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Australian Museum – Phase 1

BCA Assessment Report Report 2018/1418 R1.0

Prepared for the Australian Museum
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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

A preliminary assessment of the Phase 1 of the masterplan design at The Australian Museum has been undertaken against the Deemed-to-Satisfy (DTS) provisions of the relevant sections of the Building Code of Australia and the applicable Building Regulations.

The proposal constitutes a change of use to a portion of the premises from a storage area to an exhibition space. Under 94 of The Environmental Planning and Assessment Regulation 2000 (EPAR) when determining such a Development Application, a Consent Authority is required to assess fire safety in an existing building. Further, if a change in use is involved under a Construction Certificate application, Clause 143 (1) of the EPAR requires that the fire protection (egress), structural capacity and Category 1 Fire Safety provisions must be applicable to the new use of the building.

The existing building has significant heritage features which constrain a full upgrade. Therefore, as part of this application the applicant is requesting that the Consent Authority use its discretionary power to permit the retention of existing features.

With the exceptions noted in this report, the existing building and proposed alterations and extensions have been found to be capable of complying with the BCA. It is expected that a number of compliance issues will be resolved by Alternative Solution. It is further noted that additional issues may be identified in the course of the development which may subsequently require modifications to the upgrading strategy.

Partial upgrades proposed (subject to Council review)

Items where the heritage or otherwise existing nature of the building will preclude a full upgrade include the following:

1. Aspects of the heritage stairs
 - a. Main stairs tread and riser profiles in the curved sections
 - b. Stair tread and riser profiles leading from the topmost floor to the roof
 - c. Landing dimensions
 - d. Tactiles and Handrails in the heritage stairs
 - e. Certain other accessible features as nominated in the Access report.
 - f. Balustrades within the heritage portions
2. Balustrades to balconies;
3. Lighting and Mechanical to the (CBA) tenancy are not proposed to be upgraded;
4. Damp and weatherproofing to the existing structure;

Additional reports

The audit and/or upgrading requirements include input derived from specialist reports in the following disciplines:

- Structure (Part B)
- Disabled Access (Part D3)
- Building services (Part E)
- Energy efficiency (Part J)
- Fire-safety engineering



This report details the non-compliances identified that require either amendments to plans or an Alternative Solution to satisfy the Performance Requirements of the BCA.

Summary of BCA Parameters:

Building Use:	Museum and ancillary functions
Class of Occupancy	Class 5, 6, 7b & 9b
Type of Construction Required	Type A
Rise Storeys:	8
Number of Storeys:	8
Effective Height:	> 25 m (Level # RL## - Level # RL ##)

The proposal constitutes a change in use to which an upgrade strategy has been developed. The strategy divides compliance issues into three categories. The following categories are based on the existing site conditions and the constraints imposed by the existing building:

1. Items to be fully upgraded or otherwise to comply on a prescriptive basis;
2. Items to be upgraded / comply on a performance basis;
3. Existing features where the Consent Authority are requested to use their discretionary power under Clause 94 of the EPAR to permit the retention of the existing heritage items (e.g. Heritage).

The following are the main issues that Council will be requested to use their discretionary power under Clause 94 of the EPAR to permit the retention of the existing heritage items:

1. FRL and structural adequacy of existing structure
2. Heritage stairs Goings and risers, Landings, Thresholds, Balustrades, Handrails including access provisions
3. Damp and weather – proofing of exiting portions
4. Lighting it is not proposed to upgrade the Performance and Energy Efficiency levels of existing lighting
5. Mechanical Ventilation it is not proposed to upgrade the Performance and Energy Efficiency levels of the existing Mechanical Ventilation
6. Energy Efficiency of the existing building fabric is not proposed to be altered.

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

1. The FRL of the existing Structure
2. The premises are a large isolated building and not provided with perimeter vehicular access



3. Openings on the southern side of the premises are exposed to a fire source feature
4. Separation of and openings between fire compartments
5. Egress including width of the premises are less than BCA requirements
6. The performance of the hydrant system
7. The performance of the sprinkler system
8. The provision of a fire control room
9. The performance of smoke hazard management systems
10. The connection of multiple storeys constitutes an Atrium

The following are the main issues proposed to be addressed by the relevant Consultant via a Performance Solution:

1. Access to and throughout the premises
2. Energy efficiency of building fabric, building seal and glazing.

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 2016 amendment 1. 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 14 of the report and should be resolved prior to construction.

Key issues which require additional details have been listed under Section 10.2 of this report and need to be clarified with SWP prior to the issue of a construction certificate.



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1. Introduction

This report presents the findings of a preliminary assessment undertaken of the proposed design of the Phase 1 works of the master plan at The Australian Museum against the Deemed-to-Satisfy (DtS) provisions of Building Code of Australia (BCA) 2016 Amendment 1.

The proposal constitutes a change of use to a portion of the premises from a storage area to an exhibition space. Under 94 of The Environmental Planning and Assessment Regulation 2000 (EPAR) when determining such a Development Application, a Consent Authority is required to assess fire safety in an existing building. If a change in use is involved under a CC application, Clause 143 (1) of the EPAR requires that the fire protection (egress), structural capacity and Category 1 Fire Safety provisions must be applicable to the new use of the building.

It has been prepared by Steve Watson and Partners for The Australian Museum.

2. 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, construction certification to be issued under Part 6 of the NSW Environmental Planning and Assessment Act 1979 (The Act) and Environmental Planning and Assessment Regulation 2000 (EPAR).

3. 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.

4. National Construction Code 2016 Amendment 1 –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.

5. Performance Solutions

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

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

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

6. Statutory Framework

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

Issue	Legislative reference	Comment
Existing building fire safety	EPAR 94	Council may require upgrading in some circumstances
Alts and adds – change in building use	143(1)	Fire safety to be upgraded in affected part of building Structural adequacy to be signed off Category 1 fire safety provisions to be upgraded. (Hydrants, sprinklers, fire control centres, smoke detection, smoke hazard management, emergency lifts.)
New Work	EPAR 145	All new works must comply
Access to premises	Disability (Access to Premises — Buildings) Standards 2010	Upgrade of the “Affected Part” to provide access for people with disabilities



6.1. New Work

Clause 145 of the EPAR requires that all new work comply with the current requirements of the BCA. This means that all works proposed in the plans are required to comply but that existing features of an existing building need not comply with the BCA unless required to under other clauses of the legislation.

6.2. Consent authority may require building to be upgraded

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

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

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

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

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

6.3. Change of building use - structural strength and fire safety

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

6.4. Access to premises

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

7. 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**);
 8. In the event of alterations and extensions to an existing building, a base building non-compliance may exist which is not exacerbated by the new works. (**No Reduction in Safety**);
 9. In the event of alterations and extensions to an existing building, a base building non-compliance may exist which is being exacerbated by the new works. (**Reduction in Safety**);
 10. In the event the report is intended to address Council’s discretionary upgrading responsibility, the existing feature of the building does not comply and is recommended to be upgraded to provide adequate safety. (**Upgrade Required**) This status may be concurrent with the status of the proposed new work.
 11. In the event of a change of building use, the existing feature of the building does not comply and must be upgraded to provide safety adequate to the new use (**Upgrade Required**) This status may be concurrent with the status of the proposed new work.
 12. In the event of a change of building use the Consent Authority are requested to use their discretionary power under Clause 94 of the EPAR to permit the retention of the existing heritage items (**No Upgrade proposed**).
 13. the existing feature of the building does not comply and must be upgraded to provide safety adequate to the new use (**Upgrade Required**) This status may be concurrent with the status of the proposed new work.
 14. In the event of alterations and extensions to an existing building, a base building non-compliance may exist which is not exacerbated by the new works. (**No Reduction in Safety**)
 15. In the event of alterations and extensions to an existing building, a base building non-compliance may exist which is being exacerbated by the new works. (**Reduction in Safety**)
- 3) Nominate the status of the design against each BCA requirement;
 - 4) Provide comments against each BCA requirement as appropriate.

8. Description of Proposed Development

The proposed development involves alterations and additions of the basement level storage space for use as an exhibition space which will be connected to ground and lower ground exhibition space. As part of the above the ground level mezzanine is proposed to be demolished and the crystal hall extended.

The proposal constitutes a change of use and under the EP&A Regs. requires upgrades to the premises.

9. Assessment Data Summary

The following basic assessment data has been drawn from the provisions of the BCA 2016 amendment 1.



9.1. Assumptions

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

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.

10. Issues Requiring Resolution

10.1. Issues requiring amendments to plans

The following issues need to be resolved before issuing the Construction Certificate.

Item	DTS Clause	Description of Non-compliance	Requirement to Satisfy BCA
1.			

10.2. Regulatory Assessment

The Consent Authority are requested to use their discretionary power under Clause 94 of the EPAR to permit the retention of the existing heritage items listed below.

Item	DTS Clause	Description	Requirement to Satisfy BCA
1.	FRL and structural adequacy of existing structure	Complies for an existing building but cannot be verified to comply to the current standards as if for a new building.	The structure will be certified as capable to withstand the existing and proposed new loads. However, it may not meet the full current requirements for earthquake loads in the current standards as they apply to new buildings. Therefore, in addition to being certified as adequate to withstand the new loads, the building will instead be required to comply with AS 3826 – Strengthening Existing Buildings For Earthquakes. Non-structural elements such as shafts requiring a FRL will be maintained to the current FRL’s (as achieved and documented by the 1980’s refurbishment).
2.	Heritage stairs	Goings and risers, Landings, Thresholds, Balustrades, Handrails,	The building is listed as a significant heritage item. Any work to the Heritage stair may permanently compromise the heritage value of the premises. Partial upgrade works are proposed in a manner sympathetic to the heritage fabric. Details are to be developed and agreed with City of Sydney Council.
3.	Access	Tactile indicators, handrails etc.	The building is listed as a significant heritage item. Any work to the Heritage stair may permanently compromise the heritage value of the premises. Partial upgrade works are proposed in a manner sympathetic to the heritage fabric. Details are to be developed and agreed with City of Sydney Council. An Unjustifiable Hardship argument may also



Item	DTS Clause	Description	Requirement to Satisfy BCA
			subsequently be required to be developed for these items (based on their heritage value) in order to satisfy the Access to Premises Code.
4.	Damp and weather-proofing	Status cannot be determined. However, the building does not exhibit any evidence of a failure in this regard.	The building is listed as a significant heritage item. It is unlikely that a complete investigation and/or rectification of the existing nature of damp and weatherproofing could be realistically undertaken. Given the nature and usage of the building, and the commercial pressure to ensure the building in fact performs adequately in regard of these requirements, these issues are not considered a significant compliance requirement needing statutory upgrading.
5.	Lighting	It is not proposed to upgrade the Performance and Energy Efficiency levels of lighting	The building is listed as a significant heritage item. Any work to the Heritage fabric may permanently compromise the heritage value of the premises.
6.	Mechanical Ventilation	It is not proposed upgrade the Performance and Energy Efficiency levels of Mechanical Ventilation	The building is listed as a significant heritage item. Any work to the Heritage fabric may permanently compromise the heritage value of the premises.
7.	Energy Efficiency	The building fabric is not proposed to be altered.	A whole of building performance-based compliance approach is proposed.

10.3. Performance solutions required

It is proposed to satisfy the following non-compliances via performance solutions:

Item	Non-Compliance	DTS Clause	Description	Performance Requirement
1.	FRL of the existing structure	C1.1, C2.7, C2.8, C2.9, D2.2, D2.11	FRL of the existing structure Combustibility of external wall cladding	
2.	Large isolated building	C2.2, C2.3 & C2.4	The floor area and volume of the premises exceed the maximum limits of this clause and perimeter vehicular access is not possible to all sides.	
3.	Protection of openings	C3.2	Openings on the southern side of the premises are exposed to a fire source feature (i.e. they are within 3 m of the boundary).	
4.	Openings between fire compartments	C3.3 & C3.5	Separation of and openings between fire compartments will be addressed by an Alternative Solution	
5.	Travel distances	D1.2, D1.3, D1.4 & D1.5	Travel distances, number of exits, fire isolation of exits.	
6.	Egress widths	D1.6	Egress width provided is less than that required by this clause	
7.	Access to and throughout the premises	Part D3	Refer to access consultant's report.	
8.	Hydrant system	E1.3	The current standard of performance of the existing system must be established	



Item	Non-Compliance	DTS Clause	Description	Performance Requirement
9.	Sprinkler system	E1.5	The current standard of performance of the existing system must be established	
10.	Fire Control Centre	E1.8	The FCR is not provided in a room	
11.	Smoke hazard management	E2.2	The current standard of performance of the existing system must be established	
12.	Atrium	Part G3	The number of storeys connected form an atrium as defined by the BCA.	
13.	Energy efficiency	J1, J2 & J3	The proposal must be addressed as a performance solution.	

10.4. Upgrade measures for existing building

Having regard to the factors discussed above, the following measures are recommended as an appropriate level of upgrade under Clause 94 of the EP&A Regulations:

Item	Non-Compliance	DTS Clause	Description
1.	Heritage stairs Goings and risers, Landings, Thresholds, Balustrades, Handrails,	D2.13, D2.14, D2.15, D2.16, D2.17 & D2.20	Lighting levels to stairs to comply with AS 1680.0 and non-slip highlighted edges of treads are to be provided

11. 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,

12. 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.



13. Conclusion

The design is capable of complying with the requirements of the relevant sections of the of the Act and EPAR and the BCA 2016 amendment 1 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.



