



Building Code of Australia 2016-Amd 1

BCA DESIGN COMPLIANCE REPORT

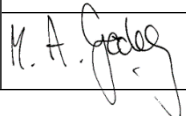
Meriden School
10-12 Redmyre Road, Strathfield

Prepared for: AJ & C Issue date: 16 May 2019

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Authorisation

Revision	Comment / Reason for Issue	Issue Date	Prepared by	Reviewed by
04	DA Submission	16.05.19	Mike Gooley	Matthew Marks
				

Revision History

Revision	Comment / Reason for Issue	Issue Date	Prepared By
01	Preliminary Review	30.08.18	Mike Gooley
02	DA Submission	30.03.19	Mike Gooley
03	DA Submission	16.04.19	Mike Gooley
04	DA Submission	16.05.19	Mike Gooley

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Executive Summary

We have reviewed architectural design documents prepared by A J & C (refer appendix A) for compliance with the Building Code of Australia 2016 (amendment 1).

The purpose of the assessment is to provide surety to the Consent Authority, that the buildings design is capable of complying with the BCA and that subsequent compliance with the provisions of Parts C, D E, F & J of the BCA will not give rise to further modifications to the building that may necessitate additional design changes.

SITE 1: SENIOR SCHOOL CAMPUS – NEW CENTRE FOR MUSIC AND DRAMA:

The design will be further developed to comply with the relevant BCA prescriptive (deemed-to-satisfy) provisions together with areas in which an alternative performance based solution will be developed in consultation with key stakeholders.

Fire Engineering Strategy

The assessment of the design documentation has revealed that the following areas are required to be assessed against the relevant performance requirements of the BCA. The submission for Construction certificate will need to include verification from a suitably accredited fire engineer: -

DTS Clause	Description of Non-Compliance	Performance Requirement
Spec. C1.1 & G3	<u>Sprinkler Protected and Atrium</u> A fire engineering assessment will be developed not to apply the atrium provisions based upon the building being sprinkler protected throughout and fire-separated by 2 hour construction at level 2 (void and internal stairway).	CP1, CP2 and EP2.2
Spec. C1.1 (clause 3.6)	There is a new glazed roof above level 1 adjacent to Hope Turner Building. Specification C1.1 (sub-clause 3.6) requires rooflights to be setback not less than 3.0m from the separating walls. A fire engineering assessment will be developed to address the location and potential spread of fire from the adjacent building.	CP1 & CP2

D1.3 and D1.7	A fire engineering assessment will be developed to allow a non-fire-isolated stairway to connect 4 storeys based upon the building being sprinkler protected throughout and fire separated at the open void and stairway on level 2 by construction that achieves an FRL of not less than 120/120/120.	CP2 & DP5
C2.7	<u>Separation of Buildings:</u> <ul style="list-style-type: none"> The firewall does not extend vertical through each storey and rely upon the existing solid brick external walls of the adjacent building; The construction of the firewall does not comply with BCA Clause C2.7 (b) (iii) as does not extend to the roof covering of the higher roof. 	CP1, CP2
C3.2, C3.3 and C3.5	<u>Protection of Openings between Buildings</u> <ul style="list-style-type: none"> There are existing window openings within the firewall which separates the Hope Turner and Wallis Buildings. Glazed doorway will connect to adjacent Wallis Building rather than an approved fire door. These doorways must be self-closing and drencher protected both sides; The open area between columns along the existing balcony connecting Wallis Building to Hope Turner Building are considered to be openings within the external walls. The external walls of the new CMD building will be exposed to openings within the adjacent buildings. There are window openings within southern elevation of Hope Turner situated within 6.0m to the proposed new CDM building. 	CP2

It is recommended an accredited fire engineer to provide initial advice in relation to documentation of performance solution for the development.

Based upon the size of the fire compartment being less than 2,000m² or 6000m². Consultation and referral to NSW Fire Brigade is not a mandatory requirement under Clause 144 of the Environmental Planning and Assessment Regulations.

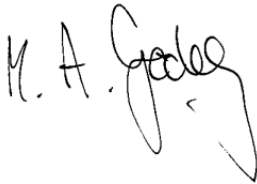
SITE 2: LINGWOOD PREP SCHOOL – NEW ADMINISTRATION AND STUDENT CENTRE:

The architectural design documentation are capable of achieving compliance with the provisions of the BCA.

The documentation will need further detailing such as door hardware, construction specifications, services design and manufacturer's details, as outlined within this report.

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

Assessed by,



Mike Gooley

2. Introduction

The following Modern Building Certifiers Team Members have contributed to this assessment:

- Mike Gooley – Director & A1 Accredited Certifier

Our assessment of the concept design documentation was based on the following:

- National Construction Code Series (Volume 1) Building Code of Australia 2016 Amendment 1 (BCA)
- Architectural Drawings – Refer to Appendix A
- Guide to the Building Code of Australia 2016 (BCA Guide)
- Access to Premises – Buildings Standards 2010 (Access Code)
- Environmental Planning and Assessment Act 1979 (EP&A)
- Environmental Planning and Assessment Regulation 2000 (EP&AR)

The objectives of this statement are to:

- Undertake an assessment of the proposed architectural design documentation against the Performance Requirements of National Construction Code Series 2016 (Volume 1) - Building Code of Australia (BCA).
- Accompany the submission of the Development Application to Strathfield Council to enable the Consent Authority to be satisfied that the building design is capable of complying with the BCA and that subsequent compliance with Parts C, D, E, F & J of the BCA will not give rise to further design changes to the building.
- Identify any BCA compliance issues that require resolution at the Construction Certificate stage. These matters are to be considered pursuant to Cls 53 .4 of the EP&A Regulation 2000.
- Enable the certifying authority to satisfy its statutory obligations under Clause 145 of the Environmental Planning and Assessment Regulation, 2000.
- Enable the certifying authority to satisfy its statutory obligations under Clause 17 & 18 of the Building Professionals Regulation 2007.
- This Capability Statement is not intended to identify all issues of compliance or non-compliance with the BCA with such other issues to be appropriately addressed prior to issue of the Construction Certificate.

