	**Roof lights**		N/A
J3.4	**Windows and doors**		N/A
J3.5	**Exhaust fans**		N/A
J3.6	**Construction of roofs, walls and floors**		N/A
J3.7	**Evaporative coolers**		N/A

Clause	Description	Comment	Status
Part J4 - This Part has deliberately been left blank			
Part J5 - Air-conditioning and Ventilation Systems			
J5.1	**Application of Part**	The building is a open deck carpark with no proposal for a mechanical air-conditioning or ventilation system.	Noted
J5.2	**Air-conditioning system control**		N/A
J5.3	**Mechanical ventilation system control**		N/A
J5.4	**Fan systems**		N/A
J5.5	**Ductwork insulation**		N/A
J5.6	**Ductwork sealing**		N/A
J5.7	**Pump systems**		N/A
J5.8	**Pipework insulation**		N/A
J5.9	**Space heating**		N/A
J5.10	**Refrigerant chillers**		N/A
J5.11	**Unitary air-conditioning equipment**		N/A
J5.12	**Heat rejection equipment**		N/A
Part J5 - Artificial Lighting and Power			
J6.1	**Application of Part**	Applies to artificial lighting and power provide to the building.	Noted
J6.2	**Artificial lighting** For artificial lighting, the aggregate design illumination power load must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum illumination power density in Table J6.2a. Aggregate design illumination power is to be calculated in accordance with requirements of this clause.	Design drawings and certification from an electrical engineer will be required.	Compliance readily achievable
J6.3	**Interior artificial lighting and power control** The power control for artificial interior lighting must comply with the requirements of Clause J6.3. Artificial lighting of a room or space must be individually operated by a switch or other control device in accordance with Specification J6.	Design drawings and certification from an electrical engineer will be required.	Compliance readily achievable
J6.4	**Interior decorative and display lighting**		N/A
J6.5	**Exterior artificial lighting** Artificial lighting around the perimeter of a building must be controlled by a daylight sensor or time switch as specified in Clause J6.5.	Design drawings and certification from an electrical engineer will be required.	Compliance readily achievable
J6.6	**Boiling water and chilled water storage units** Power supply to a boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.	Design drawings and certification from an electrical engineer will be required.	Compliance readily achievable
J6.7	**Lifts**	Design certification from the lift designer	Compliance

Clause	Description	Comment	Status
	Lifts must be configured to:- • ensure artificial lighting and ventilation in the car are turned off when it is unused for 15 minutes; • achieve the idle and standby energy performance level in Table 6.7a; • achieve the energy efficiency class in Table 6.7b; or if a dedicated goods lift energy efficiency class D in accordance with ISO 25745-2.	will be required.	readily achievable
J6.8	**Escalators and moving walkways**		N/A
Part J7 - Heated Water Supply and Swimming Pool and Spa Pool Plant			
J7.1	-	This Clause has deliberately been left blank	-
J7.2	**Heated water supply**		N/A
J7.3	**Swimming pool hearing and pumping**		N/A
J7.4	**Spa pool heating and pumping**		N/A
Part J8 - Facilities for Energy Monitoring			
J8.1	**Application of Part**	Applies to this building.	Noted
J8.2	-	This Clause has deliberately been left blank	-
J8.3	**Facilities for energy monitoring** A building with a floor area of more than 2,500m^2 must have the facility to record individually the energy consumption of: I. air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and II. artificial lighting; and III. appliance power; and IV. central hot water supply; and V. internal transport devices including lifts, escalators and travelators where there is more than one serving the building; and VI. other ancillary plant.	An energy monitoring facility is required for the building.	Compliance readily achievable

14. Appendix A – Glossary and Abbreviation

BCA GLOSSARY

Term	Definition
Deemed-to-Satisfy Solution	*A method of satisfying the Deemed-to- Satisfy Provisions.*
Deemed-to- Satisfy Provisions	*Provisions that are deemed to satisfy the Performance Requirements.*
Effective height	*The vertical distance between the floor of the lowest storey included in the calculation of rise in storeys and the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units).*
Fire resistance level	*The grading periods in minutes determined in accordance with Schedule 5 of the BCA, for the following criteria –* *(a) Structural adequacy; and* *(b) Integrity; and* *(c) Insulation,* *And expressed in that order.*
Open-deck carpark	*A carpark in which all parts of the parking storeys are cross-ventilated by permanent unobstructed openings in not fewer than 2 opposite or approximately opposite sides, and –* *(a) Each side that provides ventilation is not less than 1/6 of the area of any other side; and* *(b) The openings are not less than ½ of the wall area of the side concerned.*
Performance Requirement	*A requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.*
Performance Solution	*A method of complying with the Performance Requirements other than by a Deemed-to-Satisfy Solution.*
Rise in storey	*The greatest number of storeys calculated in accordance with C1.2 of the BCA.*
Type of Construction	*Type of fire-resisting construction of a building determined in accordance with C1.1 of the BCA. Type A is the most fire-resisting and Type C is the least fire-resisting.*