14. BCA 2016 – Clause by Clause Assessment

Clause	Description	Comment	Status																																					
BCA Version																																								
BCA 2016	<p>BCA version</p> <p>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.</p>	<p>This report assumes that the applicable BCA version is BCA 2016 amendment 1. In addition, requirements of the Premises Standards (PS) are covered as relevant.</p>	Noted																																					
Section A: General Provisions																																								
A3.2	<p>Classification and usage</p> <p>The proposed usage on each level of the building is as follows:</p> <table border="1"> <thead> <tr> <th>LEVEL</th> <th>USE</th> <th>CLASS</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Lower Ground</td> <td>Storage</td> <td>7b</td> </tr> <tr> <td>Exhibition space</td> <td>9b</td> </tr> <tr> <td rowspan="3">Ground</td> <td>Office</td> <td>5</td> </tr> <tr> <td>Exhibition space</td> <td>9b</td> </tr> <tr> <td>Storage</td> <td>7b</td> </tr> <tr> <td rowspan="3">Level 1</td> <td>Shop</td> <td>6</td> </tr> <tr> <td>Exhibition space</td> <td>9b</td> </tr> <tr> <td>Storage</td> <td>7b</td> </tr> <tr> <td rowspan="2">Level 2</td> <td>Office</td> <td>5</td> </tr> <tr> <td>Storage</td> <td>7b</td> </tr> <tr> <td rowspan="2">Level 3</td> <td>Storage</td> <td>7b</td> </tr> <tr> <td>Exhibition space</td> <td>9b</td> </tr> <tr> <td rowspan="2">Level 4</td> <td>Storage</td> <td>7b</td> </tr> <tr> <td>Exhibition space</td> <td>9b</td> </tr> </tbody> </table>	LEVEL	USE	CLASS	Lower Ground	Storage	7b	Exhibition space	9b	Ground	Office	5	Exhibition space	9b	Storage	7b	Level 1	Shop	6	Exhibition space	9b	Storage	7b	Level 2	Office	5	Storage	7b	Level 3	Storage	7b	Exhibition space	9b	Level 4	Storage	7b	Exhibition space	9b		Noted
LEVEL	USE	CLASS																																						
Lower Ground	Storage	7b																																						
	Exhibition space	9b																																						
Ground	Office	5																																						
	Exhibition space	9b																																						
	Storage	7b																																						
Level 1	Shop	6																																						
	Exhibition space	9b																																						
	Storage	7b																																						
Level 2	Office	5																																						
	Storage	7b																																						
Level 3	Storage	7b																																						
	Exhibition space	9b																																						
Level 4	Storage	7b																																						
	Exhibition space	9b																																						
A2.1	<p>Suitability of materials</p> <p>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.</p>	<p>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.</p>	Compliance readily achievable																																					



Clause	Description	Comment	Status
Section B: Structure			
<p>The structure will be certified as capable to withstand the existing and proposed new loads. However, it may not meet the full current requirements for earthquake loads in the current standards as they apply to new buildings.</p> <p>Therefore, in addition to being certified as adequate to withstand the new loads, the building will instead be required to comply with AS 3826 – Strengthening Existing Buildings For Earthquakes.</p>			
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	Further confirmation of the existing structure is required from a Structural engineer. 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.	Further confirmation of the existing structure is required from a Structural engineer. 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.	Further confirmation of the existing structure is required from a Structural engineer. 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.		Compliance readily achievable
Section C: Fire Resistance			
Part C1 – Fire Resistance and Stability			
C1.1	Type of construction required Type A Construction BCA Type A fire resisting construction is required. The following fire ratings apply: Building Element Required FRL	Details of the proposed and existing 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.	Additional details required / Performance Solution



Clause	Description	Comment	Status
		<p>Combustible materials to external walls in fire</p> <p>External walls should be constructed of non-combustible materials and/or otherwise not contribute to the risk of fire spread via the external façade.</p> <p>Combustible materials are not permitted to be located near or directly above a required exit so as to make the exit unusable in a fire.</p> <p>The following materials may be used where non-combustible materials are required:-</p> <ul style="list-style-type: none"> ▪ Plasterboard. ▪ Perforated gypsum. ▪ Fibrous-plaster sheeting to AS 2185. ▪ Fibre-reinforced cement sheeting. ▪ Pre-finished metal sheeting. ▪ Bonded laminated materials. ▪ As determined by testing to AS 1530.1 ▪ An appropriately BCA accredited product or system <p>Details of the proposed cladding system to be installed on the Façade are required to be provided to the Fire Engineer for assessment and determination of feasibility of incorporating these elements within an Alternative solution.</p>	
C1.2	<p>Calculation of rise in storeys</p> <p>Effective Height / Calculation of rise in storeys.</p> <p>Rise in storeys is a defined BCA term addressing the number of main building levels excluding basements.</p> <p>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).</p> <p>These parameters influence the BCA provisions applicable to the building.</p>	<p>The following parameters apply:</p> <p>Rise in storeys: 8 storeys</p> <p>Effective Height: > 25 m</p>	Noted
C1.3	Buildings of multiple classification	The building is required to be constructed of Type A fire resisting construction as the classification of the top storey is a Class 9b	Noted
C1.4	Mixed types of construction	If a fire wall divides the building in accordance with Clause C2.7, the building portions are able to be constructed in differing levels of fire-resistance determined in accordance with Clause C1.1 and C1.3.	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



Clause	Description	Comment	Status
C1.8	<p>Lightweight construction</p> <p>Lightweight construction used in a wall system must comply with Specification C1.8.</p> <p>Lightweight construction used as a fire-resisting covering of a steel column or the like, and where the covering is not in continuous contact with the column must have the voids filled to a height of not less than 1.2m above the floor and where the column is liable to be damaged must be protected by steel or other suitable material.</p>	<p>Details of the proposed systems to be installed must be in accordance with a tested prototype.</p>	<p>Compliance readily achievable</p>
C1.9	<p>Non-combustible building elements</p> <p>In a building of Type A or B construction the following building elements and their components must be non-combustible:</p> <ol style="list-style-type: none"> External walls and common walls, including all components. The flooring and floor framing of lift pits Non-loadbearing internal wall that are required to be fire resisting. <p>The following materials may be used where non-combustible materials are required:</p> <ul style="list-style-type: none"> Plasterboard. Perforated gypsum. Fibrous-plaster sheeting to AS 2185. Fibre-reinforced cement sheeting. Pre-finished metal sheeting. Bonded laminated materials. As determined by testing to AS 1530.1 An appropriately BCA accredited product or system 	<p>Architect and Structural engineer to make provisions for this requirement in the design.</p> <p>A detailed review of the external cladding must be undertaken to ensure that there are no combustible materials and non-complaint claddings have not been nominated that could increase the risk of fire spread via the external façade.</p> <p>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</p>	<p>Additional details required</p>
C1.10	<p>Fire hazard properties</p> <p>Floor materials, floor coverings and wall and ceiling lining materials need to comply with prescribed fire hazard properties. Refer to Appendix C1.10.</p>	<p>Compliance assumed and will require verification test data for all timber and other combustible linings and materials, including:</p> <ul style="list-style-type: none"> Carpets Vinyls (walling and flooring) Timber flooring and wall linings Veneered wall panelling 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. 	<p>Compliance readily achievable</p>
C1.11	<p>Performance of external walls in fire</p>		<p>N/A</p>
C1.12	<p>Non-combustible materials</p>	<p>Gypsum, metal and laminated non-combustible materials containing combustible components are deemed to be non-combustible.</p>	<p>Noted</p>
C1.13	<p>Fire-protected timber: Concession</p> <p><i>Fire-protected timber</i> in a Class 2, 3 or 5 building may be used wherever an element is <i>required</i> to be <i>non-combustible</i>,</p>		<p>N/A</p>



Clause	Description	Comment	Status
C1.14	<p>Ancillary elements</p> <p>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.</p>		Additional details required
Part C2 – Compartmentation and Separation			
C2.1	Application of Part	Clauses C2.2, C2.3 and C2.4 do not apply to a sprinkler protected carpark, open deck carpark or open spectator stand.	Noted
C2.2	<p>Floor area limitations (Type A construction)</p> <p>The floor area and volume limitations are: Class 5, 9b or 9c: 8,000m² and 48,000m³ Class 6, 7, 8 or 9a: 5,000m² and 30,000m³</p>	The floor area and volume of the premises exceed the maximum limits of this clause.	Alternative solution
C2.3	<p>Large isolated buildings</p> <p>Where the building exceeds the limitations under Clause C2.2 above but not more than 18,000m² nor 108,000m³:</p> <p>Class 5, 6, 7, 8 or 9:</p> <ul style="list-style-type: none"> ▪ Sprinkler protection throughout ▪ 6m wide perimeter vehicular access complying with Clause C2.4(b) <p>Where the building exceeds 18,000m² or 108,000m³:</p> <ul style="list-style-type: none"> ▪ Sprinkler protection throughout ▪ A 6m wide perimeter vehicular access complying with Clause C2.4(b) 	Refer to Clause E2.2 for smoke hazard management requirements.	
C2.4	<p>Perimeter vehicular access</p> <p>Vehicular access / open space is provided from the public road for emergency vehicular access and is not to be used for the storage or processing of materials and must not be built upon except for guard houses and service structures as long as they do not unduly impede firefighting.</p> <p>Vehicular access must have a loadbearing capacity and unobstructed height to permit the operation and passage of fire brigade vehicles.</p> <p>Vehicular access must be capable of providing <u>continuous</u> access for emergency vehicles to enable travel in a <u>forward</u> direction from the public road around the entire building.</p>	Compliant perimeter vehicular access is not provided. The premises are landlocked on one side.	Alternative Solution
C2.5	Class 9a and 9c buildings		N/A
C2.6	<p>Vertical separation of openings in external walls</p> <p>Only applicable to a building of Type A Construction, which is not sprinkler protected.</p>	The building is required to be of Type A construction and is sprinkler protected, a spandrel separation is not required.	N/A
C2.7	<p>Separation by fire walls</p> <p>A fire wall must extend to the underside of a floor having an FRL required for a fire wall or the roof covering.</p>	The existing premises and proposed alterations are broken up into compartments with “fire walls” as part of the Alternative solution.	Alternative Solution



Clause	Description	Comment	Status
C2.8	Separation of classifications in the same storey As the building has parts of different classifications located alongside one another in the same storey each building element must have the higher FRL prescribed in Specification C1.1 of the BCA or the parts must be separated by a fire wall.		Alternative Solution
C2.9	Separation of classifications in different storeys As different classifications are situated one above the other in adjoining storeys they must be separated in accordance with the DTS provisions of the BCA.		Alternative Solution
C2.10	Separation of lift shafts Openings for lift landing doors and services must be protected in accordance with the DTS provisions of Part C3 of the BCA	Compliant lift doors are proposed	Complies
C2.11	Stairways and lifts in one shaft	The lift is within its own shaft	Complies
C2.12	Separation of equipment Two-hour fire enclosure is required for: <ul style="list-style-type: none"> ▪ lift motor rooms ▪ emergency generators sustaining emergency equipment operating in emergency mode ▪ central mechanical smoke control plant ▪ boilers ▪ batteries with voltage over 24 volts and a capacity exceeding 10 ampere hours. (Batteries within an electricity network substation are exempt.) 	Any UPS system with a voltage exceeding 24 volts and a capacity exceeding 10 amp hours must be fire separated.	Additional details required
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.		Compliance readily achievable
C2.14	Public corridors in Class 2 & 3 buildings		N/A
Part C3 – Protection of Openings			
C3.1	Application of Part		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: <ul style="list-style-type: none"> ▪ less than 3m to side or rear boundary, 	Openings on the southern side of the premises are exposed to a fire source feature (i.e. they are within 3 m of the boundary).	Does Not Comply / Alternative Solution



Clause	Description	Comment	Status														
	<ul style="list-style-type: none"> less than 6m from the far boundary of a road or lane, Less than 6m from another building on the same allotment. <p>Openings that require protection should not occupy more than $\frac{1}{3}$ of the storey in which they occur.</p>																
C3.3	<p>Separation of external walls and associated openings in different fire compartments</p> <p>External walls within the distances specified in Table C3.3 of the BCA are to be protected by construction with an FRL not less than 60/60/60 and the associated openings protected in accordance with Clause C3.4 of the BCA.</p> <table border="1"> <thead> <tr> <th>Angle between walls</th> <th>Min. Distance</th> </tr> </thead> <tbody> <tr> <td>0° (walls opposite)</td> <td>6 m</td> </tr> <tr> <td>more than 0° to 45°</td> <td>5 m</td> </tr> <tr> <td>more than 45° to 90°</td> <td>4 m</td> </tr> <tr> <td>more than 90° to 135°</td> <td>3 m</td> </tr> <tr> <td>more than 135° to less than 180°</td> <td>2 m</td> </tr> <tr> <td>180° or more</td> <td>Nil</td> </tr> </tbody> </table>	Angle between walls	Min. Distance	0° (walls opposite)	6 m	more than 0° to 45°	5 m	more than 45° to 90°	4 m	more than 90° to 135°	3 m	more than 135° to less than 180°	2 m	180° or more	Nil	Separation between some fire compartments will be addressed by an Alternative Solution	Alternative Solution
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180° or more	Nil																
C3.4	<p>Acceptable method of protection</p> <p>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.</p> <p>Doorways are to be protected by internal or external wall wetting sprinklers used with doors that are self-closing or automatic closing, or -/60/30 self-closing or automatic closing fire doors.</p> <p>Other openings, excluding voids, to be protected with internal or external wall wetting sprinklers or construction having an FRL not less than -/60/-</p>		Noted														
C3.5	<p>Doorways in fire walls</p> <p>Doorways in firewalls are to be protected by a fire door or fire shutter that has an FRL of not less than that required for the firewall except that the insulation rating must be at least 30.</p>	Separation between some fire compartments will be addressed by an Alternative Solution	Alternative Solution														
C3.6	<p>Sliding fire doors</p> <p>Sliding fire doors are to be held open with an electromagnetic device, which when deactivated allows the door to be fully closed in not less than 20 seconds and not more than 30 seconds.</p> <p>An audible warning device and red flashing warning light must be provided.</p> <p>A sign stating “WARNING – SLIDING FIRE DOOR” in capital letters not less than 50 mm high lettering is to be provided on each side of the doorway located directly above the opening.</p>		Compliance readily achievable														
C3.7	<p>Protection of doorways in horizontal exits</p> <p>Doorways in horizontal exits are to be protected by a fire door, which has an FRL of not less than that required for the firewall except that the insulation</p>		Compliance readily achievable														