3. Development Description & Assessment Information

The proposed State Significant Development Application (SSDA) comprises development on each of the three Meriden School campuses. The primary objective of the proposal is to improve the current school facilities to cater for the increased demand for high quality music teaching and learning spaces. Additional administration and student facilities and increasing the playground area in the Junior School Campus.

The proposed works comprise the following:

SITE 1: SENIOR SCHOOL CAMPUS – NEW CENTRE FOR MUSIC AND DRAMA:

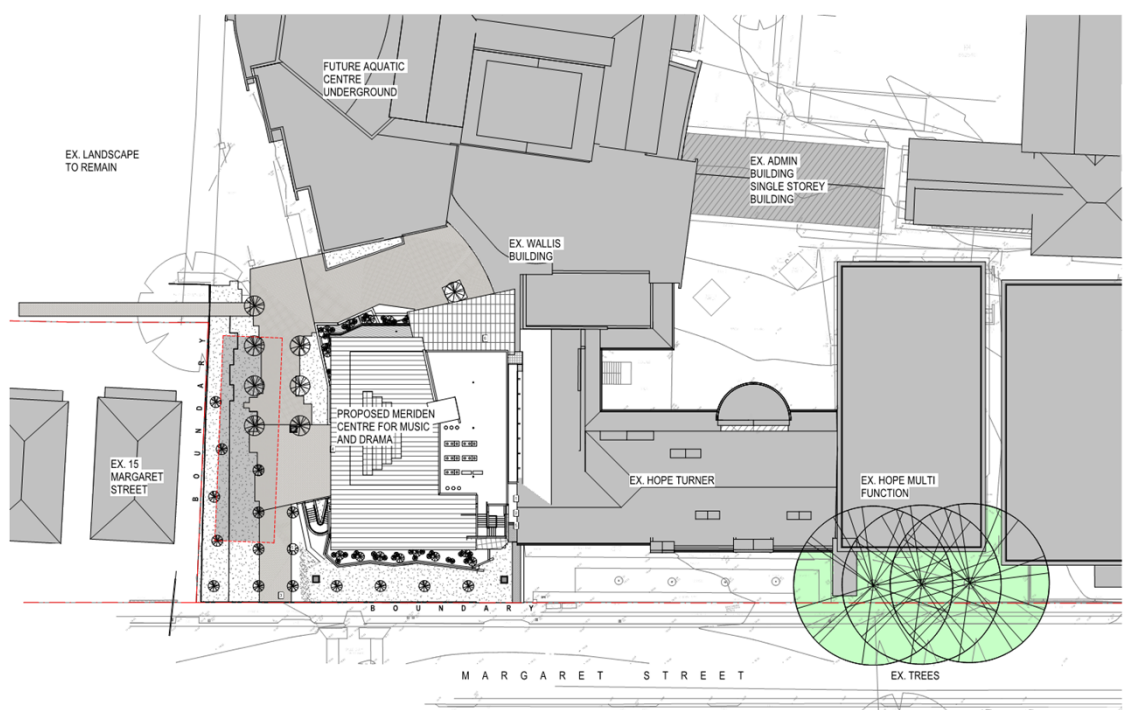
Demolition of the existing music building located towards the south-western corner of the Senior School Campus, and construction of a new 3 storeys with a 2 storey basement building incorporating a new music academy, drama facilities, music teaching rooms and staff facilities. Excavation to a depth of 6m below existing ground level to accommodate practice rooms, a recording studio, instrument storage rooms, staff room and drama performance area.

SITE 2: LINGWOOD PREP SCHOOL – NEW ADMINISTRATION AND STUDENT CENTRE:

Demolition of existing single storey Business Office building and construction of a new 2- storey general student services and administration building. The new building will be designed with maximum flexibility to accommodate a wide range of uses, and to adapt with the demands of the school. This will involve the removal of 6 trees.

SITE 3: JUNIOR SCHOOL – NEW LANDSCAPED PLAYGROUND:

Demolition of the existing residential dwelling at 4 Vernon Street to make way for a new landscaped playground area. This will involve the removal of 3 trees. The existing access and parking arrangements will be retained.



Meriden School – Site Plan.

The site is primarily accessed from Margaret Road from with a secondary frontage to Redmyre Road, Strathfield.

1.1 Current Legislation

The applicable legislation governing the design of buildings in NSW is the Environmental Planning and Assessment Act 1979.

Applicable Building Code of Australia (BCA)

The proposed development will be subject to compliance with the relevant requirements of the BCA as in force at the time that the application for the Construction Certificate is made.

In this regard it is assumed that the Construction Certificate application will be made prior to the 1st May 2019, as such this report is based upon the Deemed-to-Satisfy provisions of BCA 2016.