ABBREVIATIONS

Acronym	Definition
AS	*Australian Standard*
BCA	*National Code of Construction, Volume One, Building Code of Australia 2019*
DtS	*Deemed – to - satisfy*
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
FRL	*Fire resistance level*

Acronym	Definition
F&R NSW	*Fire and Rescue NSW*
NSW	New South Wales
Qantas	Qantas Airways Limited
QGFTC	Qantas Group Flight Training Centre
SIM	Full Motion Flight Simulators
sqm	Square Metres
SSD	State Significant Development

15. Appendix B – Referenced Documentation

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

Drawing No.	Title	Issue	Date	Drawn By
NGA-1822-DWG-A4.01.01	Carpark – Plan – Site	D0.1	19.04.01	NoxonGiffen
NGA-1822-DWG-A4.02.01	Carpark – Plan – Demolition	D0.1	19.04.01	NoxonGiffen
NGA-1822-DWG-A4.04.01	Carpark – Plan – GA – L00	D0.1	19.04.01	NoxonGiffen
NGA-1822-DWG-A4.04.11	Carpark – Plan – GA – L01	D0.1	19.04.01	NoxonGiffen
NGA-1822-DWG-A4.04.21	Carpark – Plan – GA – Typical Floor	D0.1	19.04.01	NoxonGiffen
NGA-1822-DWG-A4.04.31	Carpark – Plan – GA – L04 Roof	D0.1	19.04.01	NoxonGiffen
NGA-1822-DWG-A4.09.01	Carpark – Elevations	D0.1	19.04.01	NoxonGiffen
NGA-1822-DWG-A4.09.02	Carpark – Elevations	D0.1	19.04.01	NoxonGiffen
NGA-1822-DWG-A4.09.11	Carpark – Sections	D0.1	19.04.01	NoxonGiffen

16. Appendix B – Statutory Fire Safety Measures

Schedule of Statutory Fire Safety Measures

Measure	Standard of Performance
Emergency lighting	BCA2019 Clause E4.2, E4.4 and AS 2293.1 – 2018
Emergency warning and intercom systems ** Subject to further confirmation*	BCA2019 Clause E4.9 and AS 1670.4 – 2018
Exit signs	BCA2019 Clause E4.5, NSW E4.6, E4.8 and AS 2293.1 – 2018
Fire control centre ** Subject to further confirmation*	BCA2019 Specification E1.8
Fire doors	BCA2019 Specification C3.4 and AS 1905.1 – 2015
Fire hydrants systems	BCA2019 Clause E1.3 and AS 2419.1 – 2005
Fire seals protecting opening in fire resisting components of the building	BCA2019 Clause C3.15, Specification C3.15 and AS 1530.4 –2014 and AS 4072.1 – 2005 and installed in accordance with the tested prototype. *[Note: Systems tested to AS 1530.4 prior to 1 January 1995 need not be retested to comply with the provisions in AS 4072.1]*
Fire hose reel system	BCA2019 Clause E1.4 and AS 2441 – 2005
Portable fire extinguishers	BCA2019 Clause E1.6 and AS 2444 – 2001
Warning and operational signs	BCA2019 Clauses D1.17, D2.23, D3.6, E3.3, E3.9 and E3.10

Note the fire safety schedule will need to be amended subject to the inclusion of a fire engineered report.

17. Appendix C1.10 – Early Fire Hazard Properties for Materials

Floor materials, floor coverings and wall and ceiling lining materials are required to comply with BCA prescribed fire hazard properties.