Clause	Description	Comment	Status
	rating must be at least 30.		
C3.8	<p>Openings in fire isolated exits</p> <p>-/60/30 self-closing fire doors are required to doorways providing access to fire isolated stairways.</p> <p>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.</p>		Compliance readily achievable
C3.9	<p>Service penetrations in fire isolated exits</p> <p>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.</p>		Compliance readily achievable
C3.10	<p>Openings in fire isolated lift shafts</p> <p>Openings in lift shafts are to be protected by - /60/- fire doors complying with AS1735.11.</p> <p>Lift indicator panels are to be backed by construction having an FRL of not less than - /60/60 if it exceeds 35,000mm² (175 X 200 mm).</p>	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	<p>Openings in floors for services</p> <p>Services passing through floors are to be placed within fire resisting shafts or in accordance with Clause C3.15.</p>	Services penetrations of fire rated structure generally need to be fire-stopped and/or located in fire rated riser shafts. Openings in fire rated elements need to be fire resisting to maintain the function of the elements.	Compliance readily achievable
C3.13	<p>Openings in shafts</p> <p>In a building of Type A construction, an opening in a wall providing access to a ventilating, pipe, garbage, or other service shaft must be protected by:</p> <ul style="list-style-type: none"> ▪ If it is a sanitary compartment - a door or panel which together with its frame, is non-combustible or has an FRL of not less than - /30/30, or ▪ A self-closing -/60/30 fire door or hopper, or ▪ An access panel with an FRL of not less than - /60/30, or ▪ If the shaft is a garbage shaft - a door or hopper of non-combustible construction. 		Compliance readily achievable
C3.14	-	This clause has deliberately been left blank	-
C3.15	<p>Openings for service installation</p> <p>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 insulation or a resistance to the incipient spread of fire, must comply with a tested system or with Specification C3.15.</p> <p>Methods and materials used are to be identical to tested prototypes and in accordance with AS4072.1</p>	<p>Any system used must be a certified system and installed in accordance with the tested method. Specifications of the methods of fire sealing need to be provided.</p> <p>Some older areas contain timber floors these are not proposed to be upgraded. It is noted that the provision of a</p>	Compliance readily achievable / No Upgrade proposed



Clause	Description	Comment	Status
	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.	sprinkler system is usually the alternative solution for fire rating deficiencies	
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	Columns must be protected in accordance with the identical tested prototype.	Compliance readily achievable
Section D: Access and Egress			
Part D1 - Provision for Escape			
D1.1	Application of Part		Noted
D1.2	Number of exits required At least two exits need to serve all areas of every storey as follows: <ul style="list-style-type: none"> High rise buildings over 25m in effective height Class 2 or 3 building subject to C1.5 Each basement level Early Childhood Centres Class 9 buildings of more than 6 storeys Primary/Secondary Schools of 2 or more storeys Any class 9 storey accommodating more than 50 persons Any storey or mezzanine within an auditorium in an Entertainment Venue 		Alternative Solution
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.		Alternative Solution
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 nominated exits in the building are listed in appendix D1.4 of the report. The following areas have been identified with distances exceeding 20m to a point of choice: 1. The following areas have been identified with exit travel distances exceeding 40m: 1.	Alternative Solution
D1.5	Distance between alternative exits The following travel distance limits apply: <ul style="list-style-type: none"> ≤ 20m to a single exit or to a point of choice to alternative egress paths, and ≤ 40m to the closest alternative exit; ≤ 60m travel distance between alternative exits 	The following areas have been identified with distances between alternative exits exceeding 60m: 1.	Alternative Solution



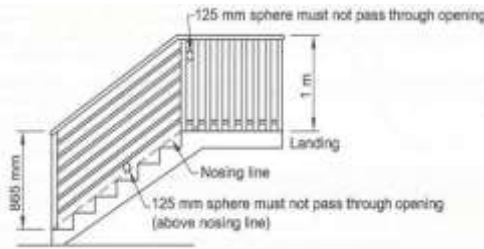
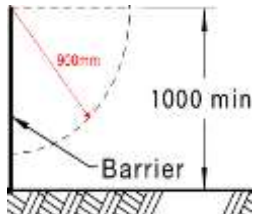
Clause	Description	Comment	Status
	<p>and not less than 9m between alternative exits;</p> <ul style="list-style-type: none"> Exit paths to alternative exits should not converge at any point to be less than 6m apart. 		
D1.6	Dimensions of exits and paths of travel to exits	Populations exceed the egress widths, this is proposed to be addressed by an Alternative Solution	Alternative Solution
D1.7	Travel via fire-isolated exits		
D1.8	<p>External stairways or ramps in lieu of fire-isolated exits</p> <p>External stairs or ramps may be used instead of fire-isolated stairs to a building under 25m in effective height, subject to:</p> <ul style="list-style-type: none"> Stair to be non-combustible construction. Exit doors onto the stair to be 1-hour fire rated. Exit paths via the stair must be shielded if within 6m of openings in external wall of building. 		N/A
D1.9	Travel by non-fire-isolated stairways or ramps		N/A
D1.10	<p>Discharge from exits</p> <p>An exit must not be blocked nor be capable of being blocked at its point of discharge.</p>	<p>The width of all exits at their point of discharge must be maintained.</p> <p>Details of the methods of protection of the doors are required to be provided on the plans to demonstrate compliance against the requirements of BCA Clause D1.10.</p>	Compliance readily achievable
D1.11	<p>Horizontal exits</p> <p>Horizontal exits must have a clear area on the side of the fire wall, to which the occupants are evacuating, to accommodate the total number of persons serviced by the horizontal exit of not less than 0.5m² per person in any other case</p>		Compliance readily achievable
D1.12	<p>Non-required stairways, ramps or escalators</p> <p>Non-required stairs are permitted to connect up to 3 consecutive levels in a sprinklered building if one of the levels has direct access to open space</p>		Compliance readily achievable
D1.13	Number of persons accommodated	Refer to Appendix D1.13	Noted
D1.14	Measurement of distances		Noted
D1.15	Method of measurement		Noted
D1.16	<p>Plant rooms, lift machine rooms and electricity network substations: Concession</p> <p>A ladder may be used in lieu of a stairway as an exit from:</p> <ol style="list-style-type: none"> a plant room with a floor area not more than 100m², or all but one point of egress from a plant room with a floor area not more than 200m². 		Compliance readily achievable
D1.17	<p>Access to lift pits</p> <p>Access requirements apply to lift pits over 3m in depth.</p>	Lift consultant to confirm.	Compliance readily achievable
Part D2 – Construction of Exits			
D2.1	Application of Part		Noted



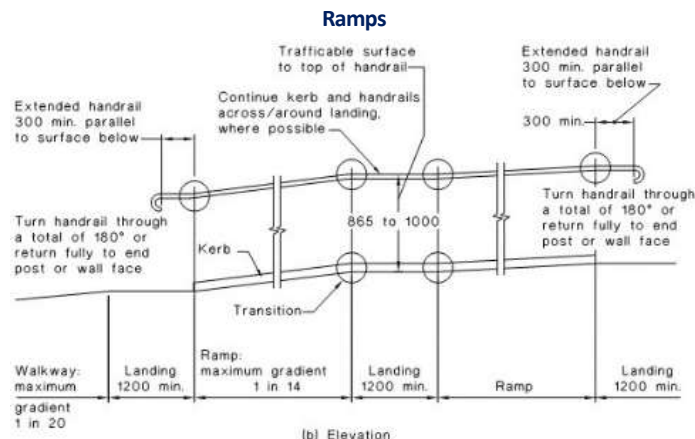
Clause	Description	Comment	Status
D2.2	<p>Fire isolated stairways and ramps</p> <p>Fire resisting shafts must be constructed of non-combustible materials and so that if there is local failure it will not cause structural damage or impair the fire resistance of the shaft</p>	All new exits are propose to comply with this clause.	Alternative solution
D2.3	<p>Non fire isolated stairways and ramps</p> <p>Required stairs in a building having a rise in storeys of not more than 2 must be constructed only of reinforced or prestressed concrete, or steel not less than 6mm thick or timber that has a finished thickness of not less than 44mm and an average density of not less than 800 kg/m³ at a moisture content of 12%.</p>	All new exits are propose to comply with this clause	Complies
D2.4	<p>Separation of rising and descending stair flights</p>		Additional details required
D2.5	<p>Open access ramps and balconies</p>		N/A
D2.6	<p>Smoke lobbies</p>		N/A
D2.7	<p>Installations in exits and paths of travel</p> <p>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.</p> <p>No openings to ducts conveying hot products of combustion permitted in required exits.</p> <p>Gas or fuel services not permitted in required exits.</p> <p>Electric or services equipment in paths of travel to exits must be within a non-combustible and smoke sealed enclosure.</p>	Install non-combustible linings to the internal walls, ceiling and doors of relevant cupboards and install smoke seals to the doors.	Additional details required
D2.8	<p>Enclosure of space beneath stairs and ramps</p> <p>If the space below a fire-isolated stairway is within the fire isolated shaft it must not be enclosed to form a cupboard or similar enclosed space.</p> <p>The space below non fire-isolated stairs must not be enclosed to form a cupboard or similar enclosed space unless the enclosing walls have an FRL of not less than 60/60/60 and any doorway to the enclosed space is fitted with a self-closing -/60/30 fire door.</p>		Additional details required
D2.9	<p>Width of required stairways and ramps</p> <p>A stairway or ramp more than 2m in width is only counted as having a width of 2m unless it is divided by a continuous handrail or balustrade between landings and each division is less than 2m wide.</p>		Additional details required
D2.10	<p>Pedestrian ramps</p> <p>Ramps serving as required exit must have a gradient not less steep than 1:8. If the ramp is required for disabled access under Part D3 it must comply with AS1428.1.</p> <p>The surface of the ramp must have a non-slip finish.</p>		Additional details required
D2.11	<p>Fire-isolated passageways</p>	All new work must comply	Additional details



Clause	Description	Comment	Status																											
	Fire isolated passageways are to have an FRL equivalent to the fire resisting stair shaft as specified in Specification C1.1 when tested from the outside		required / Alternative solution																											
D2.12	<p>Roof as open space</p> <p>The roof is required to have an FRL of not less than 120/120/120 and not incorporate any roof lights or other openings within 3m of the path of travel.</p>		N/A																											
D2.13	<p>Going and risers</p> <p>To provide safe passage, stairways must comply with the following:</p> <ul style="list-style-type: none"> • 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 <table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Riser (R)</th> <th colspan="2">Going (G)</th> <th colspan="2">Quantity (2R+G)</th> </tr> <tr> <th>Max</th> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> <th>Min</th> </tr> </thead> <tbody> <tr> <td>Public stairways</td> <td>190</td> <td>115</td> <td>355</td> <td>250</td> <td>700</td> <td>550</td> </tr> <tr> <td>Private stairways⁽¹⁾</td> <td>190</td> <td>115</td> <td>355</td> <td>240</td> <td>700</td> <td>550</td> </tr> </tbody> </table>		Riser (R)		Going (G)		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	<p>All new work must comply</p> <p>Further detail of the stairs will need to be provided to confirm compliance.</p> <p>The existing heritage stairs contain some non-compliances. These are not proposed to be altered.</p>	<p>Additional details required / No upgrade proposed</p>
	Riser (R)		Going (G)		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																								
D2.14	<p>Landings</p> <p>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:</p> <table border="1"> <thead> <tr> <th>Application</th> <th>Dry Surface Conditions</th> <th>Wet Surface Condition</th> </tr> </thead> <tbody> <tr> <td>1:14 or steeper ramps</td> <td>P4 or R11</td> <td>P5 or R12</td> </tr> <tr> <td>Ramps of 1:14 to 1:20</td> <td>P3 or R10</td> <td>P4 or R11</td> </tr> <tr> <td>Tread or Landing Surface</td> <td>P3 or R10</td> <td>P4 or R10</td> </tr> <tr> <td>Nosing Strip or Landing Strip</td> <td>P3</td> <td>P4</td> </tr> </tbody> </table>	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	<p>All new work must comply</p> <p>Certification / test reports on the slip resistance of the surfaces will need to be provided on constructed elements.</p> <p>The existing heritage stairs contain some non-compliances. These are not proposed to be altered.</p>	<p>Compliance readily achievable / No upgrade proposed</p>												
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																												
D2.15	<p>Thresholds</p> <p>Steps should not occur at doorways without a threshold landing except as follows:</p>	<p>Note that where access for people with disabilities is required it is not permitted to have a step at the threshold of a doorway.</p>	<p>Compliance readily achievable /</p>																											

Clause	Description	Comment	Status
	<ul style="list-style-type: none"> 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 the exterior. 	<p>The existing heritage stairs contain some non-compliances. These are not proposed to be altered.</p>	<p>No upgrade proposed</p>
<p>D2.16</p>	<p>Barriers to prevent falls</p> <p>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.</p>  <p>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.</p> <p>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</p> 	<p>All new work must comply</p> <p>The existing stairs and balconies contain some non-compliance. These relate to balustrade heights and opening within the balustrades. The heritage stairs and balconies are not proposed to be altered</p>	<p>Compliance readily achievable / no upgrade proposed</p>
<p>D2.17</p>	<p>Handrails</p> <p>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:</p> <ul style="list-style-type: none"> 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 Provided with handrail extensions and 180 degree curled ends 	<p>All new work must comply</p> <p>The existing stairs contain some non-compliances relating to heights. The heritage stairs are not proposed to be altered</p> <p>Handrail details to be confirmed by the access consultant</p> <p>Handrails are to be provided in compliance with Clause D3.3 and include the following-</p> <p>Non-Fire Isolated Stairways and Ramps</p> <p>All stairs and ramps not used as an emergency exit are to have handrails installed on both sides that comply with Clause 10 & 11 of AS1428.1-2009</p> <p>Fire Isolated Stairways and Ramps</p> <p>In Fire Isolated Stairways & Ramps a handrail is required to be installed to at least one side of stair flights and located not less</p>	<p>Compliance readily achievable / No Upgrade proposed</p>

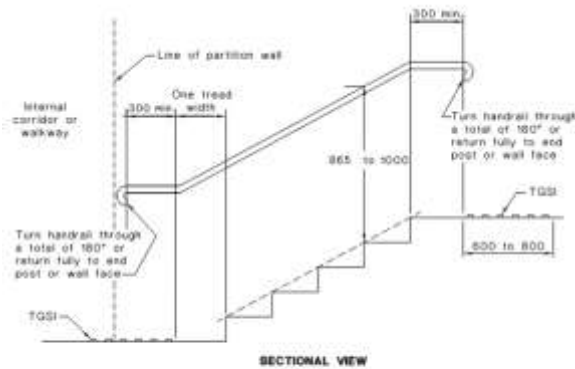
Clause	Description	Comment	Status
		<p>than 865mm above the nosing's of stair treads and the floor surfaces of landings</p> <p>Consistent Handrail Heights for all stairways</p> <p>The height of the top of the handrail, measured at a height of between 865mm – 1000mm vertically from the stair nosing shall be consistent throughout the ramp (or stairs) and any landings.</p> <p>All stairs including fire stairs are required to be designed to comply with Clause 12 of AS1428.1 – 2009</p>	