Should the application for Construction Certificate be made after 1st May 2019, this report will be required to be updated to reflect any changes made and now required by the BCA. Should an out of cycle change occur to the Building Code of Australia, then this report is required to be updated to reflect any applicable changes made and now required by the BCA.

BCA Assessment

We have reviewed architectural design documents prepared by AJ & C Architects (refer appendix A) for compliance with the Building Code of Australia 2016-Amd 1.

The design will be further developed to comply with the relevant BCA prescriptive (deemed-to-satisfy) provisions together with areas in which an alternative performance based solution will be developed in consultation with key stakeholders.

2. Building Assessment Data

Summary of Construction Determination: -

	Site 1: CMD	Site 2: Admin & Student Building
Classification	9b	5 & 9b
Number of Storeys Contained	5	2
Rise In Storeys	4	2
Type of Construction	Type A	Type B
Effective Height (m)	Less than 25m	Less than 25m

Summary of the floor areas and relevant populations where applicable: -

Site 1: CMD	BCA Classification	Approx. Floor Area (m ²)	Assumed Population
Basement – Level 2	9b	421	160
Basement – Level 1	9b	399	40
Ground – Level 0	9b	612	150
Level 1	9b	515	200
Level 2	9b	3763	50
Total		2320 m ²	600

Summary of the floor areas and relevant populations where applicable: -

Site 2: Admin & Student Centre, Lingwood Campus	BCA Classification	Approx. Floor Area (m ²)	Assumed Population
Ground Floor Level	5	TBC	30

Site 2: Admin & Student Centre, Lingwood Campus	BCA Classification	Approx. Floor Area (m ²)	Assumed Population
Level 1	9b	TBC	40
Total		m ²	70

Notes:

- The above populations have been base on the floor areas and calculations in accordance with Table D1.1.3 or seating layout in multi-purpose rooms.
- The floor areas have been adjusted without ancillary areas such as sanitary facilities, corridors, shelving and or racking layouts in storage areas.

SITE 1: SENIOR SCHOOL CAMPUS – NEW CENTRE FOR MUSIC AND DRAMA:

3. BCA Assessment Summary

The building is required to be protected by a sprinkler system based upon the following design criteria:

3.1 Atrium

An atrium is created by the connection of 2 or more storeys by an opening in the floor. It also includes the space not fire-separated from the rest of the building. The atrium well is that part extending through openings in the floor.

There is a centrally located atrium void which connects basement level up to level 2. The atrium void and stairway will be fire-separated from the remainder of level 2 by a firewall.

The building must be designed to comply with Part G3 (Atrium Construction) of the BCA. This will require separation of the atrium well on each storey together with Fire and Smoke Control systems in accordance with G3.8 of the BCA.

Compliance is not required with the atrium provisions if the atrium connects only 3 storeys and is sprinkler protected throughout and one of storeys is situated at a level at which there is direct egress to the road or open space.

A fire engineering assessment will be developed not to apply the atrium provisions based upon the building being sprinkler protected throughout and fire-separated by 2 hour construction at level 2 (void and internal stairway).

3.2 Internal Stairways

Internal stairways in a sprinkler protected building can connect 3 storeys without being enclosed within a fire-isolated stair shaft that is required to discharge outside the building.

The internal stairways connects 4 storeys so the stairway must be contained within fire-isolated stair shaft which discharge outside the building. The passage lifts are not permitted within the same fire-isolated shaft.

A fire engineering assessment will be developed to allow a non-fire-isolated stairway to connect 4 storeys based upon the building being sprinkler protected throughout and fire separated at the open void and stairway on level 2 by construction that achieves an FRL of not less than 120/120/120.

3.3 Vertical Separation of openings in external walls:

A building of Type A construction must be provided with spandrel separation between opening on different storeys unless the building is sprinkler protected throughout. Spandrels are required in accordance with BCA Clause C2.6, which stipulates a 900mm high spandrel; with 600mm of this spandrel being above the finished floor level. Alternatively, an 1100mm horizontal slab may be utilized. The spandrel material is required to achieve an FRL of 60/60/60.

The building will be served by a sprinkler system and spandrel separations between openings in different storeys will not apply to this building.

3.4 Fire Resistance and Fire Separation:

The buildings must be constructed generally in accordance with Table 3 of Specification C1.1 of the Building Code of Australia 2016-Amd 1. The building is required to be of Type A Construction.

The new four (4) storey building will be assessed as a stand-alone building and fire-separated from the adjacent buildings by a firewall that achieves an FRL of not less than 120/120/120.

There is a new glazed roof above level 1 adjacent to Hope Turner Building. Specification C1.1 (sub-clause 3.6) requires rooflights to be setback not less than 3.0m from the separating walls. A fire engineering assessment will be developed to address the location and potential spread of fire from the adjacent building.

The building has been assessed on the basis of the following fire separation/compartmentation within the development;

- Each storey of the building is connected by voids and open stairways and has been assessed as a single fire compartment;
- Level 2 will be fire separated by construction that achieves an FRL of not less than 120/120/120.

Based upon the review of fire separation and fire compartmentation within the building. Compliance is readily achieved with Clause C2.2 of the BCA.