Floor Linings and Floor Coverings	
General Non Sprinklered Areas	Minimum 2.2 (or 4.5 for Class 3 areas and 9a patient care areas) kw/m^2 critical radiant heat flux and, a maximum smoke development rate of 750 percent minutes.
General Sprinklered Areas	Minimum 1.2(or 2.2 for Class 3, 9a patient care, and 9c residential use areas) kw/m^2 critical radiant heat flux
Fire Isolated Exits and Fire Control Rooms	Minimum 2.2/(or 4.5 for Class 3, 9a and 9c areas) kw/m^2 critical radiant heat flux
Lift Cars	Minimum 2.2 kw/m^2 critical radiant heat flux

Wall Linings and Ceiling Linings	
Generally	Variously Group 1,2, or 3 materials (more restrictive Group number for non-sprinklered areas, public corridors, health care corridors and other prescribed locations) when tested to AS/ISO 9705 or clause 3 of BCA Spec A2.4 and AS/NZ 3837
Fire Isolated Exits	Group 1 material when tested as above
Lift Cars	Group 1 or 2 materials when tested as above

In addition, in non-sprinklered areas, wall and ceiling linings must have a smoke growth rate index not more than 100 or an average specific extinction area less than 250m^2/g.

Other than above, construction materials generally need to achieve as1530.3 early fire hazard indices requirements as follows:	
Generally	Spread of flame Index not > 9 Smoke developed index not > 8
Sarking	Flammability Index not > 5
Fire Isolated Exits and Fire Control Rooms	Spread of Flame Index 0 Smoke Developed Index not > 2 Sarking Flammability 0
Non Fire Isolated Stairs & Escalators and Auditorium Fixed Seating	Spread of Flame Index 0 Smoke Developed Index not > 5
Lifts	To AS 1735.2
Air Ducts	To AS4254

18. Appendix C2.2 – Floor Areas and Volumes

Floor areas and volumes of each storey

Floor	Approx. Area (m^2)	Approx. Volume (m^3)	Comment
Each storey	4,357	12,200	The building is a single fire compartment.
Total	60,996	170,789	

19. Appendix D3 – Significant Accessibility Requirements

Access for wheelchair users and people with disabilities generally must be to AS1428.1-2009. Principle requirements are:

- Continuous accessible paths of travel throughout
- Minimum 1m wide travel paths with maximum 3-5mm joints, lips, level changes etc.
- No deep pile carpets or grates with large slots.
- Walls or 75-150mm kerbs at travel path sides or if level change occurs to cause a wheelchair hazard.
- 1.8m wide x 2m long wheelchair passing spaces at 20m intervals in passageways where a direct line of sight is not available.
- Turning spaces at 20m intervals and within 2m of dead end access ways. 1.5m x 1.5m 90 deg turning spaces (with splayed internal corner) and 1.54m x 2.07m long 180 deg turning spaces are required including at dead ends in passageways.
- Step ramps, kerb ramps and threshold ramps as prescribed.
- 1:14 maximum ramps with 9m between landings.
- 1.9m x 1 in 10 (maximum 190mm rise) step ramps
- 1.52m x 1 in 8 (maximum 190mm rise) kerb ramps.
- 30-50mm handrails with 300mm extensions and curls and 50mm clearances on both sides of steps, ramps, etc.
- 850mm clear width doors with 340 - 900mm latch side clearances and 1220-1670mm approach clearances depending on arrangements.
- Stairs and ramps set back from building lines and corridors to allow space for handrail extensions and TGSIs.
- Decals to glazing.
- 900-1100mm door hardware height.
- Lever handle hardware with low opening forces.
- Landings at doorways, direction changes and at intervals on ramps and inclined walkways.
- Walkways with colour contrast borders.
- Flat even surfaces.
- Colour contrasted hand rails and door frames.
- “D” pull handles to doors.
- Continuous protected paths from disabled persons’ car spaces to lifts, access points, etc.
- Ambulant disabled persons’ toilets with grab rails and outward swinging doors or longer cubicles.
- Prescribed types of water entry arrangements for swimming pools depending on pool size.
- Non fire enclosed stairs with opaque risers.
- Fire stairs and non-fire enclosed stairs with colour contrasting nosing strips.
- All switches and controls 900-1100mm above floor level.

The following general requirements apply to accessible toilets:

- Unisex facility.
- ~1.9 x 2.7m or 2.3 x 2.4m minimum room dimensions depending on arrangements. (~2.2m x 1.6m if AS1428.1-2001 concession applies).
- 30-40mm grab rails with 50-60mm clearances.
- Doors with appropriate clearances and circulation spaces and able to be operated externally in emergencies
- Washbasins with clearances as required.
- Shielded hot water pipes.
- Mirror, shelf, dispensers and coat hooks.
- Mirrored layout for alternative facilities

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