DIMENSIONS IN MILLIMETRES

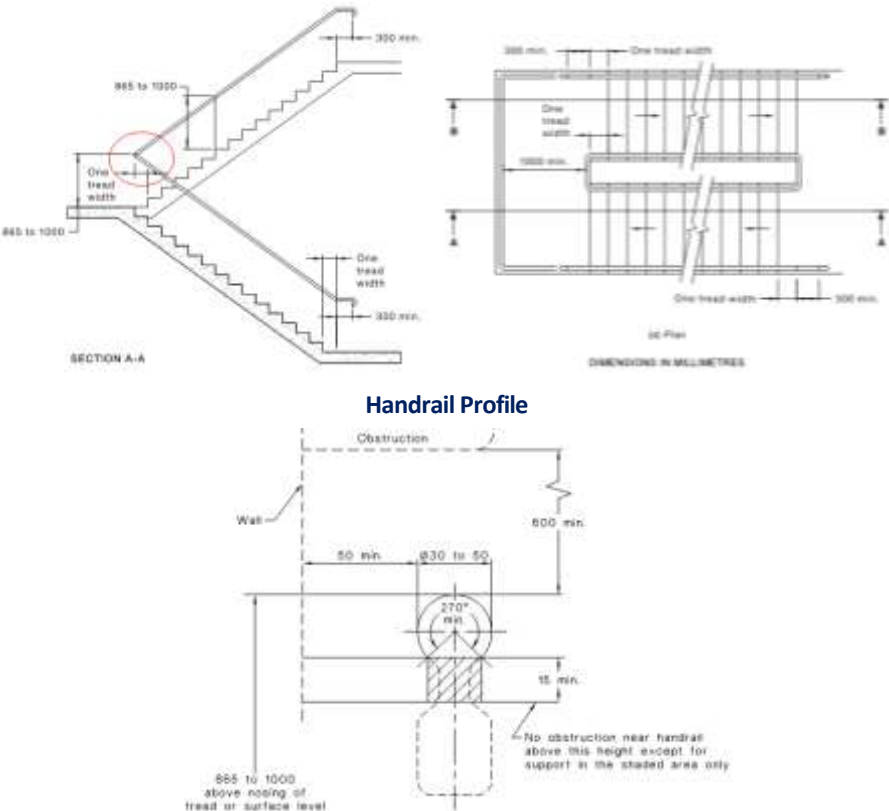
FIGURE 14 RAMP HANDRAILS

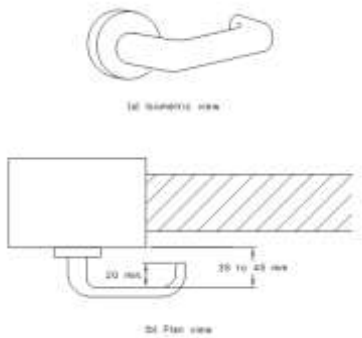
Stairways



DIMENSIONS IN MILLIMETRES

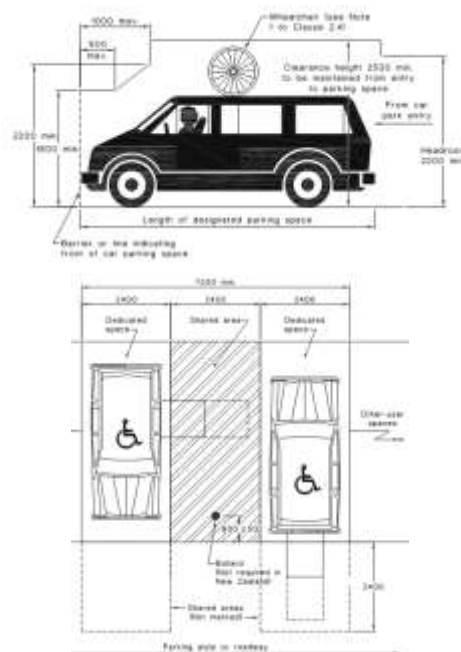
FIGURE 26(B) STAIRWAY LOCATION AND HANDRAIL EXTENSIONS AT END OF STAIRWAY OTHER THAN AT LINE OF BOUNDARY


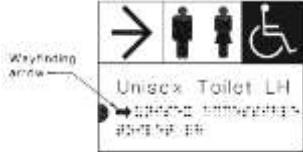


Clause	Description	Comment	Status
	 <p style="text-align: center;">Handrail Profile</p>		
<p>D2.18</p>	<p>Fixed platforms, walkways, stairways and ramps</p> <p>Platforms, walkways, stairs, ladders and the like that give access to and around plant and equipment, machine rooms, attic spaces and other low use areas of the building are permitted provided that construction details are to AS1657.</p>	<p>Certification to AS1657 is to be provided</p>	<p>Compliance readily achievable</p>
<p>D2.19</p>	<p>Doorways and doors</p> <p>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.</p>	<p>Auto sliding doors at the entries into the building must comply with these requirements</p>	<p>Compliance readily achievable</p>
<p>D2.20</p>	<p>Swinging doors</p> <p>Defined exit doors that serve a part of a building with a floor area over 200m² must swing outward in the direction of exit travel.</p> <p>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.</p>	<p>All new work must comply</p>	<p>Compliance readily achievable / Alternative Solution</p>
<p>D2.21</p>	<p>Operation of latch</p> <p>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.</p>	<p>All exit doors and doors in the path of travel must comply.</p>	<p>Compliance readily achievable</p>

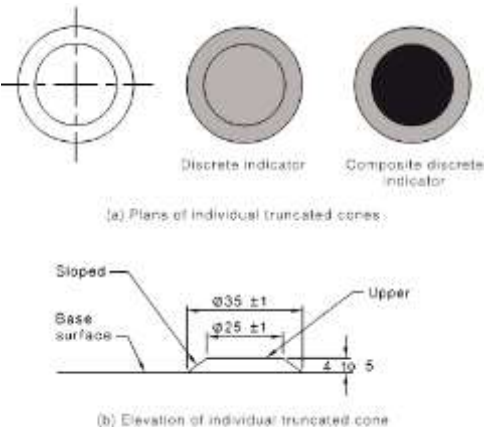
Clause	Description	Comment	Status
	 <p>Doors in a Class 9b building (other than schools or early childhood centres) serving a storey or room accommodating more than 100 people must be provided with a panic bar.</p>		
<p>D2.22</p>	<p>Re-Entry from Fire-Isolated Exits</p> <p>Fire isolated stair doors must 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, where serving a health care or aged care building or where the exit stair serves a storey above 25m in effective height.</p> <p>Doors of fire-isolated exits must not be locked from the inside of a fire-isolated exit, unless:</p> <p><u>Option 1</u></p> <ul style="list-style-type: none"> 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. <p><u>Option 2</u></p> <ul style="list-style-type: none"> 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. 		<p>Compliance readily achievable</p>
<p>D2.23</p>	<p>Signs on doors</p> <p>Signage in capital letters not less than 20mm high to be provided on doors as follows</p> <ol style="list-style-type: none"> An automatic door held open by an automatic hold-open device: <ul style="list-style-type: none"> FIRE SAFETY DOOR - DO NOT OBSTRUCT for a self-closing door <ul style="list-style-type: none"> FIRE SAFETY DOOR DO NOT OBSTRUCT DO NOT KEEP OPEN for a door discharging from a fire-isolated exit <ul style="list-style-type: none"> FIRE SAFETY DOOR - DO NOT OBSTRUCT 	<p>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.</p> <p>The notice is to state the following:</p>	<p>Compliance readily achievable</p>



Clause	Description	Comment	Status
		<p>OFFENCES RELATING TO FIRE EXITS</p> <p>It is an offence under the Environmental Planning and Assessment Act 1979</p> <p>(a) to place anything in or near this fire exit that may obstruct persons moving to or from this exit, or</p> <p>(b) to interfere with or obstruct the operation of any fire doors, or</p> <p>(c) to remove, damage or otherwise interfere with this notice.</p>	
D2.24	<p>Protection of openable windows</p> <p>Windows serving a residential bedroom or serving an early childhood centre must be protected where the floor is 2m or more above the external surface below.</p>		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			
Access is required throughout. Consultation with the access consultant is required			
D3.1	<p>General building access requirements</p> <p>Access is generally required for persons with a disability throughout all areas unless specifically exempted.</p>	Access is required throughout. Consultation with the access consultant is required	Compliance readily achievable / Alternative solution
D3.2	<p>Access to buildings</p> <p>External access to the building for people with a disability must be provided:</p> <ul style="list-style-type: none"> ▪ From main pedestrian entry points at the allotment boundary. ▪ 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. 	Refer to access consultant's report.	Compliance readily achievable / Alternative solution
D3.3	<p>Parts of the building to be accessible</p> <p>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.</p> <p>Every ramp, except a fire isolated ramp, must comply with Clause 10 if AS 1428.1.</p> <p>Every stairway, except a fire isolated stairway, must comply with Clause 11 of AS 1428.1.</p> <p>A fire isolated stairway must comply with Clause 11(f) and (g) of AS 1428.1.</p> <p>Every passenger lift must comply with Clause E3.6.</p>	Refer to access consultant's report.	Compliance readily achievable / Alternative solution

Clause	Description	Comment	Status
	<p>Access ways must have passing spaces and turning spaces complying with AS 1428.1.</p> <p>A ramp or passenger lift need not be provided to serve a storey or level other than the entrance storey of a class 5, 6, 7b or 8 building containing not more than 3 storeys and with a floor area of each storey, excluding the entrance floor, of not more than 200m².</p> <p>Pile height or pile thickness of carpets shall comply with the requirements of this Clause and AS 1428.1.</p>		
D3.4	<p>Exemptions</p> <p>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.</p>		Noted
D3.5	<p>Accessible car parking</p> <p>The accessible parking spaces must comply with AS/NZS 2890.6 – 2009.</p> <p>General requirements are:</p> <ul style="list-style-type: none"> • 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. 		N/A
D3.6	<p>Signage</p> <p>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.</p>	Signage details must be in accordance with AS1428.1 - 2009 and Specification D3.6 of the BCA.	Compliance readily achievable

Clause	Description	Comment	Status
	<p>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 #”.</p>  <p>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.</p> <p>Signage identifying ambulant accessible sanitary facilities in accordance with AS 1428.1 must be located on the door of the facility.</p>    <p>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.</p> <p>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 person to the location of the nearest accessible unisex sanitary facility.</p>		
<p>D3.7</p>	<p>Hearing augmentation</p> <p>A hearing augmentation system must be provided where an inbuilt amplification system, other than one used only for emergency warning, is installed—</p> <ul style="list-style-type: none"> i) in a room in a Class 9b building; or ii) in an auditorium, conference room, meeting room or room for judicatory purposes; or iii) at any ticket office, teller's booth, reception area or the like, where the public is screened from the service provider <p>An induction loop must be provided to not less than 80% of the floor area of the room or space served by the inbuilt amplification system; or</p> <p>A system requiring the use of receivers or the like, it must be available to not less than 95% of the floor area of the room or space served by the inbuilt amplification system, and the number of receivers provided must not be less than—</p>	<p>Refer to access consultant's report.</p>	<p>Compliance readily achievable / Alternative solution</p>

Clause	Description	Comment	Status
	<p>A) if the room or space accommodates up to 500 persons, 1 receiver for every 25 persons or part thereof, or 2 receivers, whichever is the greater; and</p> <p>B) if the room or space accommodates more than 500 persons but not more than 1000 persons, 20 receivers plus 1 receiver for every 33 persons or part thereof in excess of 500 persons; and</p> <p>C) if the room or space accommodates more than 1000 persons but not more than 2000 persons, 35 receivers plus 1 receiver for every 50 persons or part thereof in excess of 1000 persons; and</p> <p>D) if the room or space accommodates more than 2000 persons, 55 receivers plus 1 receiver for every 100 persons or part thereof in excess of 2000 persons.</p>		
<p>D3.8</p>	<p>Tactile indicators (TGSIs)</p> <p>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:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ 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 <p>Tactile ground surface indicators must comply with sections 1 and 2 of AS/NZS 1428.4.1</p> 	<p>Refer to access consultant's report.</p> <p>The existing heritage stairs are not proposed to be altered.</p>	<p>Additional details required / Alternative solution / No upgrade proposed</p>
<p>D3.9</p>	<p>Wheelchair seating spaces in Class 9b assembly buildings</p> <p>Where fixed seating is provided in a Class 9b assembly building, wheelchair seating spaces comply with AS 1428.1 must be provided in accordance with Table D3.9.</p>		<p>N/A</p>



Clause	Description	Comment	Status
	The location of wheelchair seating is to be representative of the range of seating provided.		
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 / Alternative solution
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.	Glazed shopfronts will need to have solid and non-transparent decals installed in accordance with AS 1428.1	Compliance readily achievable
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 Fire hydrant cover is required throughout to AS2419.1 from hydrants located externally, within fire stairs or at other approved locations.	Full compliance with AS2419.1 will be required unless varied via fire brigade approval. The hydraulic engineer must ensure that compliant coverage is provided to all areas of the building from the internal hydrants and must provide design certification to accompany the drawings certifying the design complies with Clause E1.3 of the BCA and AS2419.1 – 2005 (noting any non-compliances, which are to be addressed as an Alternative Solution). <i>Note 1: The hydrant hose must extend at least 1m into rooms to be counted for coverage.</i> <i>Note 2: If full coverage is not provided from hydrants located within the stairs alone. Intermittent hydrant outlets can be installed to achieve a compliant coverage. The hydrants are to be located not more than 25m from another hydrant to allow for progressive attack.</i> <i>Note 3: As the building has an effective height of greater than 25m the system is required to be installed in the configuration of a ring main</i>	Alternative solution / Upgrade required
E1.4	Fire hose reels Fire hose reel coverage to AS2441-2005 is required throughout with hose reels located adjacent to stairs and exits. Where coverage is not achieved with hose reels located Additional hose reels are permitted to be located along the paths of travel to achieve	The hydraulic engineer must ensure that compliant coverage is provided to all areas of the building and must provide design certification to accompany the drawings certifying the design complies with Clause E1.4 of the BCA and AS2441 – 2005.	Compliance readily achievable