3.5 BCA Clause C2.7 - Separation between Buildings:

A part of a building separated from the remainder of the building by a fire wall may be treated as a separate building for the purposes of the Deemed-to-Satisfy Provisions of Sections C , D and E if it is constructed in accordance with the following:

- (i) The fire wall extends through all storeys and spaces in the nature of storeys that are common to that part and any adjoining part of the building.
- (ii) The fire wall is carried through to the underside of the roof covering.
- (iii) Where the roof of one of the adjoining parts is lower than the roof of the other part, the fire wall extends to the underside of—
 - (A) the covering of the higher roof, or not less than 6 m above the covering of the lower roof; or
 - (B) the lower roof if it has an FRL not less than that of the fire wall and no openings closer than 3 m to any wall above the lower roof; or
 - (C) the lower roof if its covering is non-combustible and the lower part has a sprinkler system complying with Specification E1.5 .

The architectural design will not be able to comply with the following:

- The firewall does not extend vertical through each storey from the lowest level to the top storey (level 2);
- The existing solid brick external walls of the adjacent building will serve as the firewall between buildings. A structural engineer will be required to verify that this wall is capable to achieve an FRL of not less than 120/120/120;
- The construction of the firewall does not comply with BCA Clause C2.7 (b) (iii) as does not extend to the roof covering of the higher roof.

A fire engineering assessment will be developed to address the location and potential spread of fire from the adjacent building.

3.6 Protection of Openings

The prescriptive provisions of the BCA stipulate that openings within building elements required to have an FRL shall be protected as follows:

1. Any external opening within 3m of the fire source feature protected by -/60/- fire rated construction, or externally located wall wetting sprinklers, or an alternate solution be provided to verify CP2 of the BCA.
2. Penetrations through fire rated floors to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a fire rated shaft achieving an FRL of 120 minutes;
3. Any penetration through a wall or room required to have an FRL (e.g. substation, boiler room, apartment separating wall etc) is to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a shaft achieving an FRL of 120 minutes (or 120/120/120 where it is a room such as a substation);
4. Self-closing -/60/30 fire doors to the doors opening to the fire isolated stairs (note that this also includes the access doors to the condenser units on the plant platforms).

Note that where fire dampers, fire collars, etc are utilised, allowance needs to be made for access hatches to be provided within the walls / ceilings to ensure that maintenance access is provided.

Fire source feature is defined as;

- (a) The far boundary of a road, river, lake or the like adjoining an allotment,
- (b) The side or rear boundary of the allotment,
- (c) The external wall of another building on the allotment which is not a class 10 building.

3.7 Protection of Openings between Buildings

The openings permitted within a firewall are generally approved fire doors that achieve the same FRL as the walls. There are existing window openings within the external wall of the Hope Turner Building.

Some of the windows in the external wall of the Hope Turner building facing the new music building (7 in total) contain external drenchers with fixed glazing, on account of the existing music building that is proposed to be demolished.

To provide an adequate level of fire separation between the buildings, the following works are required to be undertaken:-

- a) External drenchers with fixed glazing is to be provided to additional windows (5 in total). The window glazing may need to be replaced accordingly;
- b) Internal drenchers are to be provided to all the relevant windows (12 in total);
- c) The new opening between the 2 buildings is to contain -/120/30 FRL self-closing or automatic-closing fire doors;
- d) Glazed doorway will connect to adjacent Wallis Building rather than an approved fire door. These doorways must be self-closing and drencher protected both sides;
- e) The open area between columns along the existing balcony connecting Wallis Building to Hope Turner Building are considered to be openings within the external walls. The external walls of the new CMD building will be exposed to openings within the adjacent buildings.

The abovementioned non-compliance can be address by the documentation of a performance assessment report from a fire engineer to evaluate fire separation between buildings.

SITE 2: LINGWOOD PREP SCHOOL – NEW ADMINISTRATION AND STUDENT CENTRE:

3.8 Fire Resistance

The buildings shall be constructed generally in accordance with Table 4 of Specification C1.1 of the BCA. The building is required to be Type B Construction.

If the design is proposed to incorporate the use of lightweight fire resistant construction, then the system selected shall comply with the requirements of Specification C1.8 of the BCA. Details of the proposed lightweight construction means of compliance and FRL achieved are to be provided as part of the Construction Certificate application.

Fire resistance levels for building structural members are as follows:

Floors	<p>Constructed so that it is at least of the standard achieved by a floor/ceiling system incorporating a ceiling to the incipient spread of fire to the space above itself of not less than 60 minutes;</p> <p>Have an FRL of at least 30/30/30; or</p> <p>Have a fire-protective covering on the underside of the floor, including beams incorporated in it, if the floor is combustible or of metal.</p>
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External Walls	Must be non-combustible construction in accordance with BCA C1.9; and Loadbearing elements within 18m to fire-source feature (side Boundary) must achieve an FRL of not less than 120/30/- in accordance with Table 4, spec. C1.1.
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The Architectural and Structural documentation to reflect compliance with the above provisions of the BCA.

3.9 Passive Fire Protection

Other passive fire protection issues that will need to be addressed in detailed documentation phase include:

Lift motor rooms,
Emergency power supply,
Emergency generators,
Electricity supply,
Boilers or batteries,
Hydrant Pump rooms,
Sprinkler Pump Rooms,

To be separated from the remainder of the building by construction achieving a minimum fire resistance level of 120 minutes.

3.10 Fire Hazard Properties

The fire hazard properties of fixed surface linings and mechanical ductwork will also need to be addressed within the detailed documentation phase pursuant to specification C1.10 Building Code of Australia.