Clause	Description	Comment	Status
	<p>coverage where</p> <p>Hoses are not permitted to pass through fire or smoke doors to achieve hose reel cover.</p>		
<p>E1.5</p>	<p>Sprinklers</p> <p>Fire sprinkler protection to AS2118.1-1999, AS2118.4-1995 or 2012 and AS2118.6-2012 as relevant is a mandatory requirement for the project if:-</p> <ul style="list-style-type: none"> ▪ The building effective height exceeds 25m. (If any part of the development exceeds 25m effective height, all parts of the complex require sprinklers.) ▪ The building is defined as a large isolated building (Refer to BCA Ref C2.3 above). <p>Sprinkler system activation must be linked to an audible occupant warning system.</p> <p>Sprinkler hazard Class under AS2118 needs to be agreed where uncertainty of usage under Appendix 1 of the Code occurs.</p> <p>“Excessive hazard” means:</p> <p>(a) Hazardous process risks including the following:</p> <ul style="list-style-type: none"> (i) Aircraft hangars (ii) Electrical/electronic manufacturing and assembly (predominantly plastic components). (iii) Fire-lighter manufacturing. (iv) Fireworks manufacturing. (v) Flammable liquid spraying. (vi) Foam plastic goods manufacturing and/or processing. (vii) Foam rubber goods manufacturing and/or processing. (viii) Hydrocarbon based sheet product manufacturing. (ix) Nitrocellulose and nitrocellulose goods manufacturing. (x) Paint and varnish works, solvent based. (xi) Plastic goods manufacturing and/or processing works. (xii) Resin and turpentine manufacturing. (xiii) Vehicle repair shops. <p>(b) Combustible goods with an aggregate volume exceeding 2,000m³ and stored to a height greater than 4m such as the following:</p> <ul style="list-style-type: none"> (i) Aerosol packs with flammable contents. (ii) Cartons and associated packing material excluding cartons with densely packed non-combustible content. 	<p>The services engineer is to provide detailed design documents and design certification for the sprinkler design confirming compliance with AS2118.1-1999.</p> <p>Any non-sprinkler protected areas and other AS2118 departures need to be identified and included in the fire engineering review (EP1.4). These areas need to be confirmed but could include:</p> <ul style="list-style-type: none"> ▪ Apartment balconies. ▪ External under croft areas ▪ Radiation therapy bunkers ▪ PC3 laboratories ▪ Chemical stores ▪ Dangerous goods stores ▪ Flammable liquids stores ▪ MRI/PET areas ▪ Server rooms ▪ Operating theatres (TBC) ▪ Data centres and related UPS ▪ Bridge links to adjacent buildings ▪ Shower recesses or low risk bathroom areas or the like ▪ Residential - Apply AS2118.4 concessions within apartments 	<p>Alternative solution / upgrade required</p>



Clause	Description	Comment	Status
E1.6	<p>Portable fire extinguishers</p> <p>Portable Fire Extinguishers are required be installed to Table E1.6 and AS 2444 requirements, at:</p> <ul style="list-style-type: none"> ▪ emergency services switchboards ▪ kitchens ▪ flammable liquid stores ▪ at nurses' stations ▪ special risk areas ▪ where fire hose reels are not installed ▪ Class 2, 3 or 4 residential areas are to be protected by 2.5kg ABE type fire extinguishers located in common areas on the storey served and located not more than 10m from each sole occupancy unit entry door. 		Compliance readily achievable
E1.7	-	This Clause has deliberately been left blank	
E1.8	<p>Fire control centre</p> <p>A fire control centre for Fire Indicator, Fire Fans Control and Emergency Intercom panels is required for buildings of over 25m in effective height or buildings over 18,000m² in area, at a location readily available for firefighting operations and located at or near the main building entry.</p> <p>Buildings over 50m in effective height require a fire rated fire control room with prescribed requirements for layout, access, location and equipment with the following features:</p> <ul style="list-style-type: none"> ▪ 2 hr FRL concrete/masonry construction. ▪ Low hazard linings (per fire stairs) ▪ No extraneous services passing through ▪ 2 hr fire FRL doors ▪ No penetrations through floor over ▪ 2-hour fire dampers, etc. ▪ Doors must open into room ▪ Two access points needed, one from front entry foyer of building and one from public place. ▪ Contents required: <ul style="list-style-type: none"> - FIP - Controls for pumps, fans and other emergency gear - Phone - Whiteboard and pinup board - Plan layout table - Tactical fire plans ▪ May also contain <ul style="list-style-type: none"> - MECP - Lift annunciation panels - Gas/electric controls - Emergency generator backup ▪ Dedicated fire isolated pressurisation system to ventilate with 30 air changes required. 	A fire control centre is provided as the premises are now over 25 m a fire control room is required. Further the centre is not provided within 300 mm height of open space.	Alternative solution / upgrade required



Clause	Description	Comment	Status
E1.9	<p>Fire precautions during construction</p> <p>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.</p> <p>When the building reaches 12m effective height:</p> <ul style="list-style-type: none"> ▪ 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. 	<p>Further discussion required with builder to determine that this is included in their program.</p> <p>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.</p> <p>This needs to be put in place early in the construction programme and may require liaison with the builder and his fire services contractor.</p>	Compliance Readily achievable
E1.10	Provisions for special hazards		N/A
Part E2 – Smoke Hazard Management			
E2.1	Applicable of Part	<p>Part is not applicable to</p> <ul style="list-style-type: none"> ▪ open deck car parks ▪ open spectator stands ▪ a Class 8 electricity network substation with a floor area not more than 200m² ▪ storerooms, etc. less than 30m² ▪ sanitary compartments ▪ plant rooms or the like 	Noted
E2.2	<p>General requirements</p> <p>Exhibition hall</p> <ul style="list-style-type: none"> ▪ Air-handling systems serving multiple fire compartments and not forming part of a smoke hazard management system should shut down on activation of: <ul style="list-style-type: none"> ○ Smoke detectors complying with Specification E2.2; and ○ Any other installed fire detection system including a sprinkler system complying with Specification E1.5. ▪ Where the floor area exceeds 2000 m² but not 3,500 m² <ul style="list-style-type: none"> ○ Automatic smoke exhaust complying with Specification E2.2b; or ○ Automatic smoke and heat vents complying with Specification E2.2c ▪ Where the floor area exceeds 3,500 m² a sprinkler system complying with Specification E1.5; and <ul style="list-style-type: none"> ○ Automatic smoke exhaust complying with Specification E2.2b; or ○ Automatic smoke and heat vents complying with Specification E2.2c. 	<p>It is proposed to sprinkler protect the building throughout. AS 1670.1 smoke detection system is proposed as part of the proposed alternative solutions.</p>	Alternative Solution / Upgrade required
E2.3	Provisions of special hazards		N/A
Part E3 – Lift Installations			
E3.1	<p>Lift installations</p> <p>Electric and electrohydraulic lifts must comply with the design requirements of BCA Specification E3.1.</p>	Certification of lift design to be provided	Compliance Readily achievable

Clause	Description	Comment	Status
E3.2	<p>Stretcher facility in lifts</p> <p>Buildings greater than 12m in effective height require a lift sized 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.</p>	Ensure a suitably sized lift serves each level.	Compliance Readily achievable
E3.3	<p>Warning against use of lift in fire</p> <p>Warning signage is required at lift doors advising that lifts should not be used in the event of a fire.</p>	<p>Signage to be installed stating.</p>	Compliance Readily achievable
E3.4	<p>Emergency lifts</p> <p>Emergency lifts of prescribed size, operation and fire isolation are required in buildings where:</p> <ul style="list-style-type: none"> the building has an effective height over 25m, or a patient care area occurs in a health care building at a level that does not have direct access to a road or open space. <p>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.</p> <p>The following requirements apply to an emergency lift:</p> <ul style="list-style-type: none"> Must serve all storeys served by a passenger lift. Must be contained in a fire rated shaft. If the building effective height exceeds 75m, must have a 600kg rating if not provided with a stretcher facility or a 900kg rating if stretcher facility is provided. If serving a patient care area in a health care building, have minimum clear car dimensions of 2280mm depth, 1600mm width and 2300 mm height. Doors must be 1300mm wide and 2100mm high. (All dimensions measured clear of all obstructions including handrails.) If serving a patient care area in a health care building, must be connected to a standby power system where installed. 		Compliance Readily achievable
E3.5	Landings		Compliance Readily achievable
E3.6	<p>Passenger lifts</p> <p>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 rely on a constant pressure device for its operation if the lift car is fully enclosed.</p>		Compliance Readily achievable
E3.7	<p>Fire service control</p> <p>Where lifts serve a storey above 12m in effective height:</p> <ul style="list-style-type: none"> A fire service control switch is required for each 	Certification of lift design to be provided	Compliance Readily achievable



Clause	Description	Comment	Status
	lift or lift group. <ul style="list-style-type: none"> A lift car fire service drive control is required for each lift. 		
E3.8	Aged care buildings		Compliance Readily achievable
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
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 throughout the building.	Emergency lighting is to be provided in: <ul style="list-style-type: none"> every fire-isolated stairway, fire-isolated ramp or fire-isolated passageway. 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 100m² 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 300m². In every required non-fire isolated stairway To every room or space that has public access in a Class 6 or 9b building if: <ul style="list-style-type: none"> the floor area is more than 300m²; or if any point on the floor is more than 20m from the nearest doorway opening directly to the road or open space; or if the egress involves a vertical rise within the building of more than 1.5m. 	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		Compliance readily achievable



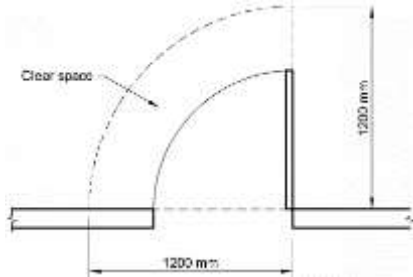
Clause	Description	Comment	Status
E4.5	<p>Exit signs</p> <p>Exit signs are to be provided in accordance with Clause E4.5 of the BCA.</p>	<p>Exit signs must be clearly visible to person approaching the exit and must be installed on, above or adjacent to;</p> <ul style="list-style-type: none"> ▪ A door providing direct egress from a storey to a stairway, passageway or ramp serving as a required exit. ▪ A door from an enclosed stairway, passageway or ramp at every level of discharge to a road or open space. ▪ A horizontal exit ▪ 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	<p>Direction signs</p> <p>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</p>		Compliance readily achievable
E4.7	<p>Class 2 and 3 buildings and Class 4 parts: Exemptions</p>		N/A
E4.8	<p>Design and operation of exit signs</p> <ol style="list-style-type: none"> 1. Exit signs are to operate in accordance with AS 2293.1. 2. Photo luminescent exit sign are to comply with Specification E4.8 		Compliance readily achievable
E4.9	<p>Sounds systems and intercom systems for emergency purposes</p> <p>A sound system and intercom system for emergency purposes (SSISEP) complying with AS 1670.4 must be installed throughout the building.</p>	<p>Details demonstrating compliance and design certification will be required from services consultants at Construction Certificate stage.</p>	Additional details required
Section F: Health and Amenity			
Part F1 – Damp and Weatherproofing			
F1.0	<p>Water proofing of external walls</p> <p>Weatherproofing of external wall systems must be in accordance with BCA Verification Method FV1.</p>	<p>The building is listed as a significant heritage item. It is unlikely that a complete investigation and/or rectification of the existing nature of damp and weatherproofing could be realistically undertaken.</p> <p>Given the nature and usage of the building, and the commercial pressure to ensure the building in fact performs adequately in regard of these requirements, these issues are not considered a significant compliance requirement needing statutory upgrading.</p> <p>For all new work a test report on the proposed wall system is to be provided. The test report must include the following</p>	No upgrade proposed / Additional details required



Clause	Description	Comment	Status
		<p>information:</p> <p>(i) Name and address of the person supervising the test.</p> <p>(ii) Test report number.</p> <p>(iii) Date of the test.</p> <p>(iv) Cladding manufacturer's name and address.</p> <p>(v) Construction details of the test specimen, including a description, and drawings and details of the components, showing modifications, if any.</p> <p>(vi) Test sequence with the pressures used in all tests.</p> <p>(vii) For each of the static and cyclic pressure tests, full details of all leakages, including position, extent and timing.</p>	
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.	Additional details required
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.	The standard membrane detailing for waterproofing including minimum upturn termination lengths, requirements for stepped balcony details at doorways and windows and provision of continuous grates where stepping does not occur.	Compliance readily achievable
F1.5	Roof coverings Metal sheet roofing complying with AS 1562.1		Compliance readily achievable
F1.6	Sarking Sarking type materials used for weatherproofing of roofs and walls must comply with AS/NZS 4200 Parts 1 and 2.		Compliance readily achievable
F1.7	Water proofing of wet areas in buildings Water proofing of wet areas within a building to comply with AS 3740.		Compliance readily achievable
F1.8	-	This clause has deliberately been left blank	-
F1.9	Damp-proofing Moisture from the ground must be prevented from reaching the lowest floor timber and the walls above the lowest floor joists, the walls above the dam proof course and the underside of a suspended floor constructed of a material other than timber, and the supporting beams or girders. Damp proof course must consist of a material that complies with AS/NZS 2904 or an impervious termite shield in accordance with AS 3660.1.	<p>The building is listed as a significant heritage item. It is unlikely that a complete investigation and/or rectification of the existing nature of damp and weatherproofing could be realistically undertaken.</p> <p>Given the nature and usage of the building, and the commercial pressure to ensure the building in fact performs adequately in regard of these requirements, these issues are not considered a significant compliance requirement needing statutory</p>	No Upgrade proposed / Compliance Readily achievable



Clause	Description	Comment	Status
		upgrading.	
F1.10	Damp-proofing of floors on the ground A vapour barrier in accordance with AS2870 is to be provided beneath the basement floor slab.	The building is listed as a significant heritage item. It is unlikely that a complete investigation and/or rectification of the existing nature of damp and weatherproofing could be realistically undertaken. Given the nature and usage of the building, and the commercial pressure to ensure the building in fact performs adequately in regard of these requirements, these issues are not considered a significant compliance requirement needing statutory upgrading.	No Upgrade Proposed / Compliance Readily achievable
F1.11	Provision of floor wastes The floor of each bathroom and laundry in each sole occupancy of the Class 2 and 3 building portions must have a floor waste and the floor graded to the floor waste to permit drainage of water.		N/A
F1.12	Subfloor ventilation The lower ground sub floor space is to be cleared of all building debris and vegetation and be cross ventilated in accordance with Table F1.12 by evenly distributed openings provided in the external walls Additionally the sub floor space is to contain no dead air spaces and be graded to prevent water ponding under the building.		No Upgrade proposed / Compliance Readily achievable
F1.13	Glazed assemblies Windows, sliding doors with a frame, adjustable louvres, shopfronts and window walls with one piece framing in an external wall must comply with AS 2047 requirements for resistance to water penetration.		Compliance readily achievable
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.	Refer to appendix F2.3 of this report.	Complies
F2.4	Accessible sanitary facilities Accessible unisex toilets for people with a disability are required on each storey and at 50% of toilet banks on any storey. Facilities should be constructed to AS1428.1 – 2009 although an existing WC facility that fully complies with AS1428.1 – 2001 may substitute as a concession.	Refer to access consultant's report	Compliance readily achievable
F2.5	Construction of sanitary compartments Where clear space between closet pan and doorway is less than 1.2m, doors must open outwards, slide	All hinged doors that swing inward to sanitary facilities and do not comply with achieving a 1200mm clearance to pan are	Complies