4. Egress

The egress provisions from the proposed building are provided by:

- Fire isolated stairways
- External perimeter doorways
- Required non-fire isolated stairways

Other detailing issues that will need to be addressed include:

- Door Hardware

- Exit door operation
- Stair construction
- Handrail and balustrade construction
- Details of Separation of rising & descending stairs
- Discharge from the Fire Isolated Exits
- Details of the egress provisions to the Road.

4.1 Number of required exits

In a class 2-8 building, not less than 2 exits must be provided from every storey where the building has an affective height more than 25m. The architectural drawings nominate at least 2 required exits from each storey.

5.2 Exit Travel Distances

The locations of the proposed exits would appear to indicate that the deemed to satisfy requirements in terms of travel distances, distances between alternative exits and egress widths would be satisfied for insert relevant parts of the building parts of the buildings.

The travel distances to exits should not exceed:

Class 5-9

- 20m to a single exit or point of choice and where two exits are provided, a maximum of 40m to one of those exits; and
- exits shall be located to not be more than 60m apart and not closer than 9m

Based upon the floor area of each storey and number of exits provided, the travel distances will be able to comply with the provisions of the BCA.

5.3 Dimensions of Exits

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

The following table summaries the exit widths required:

Floor Level	Exit Width Provided	Number of people (as provided)	Exit Width required
Lower Level	3.0m	300	3.0m
Ground Floor	3.0m	300	3.0m
Level 1	3.0m	300	3.0m
Level 2	2.0m	200	2.0m

The exit width provided is 3.0m per storey.

The total aggregate exit width within the building caters for 300 occupants per storey.

The following doors being designed to swing in the direction of egress:

- Required entrance doors to fire-isolated stairway together with perimeter exit doors.

Doorways are permitted to contain a clear opening width of 750mm with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 870 mm doors).

5.4 Fire Isolated Exits

Each fire-isolated stairway or fire-isolated ramp must provide independent egress from each storey served and discharge directly, or by way of its own fire-isolated passageway to:

- A road or open space; or
- To a point within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter; and from which an unimpeded path of travel, not further than 20 m, is available to a road or open space; or
- Into a covered area that adjoins a road or open space, is open for at least 1/3 of its perimeter, has an unobstructed clear height throughout, including the perimeter openings, of not less than 3 m and provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6 m.

Where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, that part of the wall must have an FRL of not less than 60/60/60 and any openings protected internally in accordance with C3.4, for a distance of 3 m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser.

Comment:

Fire-isolated stairway discharges at the front entrance to the building. The glazed wall and doorway will be exposed to path of travel to roadway. The glazing must

be protected internally by wall-wetting drenchers with doorway being a self-closing door.

The sprinkler protection of the building, means this stairway is not required to be designed as a fire-isolated stairway.

5.5 Balustrading and Handrail

Balustrading to a height of 1000mm with a maximum opening of 125mm in any direction should be provided adjacent to balconies, landings, corridors etc where located adjacent to a change in level exceeding 1000mm.

Where it is possible to fall more than 4m to the finished floor below, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing.

Any windows with a sill height of less than 1.7m in bedrooms or 865mm in all other cases with a fall of more than 2m for windows, 4m for all other cases, openings are to be restricted or a protective barrier that does not allow a 125mm sphere to pass through.

Handrails should generally be provided at a minimum height of 865mm alongside of all ramps and stairs.

The main public stairs and ramps should be designed in accordance with the requirements of AS1428.1 for persons with disabilities. This requires a handrail on each side of the stair and ramp and for the handrail to extend approximately 550mm – 600mm past the last tread / end of ramp.

5.6 Access for Persons with a Disability

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of Clause D3.2, D3.3 and D3.4 of the BCA 2016. Parts of the building required to be accessible shall comply with the requirements of AS1428.1-2009.

The design would generally comply with the prescriptive provisions of the BCA with additional ongoing review being undertaken as to door widths, circulation, etc. Further details are to be provided or access to these areas is to be assessed by an access consultant.

Where the main public entrance is via a ramp, tactile indicators shall be provided in accordance with AS 1428.4 at the top and bottom. Parking shall be provided for people with disabilities in accordance with in accordance with Clause D3.5 of the

BCA. Facilities services and features of the building accessible to people with disabilities shall be identified by signage complying with Clause D3.6 of the BCA.

General

Access to be provided to and within the building pursuant to AS1428.1-2009 as follows:

- Via the principle public entry and at least 50% of all other entrances
- From designated car parking spaces for the use of occupants with a disability.
- From another accessible building connected by a pedestrian link.
- All areas used by the public.

Note that entrances that are not accessible are to be located within 50m of an entrance that is accessible.

A hearing augmentation-listening system shall be installed throughout the building in accordance with the requirements of Clause D3.7 of the BCA.

Refer to Accessibility Report from the appointed Access Consultant.

5. Fire Services & Equipment

The following fire services will need to be provided throughout the building:

- An automatic sprinkler system in accordance with the relevant provision of clause E1.5 of the BCA and AS 2118.1-1999
- Fire hydrants in accordance with clause E1.3 of the BCA and AS 2419.1-2005,
- Fire hose reels in accordance with clause E1.4 of the BCA and AS 2441-2005,
- Portable Fire Extinguishers in accordance with Clause E1.6 of the BCA and AS 2444-2001,
- Sound System & Intercom System for Emergency Purposes in accordance with AS 1670.4-2004.
- Emergency lighting, exit signage and directional exit signage is required throughout the building in accordance with Part E of the BCA and AS/NZS 2293.1-2005

6.1 Fire Hydrants

A system of Fire Hydrants required to be provided to BCA Clause E1.3 and AS 2419.1-2005. We will reply upon design certificate from a Hydraulic Consultant.