Clause	Description	Comment	Status
	or be readily removable from outside.	required to be installed with lift-off hinges 	
F2.6	Interpretation: Urinals and washbasins	Each 600mm length of a continuous urinal trough is counted as 1 urinal.	Noted
F2.7	-	This clause has deliberately been left blank	-
F2.8	Waste management		N/A
Part F3 – Room Heights			
F3.1	<p>Height of rooms and other spaces</p> <p>Generally, a minimum ceiling height of 2.4m is required throughout.</p> <p>In a Class 9b building in a school classroom or other assembly building with more than 100 persons — 2.4 m;</p> <p>A theatre, public hall or other assembly building with more than 100 persons — 2.7 m</p> <p>In a corridor that serves an assembly building with not more than 100 persons — 2.4 m</p> <p>In a corridor that serves an assembly building with more than 100 persons — 2.7 m;</p>		Compliance Readily achievable
Part F4 – Light and Ventilation			
F4.1	<p>Provisions of natural light</p> <p>Natural lighting aggregating 10% of room floor area is required as follows:</p> <ul style="list-style-type: none"> ▪ To all habitable rooms in residential buildings. ▪ In bedrooms and dormitories of hotels, motels and the like. ▪ To rooms used for sleeping in health care and aged care buildings. ▪ To school classrooms and early childhood centres. 		N/A
F4.2	Methods and extent of natural lighting		N/A
F4.3	Natural Light borrowed from adjoining room		N/A
F4.4	<p>Artificial lighting</p> <p>The artificial lighting system must comply with AS/NZS 1680.0.</p>	Design details and certification from an electrical engineer is required	Compliance readily achievable
F4.5	<p>Ventilation of rooms</p> <p>Ventilation shall be provided throughout the building in by means of natural ventilation complying with Clause F4.6 or mechanical ventilation complying with the requirements of AS1668.2 as required by Clause F4.5 of the BCA.</p>	Design details and certification from an mechanical engineer is required	Compliance readily achievable
F4.6	Natural ventilation		N/A



Clause	Description	Comment	Status
F4.7	Ventilation borrowed from adjoining room		N/A
F4.8	Restriction on position of sanitary compartments		Compliance readily achievable
F4.9	Airlocks		N/A
F4.10	-	This clause has intentionally been left blank	-
F4.11	Carparks Basement carparks must be provided with a system of mechanical ventilation complying with AS 1668.2		N/A
F4.12	Kitchen local exhaust ventilation A commercial kitchen must be provided with a kitchen exhaust hood complying with AS/NZS 1668.1 and AS 1668.2, where: <ul style="list-style-type: none"> any cooking apparatus has a total maximum electrical power input exceeding 8kW, or a total gas power input exceeding 29 MJ/h, or the total maximum power input to more than one apparatus exceeds 0.5kW electrical power or 1.8 MJ gas per metre square of the room or enclosure. 		N/A
Part F1 – Sound Transmission and Insulation			
Part F5	Sound Transmission and Insulation Applicable only to the Class 2 and 3		N/A
Section G: Ancillary Provisions			
Part G1- Minor Structures and components			
G1.1	Swimming pools		
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.	The windows must either be able to be cleaned wholly from within the building, or a method complying with the Construction Safety Act 1912 and Regulations is required.	Compliance readily achievable
Part G2 - Boilers, pressure vessels, heating appliances, fire places, chimneys and flues			
Part G2	Boilers, pressure vessels, heating appliances, fire places, chimneys and flues		N/A
Part G3 - Atrium Construction			
G3.1	Application of Part		Noted
G3.2	Dimensions of atrium well Minimum 6m diameter atrium well is required.		Alternative Solution
G3.3	Separation of atrium by bounding walls An atrium well is required to be separated from the remainder of the building by bounding walls not more than 3.5m from the perimeter of the atrium well, except in the case of 3 consecutive storeys.		Alternative Solution



Clause	Description	Comment	Status
G3.4	Construction of bounding walls Bounding walls must have an FRL not less than 60/60/60 or constructed of fixed toughened safety glass or wired safety glass in non-combustible frames protected with wall wetting sprinklers in accordance with Specification G3.8.		Alternative Solution
G3.5	Construction of balconies If a bounding wall separating an <i>atrium</i> from the remainder of the building is set back from the <i>atrium well</i> , an imperforate and non-combustible barrier not less than 1 m high must be provided.		Alternative Solution
G3.6	Separation at roof The atrium roof must have an FRL not less than that prescribed in Table 3 of Specification C1.1 or the roof structure and membrane are to be protected by a sprinkler system complying with Specification E1.5 and G3.8		Alternative Solution
G3.7	Means of egress All areas within the atrium must have at least 2 means of egress.		Alternative Solution
G3.8	Fire and smoke control systems Sprinklers are to be provided throughout in accordance with Specification E1.5 and G3.8. A smoke control system complying with AS/NZS1668.1 and Specification G3.8 is required throughout. An automatic fire detection and alarm system must comply with AS1670.1 and Specification G3.8. A sound system and intercom system for emergency purposes must be provided in accordance with AS1670.4 and must incorporate visual warning devices that operate on alarm and display the words "EVACUATE" in red letters. A suitable alternative power supply (emergency generator) must be provided to operate "required" safety systems in the building in accordance with Specification G3.8. Fire isolated stairways are required to be provided automatic air pressurisation in accordance with AS/NZS1668.1.		Alternative Solution
Part G4 - Construction in Alpine Areas			
Part G4	Construction in Alpine Areas		N/A
Part G5 - Construction in Bushfire Prone Areas			
Part G5	Construction in Bushfire Prone Areas		N/A
Section H: Special Use Buildings – Auditoriums, Public Halls, Public Transport Buildings			
Part H1 - Class 9b Buildings			
Part H1	Class 9b Buildings	I.	N/A



Clause	Description	Comment	Status
NSW Part - H101 Entertainment Venues other than Temporary Structures and Drive-In Theatres			
NSW Part H101	Entertainment Venues		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			
<p>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.</p> <p>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.</p>			
Section J	Energy efficiency measures Energy efficiency measures are prescribed for the following building elements to limit energy consumption:- <ul style="list-style-type: none"> • Building fabric • External glazing • Building sealing • Air movement. • Air-conditioning and ventilation systems. • Artificial lighting and power • Hot water supply • Access for maintenance 	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.	Alternative Solution
NSW Subsection J(B) Energy Efficiency - Class 3 and Class 5 to 9 Buildings			
NSW J(B)1 - Compliance with BCA Provisions.			Noted
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.			
Part J0 - Energy Efficiency			
J0.1	Application of Part		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 Required ceiling fans must be permanently installed and have a speed controller		Compliance readily achievable
Part J1 - Building Fabric			
J1.1	Application of Part		Noted
J1.2	Thermal construction – general Insulation must comply with AS/NZS 4859.1 and be installed in accordance with Clause J1.2. Insulation must abut or overlap adjoining insulation, form a continuous barrier with ceilings, walls, bulkheads, floors or the like and not affect the safe		Compliance Readily achievable / Alternative Solution



Clause	Description	Comment	Status
	or effective operation of services.		
J1.3	<p>Roof and ceiling construction</p> <p>A roof or ceiling that is part of the envelope must achieve the Total R-Value specified in Table J1.3 for the direction of heat flow.</p> <p>A roof that -</p> <ul style="list-style-type: none"> i. is required to achieve a minimum <i>Total R-Value</i>; and ii. has metal sheet roofing fixed to metal purlins, metal rafters or metal battens; and iii. does not have a ceiling lining or ha a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens (see specification J1.3 Figure 2(c) and (f), <p>must have a thermal break, consisting of a material with an <i>R-Value</i> of not less than R0.2, installed between the metal roofing and its supporting metal purlins, metal rafters or metal battens.</p>	The minimum total R-Value required for roofs or ceilings are specified in Appendix J1.	Compliance Readily achievable / Alternative Solution
J1.4	<p>Roof lights</p> <p>Roof lights, including any associated shaft and diffuser, that form part of the envelope must, if the roof lights are not required for compliance with Part F4, comply with Table J1.4.</p> <p>If the roof lights are required for compliance with Part F4 they must have an area not more than 150% of the minimum area required by F4.6; and have transparent and translucent elements, including any imperforate ceiling diffuser, with a combined performance of not more than 0.29 Total System SHGC; and 2.9 Total System U-Value.</p>		Compliance Readily achievable / Alternative Solution
J1.5	<p>Walls</p> <p>Each part of an external wall that is part of the envelope must satisfy one of the options in Table J1.5a or Table J1.5b except as specified in Clause J1.5.</p> <p>A wall that -</p> <ul style="list-style-type: none"> i. is required to achieve a minimum <i>Total R-Value</i>; and ii. has lightweight external cladding such as weatherboards, fibre cement or metal sheeting fixed to a metal frame; and iii. does not have a wall lining or has a wall lining that is fixed directly to the same metal frame, <p>must have a thermal break, consisting of a material with an <i>R-Value</i> of not less than R0.2, installed between the external cladding and the metal frame.</p>	Refer to Appendix J1 for required minimum R-Values and other requirements.	Compliance Readily achievable / Alternative Solution
J1.6	<p>Floors</p> <p>Floors are required to achieve a minimum R-Value in accordance with Table J1.6.</p> <p>A concrete slab-on-ground with an in-slab heating or cooling system; or located in climate zone 8 must have insulation installed around the vertical edge of its perimeter.</p> <p>The insulation must have an R-Value of not less than</p>	Refer to Appendix J1 for minimum R-Values for floors	Compliance Readily achievable / Alternative Solution



Clause	Description	Comment	Status
	1.0, be water resistant and be continuous from the adjacent finished ground level to a depth of not less than 300 mm or for the full depth of the vertical edge of the concrete slab-on-ground		
Part J2 - Glazing			
J2.1	Application of Part		Noted
J2.2	-	This Clause has deliberately been left blank	-
J2.3	-	This Clause has deliberately been left blank	-
J2.4	<p>Glazing</p> <p>The glazing in each storey including a mezzanine must be assessed separately in accordance with Clause J2.4(b) and (c) for-</p> <ul style="list-style-type: none"> i) <i>glazing</i> in the external <i>fabric</i> facing each orientation; and ii) <i>glazing</i> in the internal <i>fabric</i> using the south orientation sector energy constants in Table J2.4b and shading multipliers in Table J2.4c and Table J2.4d. <p>The aggregate <i>air-conditioning</i> energy value attributable to the <i>glazing</i> must not exceed the allowance obtained by multiplying the facade area that is exposed to the <i>conditioned space</i> for the orientation by the energy index in Table J2.4a.</p>	The glazing calculator must be completed and submitted with the Construction Certificate application as evidence of compliance.	Compliance Readily achievable / Alternative Solution
J2.5	<p>Shading</p> <p>Where shading is required to comply with Clause J2.4, it must;</p> <ul style="list-style-type: none"> a) be provided by an external permanent projection, such as a verandah, balcony, fixed canopy, eaves or shading hood which <ul style="list-style-type: none"> i. extends horizontally on both sides of the glazing for the same projection distance P in figure J2.4 of the BCA, or ii. provides the equivalent shading to that above with a reveal or the like, or b) be provided an external shading device such as a blind, vertical or horizontal building screen with blades, battens or slats, which <ul style="list-style-type: none"> i. is capable of restricting at least 80% of summer solar radiation, and ii. if adjustable is operated automatically in response to the level of solar radiation. 		Compliance Readily achievable / Alternative Solution
Part J3 - Building Sealing			
J3.1	Application of Part <i>(NSW variation for building sealing)</i>	Applies to elements forming the envelope of a Class 3, and Class 5 to 9 building other than as specified including parts of the building that cannot be fully enclosed.	Noted
J3.2	Chimneys and flues		N/A
J3.3	Roof lights		Compliance Readily



Clause	Description	Comment	Status
			achievable / Alternative Solution
J3.4	<p>Windows and doors</p> <p>A seal to restrict air infiltration must be fitted to each edge of an external door, openable external window or the like when serving a conditioned space.</p>		Compliance Readily achievable / Alternative Solution
J3.5	<p>Exhaust fans</p> <p>A miscellaneous exhaust fan must be fitted with a sealing device such as a self-closing damper or the like when serving a conditioned space.</p>		Compliance Readily achievable / Alternative Solution
J3.6	<p>Construction of roofs, walls and floors</p> <p>Roofs, walls, floors and any opening must be constructed to minimise air leakage in accordance with Clause J3.6(b) when forming part of the external fabric of a conditioned space.</p> <p>These requirements do not apply to openings, grilles and the like required for smoke hazard management.</p>		Compliance Readily achievable / Alternative Solution
J3.7	<p>Evaporative coolers</p> <p>An evaporative cooler must be fitted with a self-closing damper or the like when serving a heated space.</p>		Compliance Readily achievable / Alternative Solution
Part J4 - This Part has deliberately been left blank			
Part J5 - Air-conditioning and Ventilation Systems			
J5.1	Application of Part		Noted
J5.2	<p>Air-conditioning systems</p> <p>An air-conditioning system must be capable of being deactivated when the building or part of a building served by that system is not occupied.</p> <p>An air-conditioning system must comply with requirements specified under this Clause which relate to controls, fans, pumps, insulation and time switches.</p> <p>Space heating must comply with Specification J5.2d.</p> <p>Energy efficiency ratios must comply with Specification J5.2e</p>	The mechanical engineer is to design and certify the A/C system to comply with the requirements under this Clause.	Compliance Readily achievable / Alternative Solution
J5.3	<p>Mechanical ventilation systems</p> <p>The mechanical ventilation system must comply with the requirements specified under this clause which relate to controls, fans and time switches.</p>	The mechanical engineer is to design and certify the mechanical ventilation system to comply with the requirements under this Clause.	Compliance Readily achievable / Alternative Solution
J5.4	<p>Miscellaneous exhaust systems</p> <p>3. A miscellaneous exhaust system with an air flow rate of more than 1000 L/s, that is associated with equipment having a variable demand, must be capable of stopping the motor when the system is not needed and have a variable speed fan or the like.</p>		Compliance Readily achievable / Alternative Solution