A booster assembly as part of the fire hydrant requirements. The booster if is required to be located attached to the building at the main entry. If remote from

the building at the main vehicle entry or with sight of the main entry of the building within 20m of a hardstand area.

Fire hydrants are to be provided within fire isolated stairs/within 4.0m of required exits.

Location Hydrant Pump Room

Internal hydrant pump rooms shall have a door opening to a road or open space, or a door opening to a fire-isolated passage or stair which leads to a road or open space.

6.2 Fire Hose Reels

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441. A fire hose reel system does not apply to classrooms and associated corridors in a primary and secondary school.

6.3 Automatic Sprinkler Protection

An Automatic Fire Suppression System is required to Specification E1.5 and AS2118 part 1-1999.

Location of pumps, tanks, FIP, control valves and booster are to be specified by fire services engineer.

An occupant warning system that is triggered upon activation of the sprinkler system should be provided in accordance with BCA Specification E1.5.

Location of Sprinkler Valve/ Pump Room

Sprinkler alarm values and pump rooms must be located in a secure room or enclosure which has direct egress to fire-isolated stairway or road or open space.

6. Ventilation and Smoke Hazard Management

Smoke hazard management shall be provided throughout the building by means of the following systems:

- Automatic Shutdown of Mechanical Systems in accordance with the requirements of NSW Table E2.2b and AS/NZS 1668.1-1998;
- Automatic Smoke Detection and Alarm System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2015; or

- Automatic sprinkler system complying with Specification E1.5 and AS 2118.1-1999.

A fire indicator panel is required as part of the detection system. This panel is to be located within 4m of the main entry. Any variation to the prescriptive provisions will require the consent of the fire brigade and should form part of the fire safety engineering report to verify the performance requirements of the BCA.

Throughout the development the provision of natural or mechanical ventilation is required to all habitable rooms in accordance with F4.5 Building Code of Australia and AS 1668 and AS/NZS 3666.1.

7. Lift Services

The passenger lifts to be installed are to be: -

- fitted with warning signs, fire service controls in accordance with AS 1735.2
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600mm wide, 2000mm long and 1400mm high.
- Be provided with the following: -
 - A handrail in accordance with AS 1735.12
 - Minimum internal floor dimensions as specified in AS 1735.12,
 - Fitted with a series of door opening sensory devices which will detect a 75mm diameter or across the door opening between 50mm and 1550mm above floor level,
 - Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12.

8. Sanitary Facilities

The sanitary & other facilities required within the building is based upon the occupant density per day. Based upon the information provided the following number of sanitary facilities will be required throughout the building.

Class	Occupant Number	Population	Required		
			WC	Urinals	Basins
5 - Staff	Male	1-20	TBC	TBC	TBC
	Female	1-15	TBC	TBC	TBC
Students	Male	N/A	N/A	N/A	N/a
	Female	1-25	TBC	N/A	TBC

Notes:

1. The public and staff numbers are based on information presented to MBC.
2. Male and female split of population is 50% females and 50% males. The school to confirm staff numbers.
3. WC may be substituted for each urinal required.
4. The Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2009.
5. The staff and public are permitted to share the same sanitary facilities provided is not less than the total number of facilities required for employees plus those required by the public.
6. In each bank of sanitary facilities an ambulant facility must be provided for use by male and females together with unisex accessible sanitary facility.

Further information required from the school to determine staff numbers and students to be accommodated. Should sanitary facilities be utilised within the school site then can evaluate at a later stage.

9. Light and Ventilation

Throughout the development, the provision of natural or mechanical ventilation is required to all habitable rooms in accordance with F4.5 Building Code of Australia and AS 1668 and AS/NZS 3666.1.

Natural light must be provided to all habitable rooms in a class 2 building and all bedrooms in a class 3 building.

10. Energy Efficiency

The proposed development shall comply with Part J of the BCA. To achieve compliance, there are two options available:

1. The building can comply with the deemed-to-satisfy provisions of the BCA, relating to the following areas:
 - Building Fabric
 - Glazing
 - Building Sealing
 - Air Conditioning & Ventilation Systems
 - Artificial Lighting & Power
 - Hot Water Supply

2. The building can be verified against a reference building as per Verification Method JV3. This requires that the proposed building and its services be shown to have an annual energy consumption of equal or less than the reference building which has been modelled as per the requirements of Part J of the BCA.

Certification from an appropriately qualified engineer should be provided for either option with a report / computations outlining how compliance is achieved.

Access for maintenance is to be provided to the building in accordance with the requirements of BCA Part J8.

The proposed site will be located in a climate zone 6.

Due to special nature of the building some energy provisions may not be appropriate.