Clause	Description	Comment	Status
Part J5 - Artificial Lighting and Power			
J6.1	Application of Part		Noted
J6.2	Artificial lighting In a Class 5, 6, 7, 8, 9a or 9b the artificial lighting must not exceed the sum of the allowances obtained by multiplying the area of each space by the maximum power density in Table J6.2a.		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.		Compliance Readily achievable
J6.4	Interior decorative and display lighting Interior decorative and display lighting, such as for foyer mural or art displays, must be controlled separately from other artificial lighting as specified in Clause J6.4. Window display lighting must be controlled separately from other display lighting.		Compliance Readily achievable
J6.5	Artificial lighting around the perimeter of a building Artificial lighting around the perimeter of a building must be controlled by a daylight sensor or time switch as specified in Clause J6.5.		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.		Compliance Readily achievable
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 A hot water supply system for food preparation and sanitary purposes, other than a solar hot water supply system in climate zones 1, 2 and 3 must be designed and installed in accordance with Section 8 of AS/NZS 3500.4		Compliance Readily achievable
J7.3	Swimming pool heating and pumping		N/A
J7.4	Spa pool heating and pumping		N/A
Part J8 - Facilities for Energy Monitoring			
J8.1	Application of Part		Noted
J8.2	-	This Clause has deliberately been left blank	-
J8.3	Facilities for energy monitoring	An energy monitoring facility is required for the building.	Compliance readily achievable



Clause	Description	Comment	Status
	<p>A building or sole-occupancy unit with a floor area of more than 500m² must have the facility to record the consumption of gas and electricity.</p> <p>A building with a floor area of more than 2,500m² must have the facility to record individually the energy consumption of:</p> <ul style="list-style-type: none">I. air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; andII. artificial lighting; andIII. appliance power; andIV. central hot water supply; andV. internal transport devices including lifts, escalators and travelators where there is more than one serving the building; andVI. other ancillary plant.		



15. Appendix A – Referenced Documentation

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

Drawing No.	Title	Issue	Date	Drawn By



16. Appendix B – Statutory Fire Safety Measures

Existing Schedule of Statutory Fire Safety Measures

PREMISES **1- 43 WILLIAM STREET, SYDNEY (6 COLLEGE STREET, DARLINGHURST)**
(AUSTRALIAN MUSEUM)

ITEM No.	MEASURE	STANDARD OF PERFORMANCE
1.	Automatic failsafe devices	BCA Specification, C3.4
2.	Automatic Fire Detection & Alarm System	Ord 70.27.4, AS 1670
3.	Automatic Fire Suppression System (sprinklers)	Ord 70.55.17, 22.4, 26.3, AS CA 16, AS 2118.1.
4.	Emergency Lighting	Ord 70.55.12, AS/NZS 2293.1
5.	Emergency Warning & Intercommunication System	Ord 70.55.16, AS 2220.1&2
6.	Fire Alarm Communication Link or Auto Fire Alarm Monitoring	AS 4428.6
7.	Exit Signs	Ord 70.24.29, AS/NZS 2293.1
8.	Fire Dampers	Ord 70.22.13, Ministerial Specification No.12, AS/NZS 1668.1, AS1668.2, C.S.I.R.O Report 2006
9.	Fire doors	Ord 70.21.1, AS/NZS1905.1 Pawal Consulting Report 2005
10.	Fire Hydrant Systems	Ord 70.27.3, AS 2419.1
11.	Fire seals (protecting openings in fire resisting components of the building)	Ord 70.22.12, AS 4072.1 & installed in accordance with the tested prototype.Pawal Consulting Report
12.	Hose reel system	Ord 70.27.2, Ministerial Specification No 10, AS 2441
13.	Mechanical air handling systems	Ord 70.55.7, Ministerial Spec. Numbers 12 & 13 Steve Watson ,Fire Safety Upgrade Sept 2004 Report 2003/211 R3
14.	Portable fire extinguishers	Ord 70.27.4.1, AS 2444
15.	Smoke Dampers	AS1668.1, AS 1668.2 Steve Watson ,Fire Safety Upgrade Sept 2004 Report 2003/211 R3
16.	Smoke Detectors & Heat Detectors	Ord 70.27.4, AS1670.1
17.	Automatic fire suppression system – Gaseous Systems) Inergen, NAF – S111 (Spirit Store)	AS 4214

Proposed Schedule of Statutory Fire Safety Measures

Measure	Standard of Performance
Access panels, doors and hoppers to fire resisting shafts	BCA2016 Clause C3.13 and tested prototypes (AS 1530.4 – 2014 and AS 4072.1-2005) 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.]
Automatic fail safe devices	Scheduled devices release upon trip of smoke detection and/or sprinkler activation in accordance with BCA2016 Clauses D2.19 and D2.21.
Automatic fire detection and alarm system (smoke detection system)	BCA2016 Specification E2.2a, AS 1670.1 – 2015
Automatic fire suppression systems (Sprinklers)	BCA2013 Specification E1.5 and AS 2118.1 – 1999
Automatic fire suppression systems (Residential sprinkler system)	BCA2013 Specification E1.5 and AS 2118.4-2012 (sprinkler protection for accommodation buildings not exceeding 4 storeys
Emergency lifts	BCA2016 Clause E3.4
Emergency lighting	BCA2016 Clause E4.2, E4.4 and AS 2293.1 – 2005
Sound System and Intercommunication System for Emergency Purposes (aka EWIS)	BCA2016 Clause E4.9, Specification G3.8 and AS 1670.4 – 2015
Exit signs	BCA2016 Clause E4.5, NSW E4.6, E4.8 and AS 2293.1 – 2005



Measure	Standard of Performance
Fire control room / centre	BCA2016 Specification E1.8
Fire dampers	BCA2016 Clause C3.15 and AS/NZS 1668.1 – 2015 (AS 1682.1-1990 and AS 1682.2-1990)
Fire doors	BCA2016 Specification C3.4 and AS 1905.1 – 2015
Fire hydrants systems	BCA2016 Clause E1.3 and AS 2419.1 – 2005
Fire seals protecting opening in fire resisting components of the building	BCA2016 Clause C3.15, Specification C3.15 and AS 1530.4 –2014 and AS 4072.1 – 2005 and installed in accordance with the tested prototype. <i>[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.]</i>
Hose reel system	BCA2016 Clause E1.4 and AS 2441 – 2005
Mechanical air handling system (automatic shutdown of air-handling system)	BCA2016 Clause E2.2 and AS/NZ 1668.1-2015
Mechanical air handling system (automatic air pressurisation system)	BCA2016 Table E2.2a and Specification G3.8 and AS/NZ 1668.1-2015
Mechanical air handling system (automatic smoke exhaust system)	BCA2016 Table E2.2b, Specification E2.2b and G3.8, and AS/NZ 1668.1-2015
Perimeter vehicle access for emergency vehicles	BCA2016 Clause C2.4
Portable fire extinguishers	BCA2016 Clause E1.6 and AS 2444 – 2001
Smoke doors	BCA2016 Specifications C2.5, C3.4 and AS 1288 – 2006
Wall wetting sprinkler and drencher systems	BCA2016 Clause C3.4 Specification G3.8 and AS 2118.2 – 1995
Warning and operational signs	BCA2016 Clauses C3.6, D1.17, NSW D2.19, D2.23, D3.6, E3.3, E3.9, E3.10 and Specifications D1.12, E1.8, E3.1
Fire Engineering Report	

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



17. Appendix C1.1 – Fire Rating Requirements

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



18. 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	Variouly 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 250m²/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



19. Appendix C2.2 – Floor Areas and Volumes

Floor areas and volumes of each storey

Floor	Approx. Area (m ²)	Approx. Volume (m ³)	Comment
Basement level			
Lower ground			
Ground			
Level 1			
Level 2			
Level 3			
Level 4			

Nominated Fire Compartments

These are indicated in the table above.

Compartment	Approx. Area (m ²)	Approx. Volume (m ³)	Comment



20. Appendix D1.4 – Exits

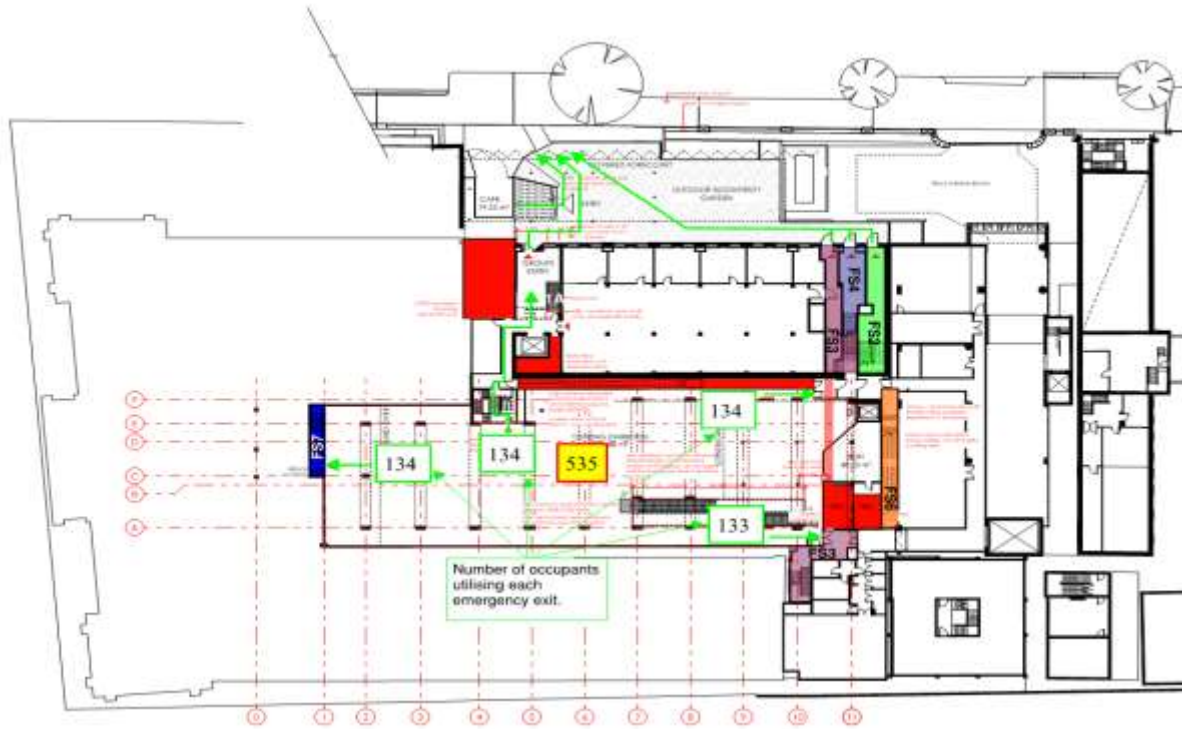
The exits from the building are set out below:

Exit No	Location	Type	Grid Ref	No of storeys connected / passed by	Comments
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

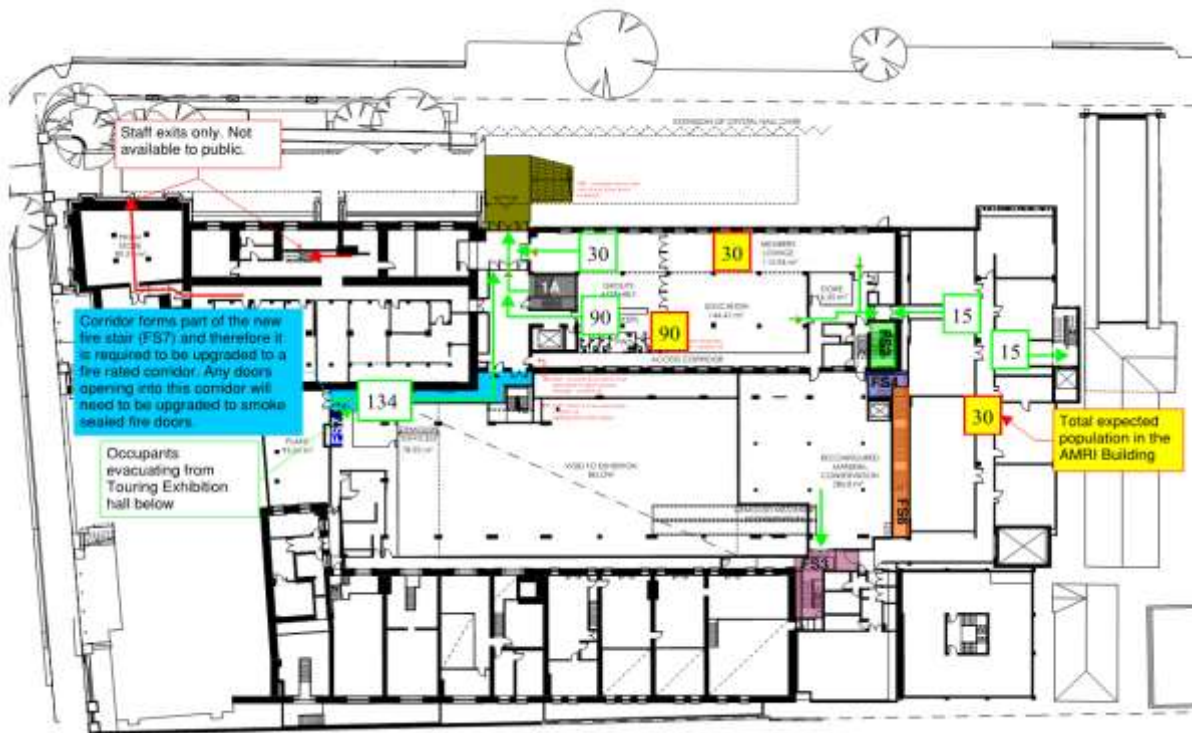


21. Appendix D1.13 – Populations/Exit Width Assessment

Basement

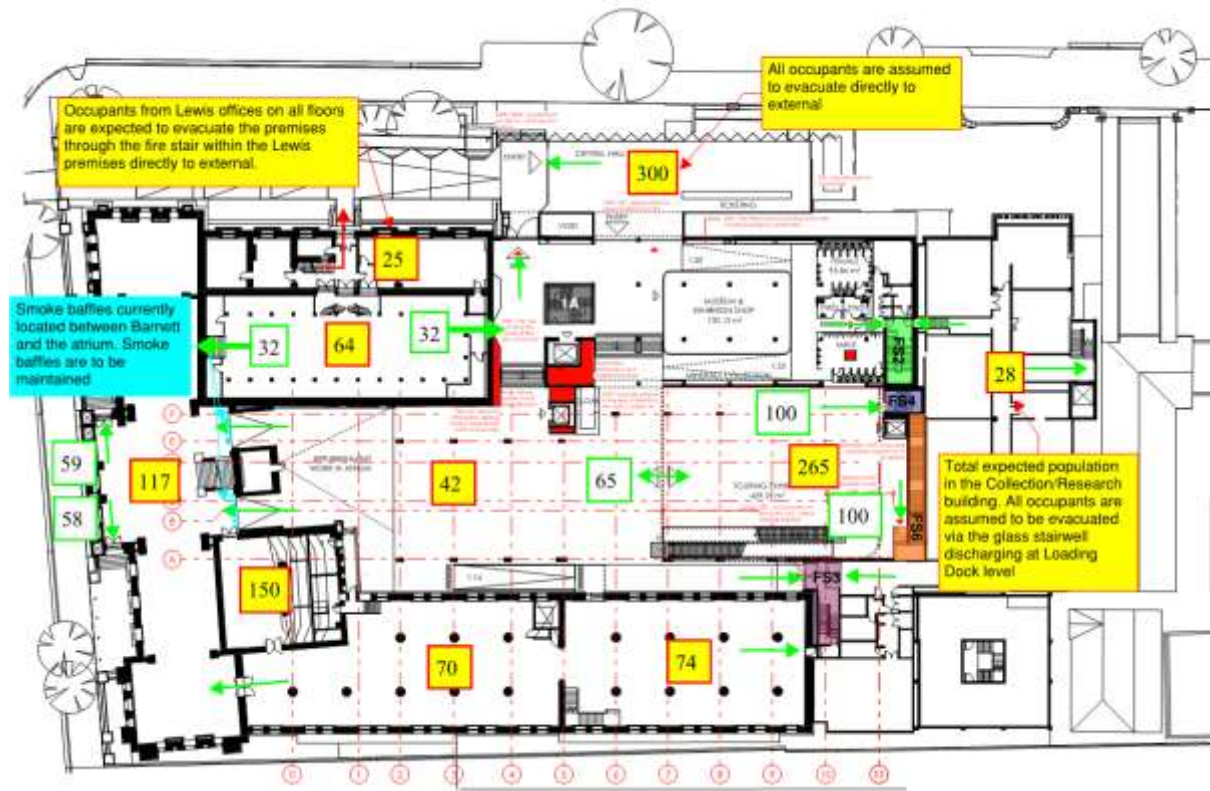


Lower Ground

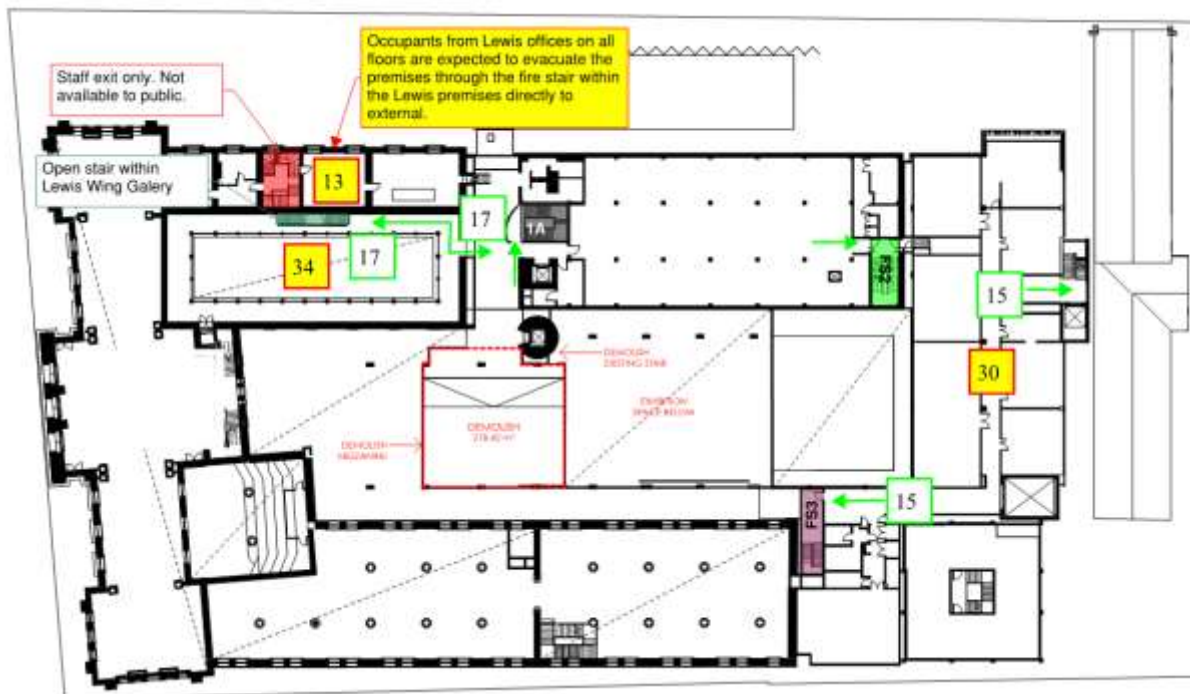




Ground



Level 1





22. 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

23. Appendix F2.3 – Requirements for Sanitary Facilities

The status of sanitary facilities required by Part F2 of the BCA are set out below:

Class	Use	Occupant Numbers		WC Required / Provided	Urinal Required / Provided	Basin Required / Provided
		Total				
			Male			
			Female		N/A	
			Unisex Disabled		N/A	
			Male			
			Female		N/A	
			Unisex Disabled		N/A	
	TOTAL		Male			
			Female		N/A	
			Unisex Disabled		N/A	

Notes:

1. A common unisex accessible facility may be counted once for both male and female facilities in accordance with Clause F2.2(c) of the BCA;
2. Staff and patrons are permitted to share the same facilities in accordance with Clause F2.3(d) of the BCA;
3. At least one ambulant sanitary compartment must be provided within each the male and female facilities complying with Section 16 of AS1428.1 – 2009.
4. A WC is able to be used in place of a urinal.



24. Appendix J1 – Energy Efficiency R-Values

Roofs and Ceilings - Minimum Total R-Value (Table J1.3a)

Climate zone	1, 2, 3, 4 & 5	6	7	8
Direction of heat flow	Downwards		Upwards	
Minimum <i>Total R-Value</i> for a roof or ceiling with a roof upper surface solar absorptance value of not more than 0.4	3.2	3.2	3.7	4.8
Minimum <i>Total R-Value</i> for a roof or ceiling with a roof upper surface solar absorptance value of more than 0.4 but not more than 0.6	3.7	3.2	3.7	4.8
Minimum <i>Total R-Value</i> for a roof or ceiling with a roof upper surface solar absorptance value of more than 0.6	4.2	3.2	3.7	4.8

Adjustment of Minimum Total R-Value for Loss of Ceiling Insulation (Table j1.3b)

Percentage of ceiling area uninsulated	Minimum R-Value of ceiling insulation required to satisfy J1.3(a)										
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
	Adjusted minimum R-Value of ceiling insulation required to compensate for loss of ceiling insulation area										
0.5% to less than 1.0%	1.0	1.6	2.2	2.8	3.4	4.0	4.7	5.4	6.2	6.9	
1.0% to less than 1.5%	1.1	1.7	2.3	2.9	3.6	4.4	5.2	6.1	7.0		
1.5% to less than 2.0%	1.1	1.7	2.4	3.1	3.9	4.8	5.8	6.8			
2.0% to less than 2.5%	1.1	1.8	2.5	3.3	4.2	5.3	6.5				
2.5% to less than 3.0%	1.2	1.9	2.6	3.6	4.6	5.9	Not Permitted				
3.0% to less than 4.0%	1.2	2.0	3.0	4.2	5.7						
4.0% to less than 5.0%	1.3	2.2	3.4	5.0							
5.0% or more											

Note: Where the minimum *R-Value* of ceiling insulation *required* to satisfy J1.3(a) is between the values stated, interpolation may be used to determine the adjusted minimum *R-Value*.



Roof Lights - Thermal Performance of Transparent and Translucent Elements (Table j1.4)

Roof light shaft index (see Note 1)	Constant	Total area of roof lights serving the room or space as a percentage of the floor area of the room or space			
		Up to 2%	More than 2% to and up to 3%	More than 3% and up to 4%	More than 4% and up to 5%
Less than 0.5	<i>Total System SHGC</i>	Not more than 0.83	Not more than 0.57	Not more than 0.43	Not more than 0.34
	<i>Total System U-Value</i>	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
0.5 to less than 1.0	<i>Total System SHGC</i>	Not more than 0.83	Not more than 0.72	Not more than 0.54	Not more than 0.43
	<i>Total System U-Value</i>	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
1.0 to less than 2.5	<i>Total System SHGC</i>	Not more than 0.83	Not more than 0.83	Not more than 0.69	Not more than 0.55
	<i>Total System U-Value</i>	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4
2.5 and more	<i>Total System SHGC</i>	Not more than 0.83	Not more than 0.83	Not more than 0.83	Not more than 0.83
	<i>Total System U-Value</i>	Not more than 8.5	Not more than 5.7	Not more than 4.3	Not more than 3.4

Notes:

- The roof light shaft index is determined by measuring the distance from the centre of the shaft at the roof to the centre of the shaft at the ceiling level and dividing it by the average internal dimension of the shaft opening at the ceiling level (or the diameter for a circular shaft) in the same units of measurement.
- The total area of roof lights is the combined area for all roof lights serving the room or space.
- The area of a roof light is the area of the roof opening that allows light to enter the building.
- The thermal performance of an imperforate ceiling diffuser may be included in the Total System U-Value and Total System SHGC of the roof light.
- The total area of roof lights serving the room or space as a percentage of the floor area of the room or space must not exceed 5% unless allowed by J1.4(b).



Options for Each Part of an External Wall that is Part of an Envelope (Table J1.5a)

Climate zone	Options
1, 2 and 3	(a) (i) Achieve a minimum <i>Total R-Value</i> of 3.3. (ii) The minimum <i>Total R-Value</i> in (i) is reduced (A) for a wall with a surface density of not less than 220 kg/m ² , by 0.5; and (B) for a wall that is (aa) facing the south orientation as described in Figure J2.3, by 0.5; or (bb) shaded with a projection shade angle in accordance with Figure J1.5 of (AA) 15 degrees to not more than 45 degrees, by 0.5; or (BB) more than 45 degrees, by 1.0; and (C) if the outer surface solar absorptance value is not more than 0.6, by 0.5.
	(b) Where the only space for insulation is provided by a furring channel, top hat section, batten or the like (i) achieve a minimum <i>Total R-Value</i> of 1.4; and (ii) satisfy <i>glazing</i> energy index Option B of Table J2.4a.
4, 5 and 6	(a) (i) Achieve a minimum <i>Total R-Value</i> of 2.8. (ii) The minimum <i>Total R-Value</i> in (i) is reduced - (A) for a wall with a surface density of not less than 220 kg/m ² , by 0.5; and (B) for a wall that is - (aa) facing the south orientation as described in Figure J2.3, by 0.5; or (bb) shaded with a projection shade angle in accordance with Figure J1.5 of (AA) 30 degrees to not more than 60 degrees, by 0.5; or (BB) more than 60 degrees, by 1.0.
	(b) Where the only space for insulation is provided by a furring channel, top hat section, batten or the like (i) achieve a minimum <i>Total R-Value</i> of 1.4; and (ii) satisfy <i>glazing</i> energy index Option B of Table J2.4a.
7	(a) Achieve a minimum <i>Total R-Value</i> of 2.8. (b) Where the only space for insulation is provided by a furring channel, top hat section, batten or the like (i) achieve a minimum <i>Total R-Value</i> of 1.4; and (ii) satisfy <i>glazing</i> energy index Option B of Table J2.4a.
8	(a) Achieve a minimum <i>Total R-Value</i> of 3.8.
	(b) Where the wall is an earth retaining wall or earth-berm, achieve a minimum <i>Total R-Value</i> of 2.0.



An Envelope Wall Other than an External Wall Minimum Total R-Value (Table J1.5b)

Location		Climate zone										
		1	2	3	4	5	6	7	8			
(a)	Where the adjacent enclosed non- <i>conditioned space</i> has											
	(i)	ventilation of not more than 1.5 air changes per hour of outside air during occupied hours; and										
	(ii)	glazing in the external fabric as required by Part J2; and										
	(iii)	<i>roof lights</i> in the external fabric as required by J1.4.										
(b)	For other than (a)											
		1.0	1.0	Nil	Nil	1.0	1.0	1.5	2.5			
		2.3	2.3	2.3	1.8	1.8	1.8	2.8	3.8			

Note:

When assessing the glazing and roof lights as required by Part J2 and J1.4, assess the glazing and roof lights as if the non- conditioned space is the same separate conditioned space.

Floors - Minimum Total R-Value (Table J1.6)

Location		Climate zone										
		1	2	3	4	5	6	7	8			
Direction of heat flow		Upwards	Downwards and upwards		Downwards							
(a)	A slab on ground:											
	(i)	Without an in-slab heating or cooling system										
	(ii)	With an in-slab heating or cooling system										
(b)	A suspended floor without an in-slab heating or cooling system where the non- <i>conditioned space</i> is											
	(i)	enclosed; and										
	(ii)	where mechanically ventilated by not more than 1.5 air changes per hour.										
(c)	A suspended floor with an in-slab heating or cooling system where the non- <i>conditioned space</i> is											
	(i)	enclosed; and										
	(ii)	where mechanically ventilated by not more than 1.5 air changes per hour										
(d)	For other than (a), (b) or (c)											
		Nil	Nil	Nil	Nil	Nil	Nil	1.0	2.0			
		1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	2.25	
		1.0	1.0	Nil	Nil	1.0	1.0	1.5	2.5			
		1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	2.75	
		2.0	2.0	2.0	2.0	2.0	2.0	2.0	3.5			

Note:

A sub-floor space with not more than 150% of the required sub-floor ventilation is considered enclosed.



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