Appendix A - Design Documentation

The following documentation prepared by AJ & C Architects was used in the assessment and preparation of this report: -

Meriden Centre for Music and Drama 13 Margaret Street, Strathfield NSW 2135

Drawing No.	Title
DA1001	Site Plan
DA1002	Demolition Plan
DA2000	Floor Plan – Level 2 (basement)
DA2001	Floor Plan – Level 1 (Basement)
DA2002	Floor Plan – Level 0 (Ground)
DA2003	Floor Plan – Level 1
DA2004	Floor Plan – Level 2
DA2005	Plant Plan – Level 3
DA3100	Elevation – North/East
DA3101	Elevation – South/West
DA3200	Sections
DA3201	Sections

Admin & Student Centre, Lingwood Campus 16 Margaret Street, Strathfield NSW 2135

Drawing No.	Title
DA000	Cover Sheet
DA1000	Site Plan
DA1001	Site Analysis
DA2100	Ground Floor Plan
DA2101	Level 1 Plan
DA2102	Roof Plan
DA3100	Elevations
DA3200	Sections
DA3201	Sections

Appendix B - Draft Fire Safety Schedule

Meriden Centre for Music and Drama
13 Margaret Street, Strathfield NSW 2135

	Essential Fire Safety Measures	Standard of Performance
1	Access panels, doors and hoppers to fire-resisting shafts	BCA 2016 Clause C3.13, AS 1905.1-2015, AS1905.2-2005.
3	Automatic fail safe devices	BCA 2016 D2.19, D2.21, D2.22, Clause C3.6, Spec C3.4, AS 2118.1-1999, AS 1670.1-2015
4	Automatic fire detection and alarm system	BCA 2016 Clause C3.5, C3.6, C3.7, D2.21, G4.8, Spec. C3.4, E2.2, Spec. E2.2a, Spec. G3.8 and AS 1670.1-2015
5	Automatic fire suppression system	BCA 2016 Clause C2.3, E1.5, E2.2, Spec. E1.5, Spec. E2.2, AS 2118.1-1999/2017,
6	Emergency evacuation procedures	Clause 43 of the Work Health & Safety Regulation 2011
8	Emergency lighting	BCA 2016 Clause E4.2, E4.3 E4.4, AS 2293.1-2005
9	Exit and directional signage	BCA 2016 Clause E4.5, NSW E4.6 & E4.8, Spec E4.8 and AS 2293.1-2005,
13	Fire dampers	BCA 2016 Clause E2.2, C2.5, C3.12, C3.15, Spec E1.8, Spec E2.2, Spec C2.5, Spec G3.8 AS/NZS 1668.1-2015, AS 1682.1-2015, AS 1682.2-2015
14	Fire doors	BCA 2016 Clause C2.12, C2.13, C3.4, C3.6, C3.8, Spec C3.4, AS 1905.1-2015
15	Fire hose reel systems	BCA 2016 Clause E1.4 (excludes classrooms and associated corridors) AS 2441-2005

	Essential Fire Safety Measures	Standard of Performance
16	Fire hydrant systems	BCA 2016 Clause C2.12, E1.3, AS 2419.1-2005, AS 2118.6-2012
17	Fire seals (protecting openings and service penetrations in fire resisting components of the building)	BCA 2016 Clause C3.12, C3.15, Spec C3.15, AS 4072.1-2005, AS 1530.4-2014, Manufacturer's specifications
10	Fire windows (including frame)	BCA 2016 Clause C3.4, BCA Spec C3.4, AS 1288-2006
20	Lightweight construction	BCA 2016 Clause C1.8, Spec A2.3, Spec C1.8, Manufacturer's specifications
21	Mechanical air handling systems	BCA 2016 Clause E2.2, Spec. E1.8, Spec E2.2a, AS/NZS 1668.1-2015, AS 1668.2-2012
22	Openings in fire-isolated lift shafts	BCA 2016 Clause C3.10, AS 1735.11-1986
23	Occupant warning system	BCA 2016 Clause E2.2, Spec. E2.2a, AS 1670.4-2015
24	Path of travel for stairways, passageway and ramps	Clauses 183-186 of the Environmental Planning and Assessment Regulation 2000
26	Portable fire extinguishers	BCA 2016 Clause E1.6 and AS 2444-2001
37	Sound systems and intercom systems for emergency purposes	BCA 2016 Clause E4.9, G3.8, AS 1670.4-2015
39	Wall wetting sprinkler and drencher systems	BCA 2016 Clause C3.4, Spec G3.8, AS 2118.2-2010
40	Warning and operational signs	BCA 2016 Clause C3.6, D2.23, E3.3, Spec E1.8, Clause 183 of the Environmental Planning and Assessment Regulation 2000

A Fire Engineering Assessment will be development to address departures from the DTS provisions of the BCA. The Fire Safety Schedule will be amended to reflect recommendations.

Appendix B - Draft Fire Safety Schedule

Admin & Student Centre, Lingwood
16 Margaret Street, Strathfield NSW 2135

	Essential Fire Safety Measures	Standard of Performance
3	Automatic fail safe devices	BCA 2016 D2.19, D2.21, D2.22, Clause C3.6, Spec C3.4, AS 2118.1-1999, AS 1670.1-2015
8	Emergency lighting	BCA 2016 Clause E4.2, E4.3 E4.4, AS 2293.1-2005
9	Exit and directional signage	BCA 2016 Clause E4.5, NSW E4.6 & E4.8, Spec E4.8 and AS 2293.1-2005,
14	Fire doors	BCA 2016 Clause C2.12, C2.13, C3.4, C3.6, C3.8, C3.11, Spec C3.4, AS 1905.1-2015
15	Fire hose reel systems	BCA 2016 Clause E1.4, AS 2441-2005
16	Fire hydrant systems	BCA 2016 Clause C2.12, E1.3, AS 2419.1-2005, AS 2118.6-2012
17	Fire seals (protecting openings and service penetrations in fire resisting components of the building)	BCA 2016 Clause C3.12, C3.15, Spec C3.15, AS 4072.1-2005, AS 1530.4-2014, Manufacturer's specifications
20	Lightweight construction	BCA 2016 Clause C1.8, Spec A2.3, Spec C1.8, Manufacturer's specifications
21	Mechanical air handling systems	BCA 2016 Clause C2.3, E2.2, Spec. E1.8, Spec E2.2a, Spec G3.8, AS/NZS 1668.1-2015, AS 1668.2-2012
26	Portable fire extinguishers	BCA 2016 Clause E1.6 and AS 2444-2001
40	Warning and operational signs	BCA 2016 Clause C3.6, D2.23, E3.3, Spec E1.8, Clause 183 of the Environmental Planning and Assessment Regulation 2000

Appendix C- Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2016:

Table 3 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, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is–				
For loadbearing parts–				
less than 1.5 m	90/ 90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/ 60/ 60	120/ 90/ 90	180/180/120	240/240/180
3 m or more	90/ 60/ 30	120/ 60/ 30	180/120/ 90	240/180/ 90
For non-loadbearing parts–				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 60	–/ 90/ 90	–/180/120	–/240/180
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an external wall, where the distance from any fire-source feature to which it is exposed is–				
less than 3 m	90/–/–	120/–/–	180/–/–	240/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
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



Building Code of Australia 2016

BCA DESIGN COMPLIANCE REPORT

PGA Pty Ltd

Fire Engineering and Building Code Consulting
ABN 95 619 710 511 M: +61 (0)435 184 053
PO Box 519 E: peterg@pg-a.com.au
Five Dock NSW 2046 W: www.pg-a.com.au



Meridan School
c/- AJ+C
Attn: Josh Wrathall
79 Myrtle Street
Chippendale NSW 2008

9 May 2019

Dear Josh,

Re: Fire Safety Strategy – Meridan CMD**1 INTRODUCTION**

PGA has been engaged by Meridan School to provide initial fire safety engineering advice in relation to the proposed development which includes assessing the architectural plans, BCA report and other relevant documentation, undertaking a site inspection, attending meetings and discussing options with the design team.

This fire safety strategy provides initial fire safety engineering advice which will be further developed in the future fire engineering stages of the project comprising the Fire Engineering Brief (FEB) and Fire Engineering Report (FER), and includes identification of the potential fire engineering Performance Solutions.

The proposed development is for a new 3 storey Meridan School building known as the Meridan Centre for Music and Drama (Meridan CMD) located at 13 Margaret Street, Strathfield.

This advice has been based on the following information:

1. DA architectural plans prepared by AJ+C, Issue A.
2. BCA Design Compliance Report prepared by MBC dated 16.4.19.
3. Meetings with AJ+C and MBC on 29.1.19 and 10.4.19.
4. Inspection of the school undertaken on 7.2.19.
5. National Construction Code, Volume One, Building Code of Australia 2019, Australian Building Codes Board, May 2019 (BCA).

2 FIRE SAFETY REVIEW

From the initial fire safety engineering review undertaken, the fire engineering Performance Solutions incorporate the following matters:

1. The voids can be provided within the building and the atrium provisions within the DtS Provisions of the BCA do not need to be applied based upon the building being sprinkler protected throughout and fire separated by 2 hour construction at Level 2 (void and internal stairway) whilst maintaining egress from Level 2.
2. The new glazed roof above Level 1 adjacent to the Hope Turner Building can be provided even though it is not setback 3.0m from the fire wall.
3. The main non fire-isolated stairway within the building can connect 4 storeys based upon the building being sprinkler protected throughout and fire separated by 2 hour construction at Level 2.
4. The fire wall does not need to extend vertically through each storey and can rely upon the existing solid brick external walls of the adjacent Hope Turner Building, whilst the construction of the fire wall does not need to extend to the roof covering of the higher roof.
5. Window openings can be provided within the fire wall which separates the Hope Turner and Wallis Buildings subject to the window openings being fixed closed and drencher protected on both sides. The open area between columns along the existing balcony connecting the Wallis Building to the Hope Turner Building does not need to be protected. The window and door openings in the external walls of the new

CMD Building and the Hope Turner Building located within 6.0m of each other are to be fixed closed or self-closing and also drencher protected.

MBC have advised that based upon the size of the fire compartment being less than 2,000m² or 6000m², consultation and referral to Fire and Rescue NSW is not a mandatory requirement under Clause 144 of the Environmental Planning and Assessment Regulation.

3 CONCLUSION

This fire safety strategy provides initial fire safety engineering advice which will be further developed in the future fire engineering stages of the project comprising the Fire Engineering Brief (FEB) and Fire Engineering Report (FER).

In all other respects, the building is to comply with the prescriptive, fire safety related DtS Provisions of the BCA.

The fire engineering Performance Solutions for the development as detailed in this advice can be readily addressed and it is expected that the proposed development will readily achieve compliance with the relevant fire safety related provisions of the BCA.

This fire safety review is limited to the scope described above and does not include a review of any other fire safety or BCA related matter.

Please advise if you require any further information or assistance in this matter.

Yours faithfully,



Peter Gardner
C10 – Accredited Certifier – Fire Safety Engineering Compliance, BPB
Director
PGA Pty Ltd
+61 (0)435 184 053
peterg@pg-a.com.au