

FORMIGA1

Schematic Design Report

Project: Samuel Gilbert Public School

Location: Ridgecrop Drive, Castle Hill, NSW, 2154

Completed For: Fulton Trotter Architect

On Behalf of: Department of Education NSW

Date: 8th October 2018

Revision Number: C

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Revision Schedule				
Revision	Date	Report Information		
A	12/09/2018	Reason for Revision	Initial Schematic Design Report	
			Prepared by	Reviewed by
		Name	Scott Naylor	Steve Passfield
		Signature		
B	12/09/2018	Reason for Revision	Amended to Include Section G Requirements	
			Prepared by	Reviewed by
		Name	Scott Naylor	Steve Passfield
		Signature		
C	08/10/2018	Reason for Revision	Review original non-compliances on revised plans (does not include a full re-assessment of revised plans)	
			Prepared by	Reviewed by
		Name	Scott Naylor	Steve Passfield
		Signature		

This report has been prepared and checked by the experienced team at Formiga1. For any queries regarding this report, please contact our office.

1. Introduction

Formiga1 has been engaged by Fulton Trotter Architects to provide a Schematic Design (SD) review of the proposed school development at Samuel Gilbert Public School.

The proposal is to redevelop some of the existing buildings on site as well as to construct new buildings, being:

- A three storey Home Base/Library Building (Buildings N and P);
- Conversion of existing Admin/Staff Building Home Base Building (Building A);
- Alteration to the existing Home Base (Building E);
- New Hall/OOSH/Canteen Building adjacent to the existing COLA on the site (Building Q).

There are a number of technical considerations to address as part of the proposed work. These have been developed by establishing a process for the assessment of the work outlined in the Environmental Planning and Assessment Act 1979. The Act gives a number of requirements and considerations existing and new works and how the building assessment provisions are usually applied.

2. Purpose

The purpose of this report is to provide a high level design guide on an approach to building compliance assessment and establish scope for some of the aspects. The advice contained within this report provides guidance as to how BCA compliance can be achieved in accordance with the Environmental Planning and Assessment Act 1979, Clause 109R. We understand that the proposed development will be subject to a Development Application and this Schematic Design Report will form part of the DA submission to the Consent Authority for their determination.

Given the restrictions and technical limitations of the existing building, a mix of transitional provisions combined with performance and prescriptive measures will be used to establish the compliance of proposed works. This approach is subject to an approval by the Consent Authority.

This report seeks to outline the basis from which redesign can be developed for a number of aspects. An exhaustive list of variations to individual prescriptive measures will need to be completed as the design is further developed and performance solutions compiled. This scenario will likely require a fire engineered strategy for the building to achieve compliance with the current building assessment provisions.

3. Scope, Limitations and Exclusions

The scope of this assessment is limited to the current design documentation and will require further development of the building's design. The aspects noted for compliance are based on generic examples gleaned from similar buildings that comply using a combination of prescriptive and performance measures. It should be expected that individual aspects will vary in any detailed design though wider concepts and characteristics will make a similar contribution, particularly to overall fire safety.

This report is limited to the design documentation supplied and is only intended to outline the services that will be required.

This Schematic Design Report does not address safety provisions enforced under the Local Government Act, such as, Occupational Health and Safety Act, Water, drainage, gas, telecommunications and electricity supply authority requirements, etc. The application of the Disability (Access to Premises) Standard 2010 has been assessed as part of this report, however, no other provisions of the Disability Discrimination Act 1992 have been reviewed.

4. Approval Methodology

The Environmental Planning and Assessment Regulation 2000 outlines the approval processes for different types of buildings and the method by which they are assessed. These works have been assessed against the Building Code of Australia 2016(+A1) that is currently enforced. However, as a requirement of the EP&A Act, Clause 109R, the final design for approval is to be assessed against the BCA enforced at the date of the date of the invitation for tenders to carry out the Crown building work. Therefore, the advice provided in this report may become outdated if a revised BCA is released before the invitation for tenders to carry out the Crown building work is issued.

The proposed work involves the conversion of the existing Staff/Admin Building (Class 5 Building) into a Home Base Building (Class 9b Building). As this change in classification is proposed, the building needs to comply with all requirements of the current BCA. This can be quite an onerous task to upgrade an existing building and a concession request to Consent Authority under Clause 94 of the EP&A Reg should be considered. This report will need to be included as part of the Development Application submission to the Consent Authority to request that they take into consideration whether it would be appropriate to only partially conform with the currently enforced BCA, as per the advice provided in the report.

The application of the Disability (Access to Premises) Standard and provision for access for people with disabilities will need to be addressed against the current BCA. As this is based in Commonwealth Legislation, State regulatory transitional provisions do not apply and compliance with the current code is required. Please note that the Deemed to Satisfy Provisions of the BCA are not the only method of compliance and a Performance Solution is expected as part of any work in any building. Generally, compliance with BCA Part D3 will be required throughout.

Development Consent from Council or other Consent Authority will be required prior to the start of any work on site.

5. Building Compliance

The assessment has been based on Architectural plans by Fulton Trotter Architects, Project Number 7068SG01, Revision P8.

This assessment has been tabulated and items identified in relation to Action, Consider and Note, meaning the following:

- **Action** - Requires action on your behalf to either address a non-compliance and/or provide further information on how compliance is proposed to be met for the item;
- **Consider** - Full details are not yet documented and the item should be considered as the design is developed to ensure compliance is met;
- **Note** - A general note stating that compliance has been achieved for the item.

5.1. Principal Building Characteristics

Aspect	Building
Existing Classification	Building A - Class 5 Office Building E - Class 9b Assembly Building
Proposed Classification	Building A - Class 9b School Building E - Class 9b School Building N/P - Class 9b School/Assembly Building Building Q - Class 9b Assembly Building
Rise in Storeys	Building A - 1 Storey Building E - 1 Storey Building N/P - 3 Storeys Building Q - 1 Storey
Effective Height	Building A - <12m Building E - <12m Building N/P - <12m Building Q - <12m
Construction Type	Building A - Type C Building E - Type C Building N/P - Type A Building Q - Type C
Compartment Limit	Building A - 3,000m ² or 18,000m ³ Building E - 3,000m ² or 18,000m ³ Building N/P - 8,000m ² or 48,000m ³ Building Q - 3,000m ² or 18,000m ³
Occupants	Occupant numbers will be determined based on the design intent of this building as this is more suitable than table outlined in D1.13.

5.2. Building Code of Australia Assessment

Comments	Consider/ Action/ Note
BCA Section B - Structure	
Buildings A, E and Q are to be designed to an importance level of 2 as the building does not fall under the category of an importance level of 3.	Consider
Building N and P are to be designed to an importance level of 3 as the school buildings are capable of containing more than 250 occupants.	Consider
Building Q is to be designed to an importance level of 3 as the building is capable of containing more than 300 occupants in the one area.	Consider
The Structural Engineer is to provide a Design Certificate prior to the approval stage certifying that the building has been designed to the above requirements.	Action
BCA Section C - Fire Resistance	
Generally, the FRL's required by Table 3 of Spec C1.1 are 120 minutes for Building N/P and 60 minutes for all other buildings. Particular note should be paid to the following elements: - External Walls of all Buildings (including insulation, sarking and framing on Building N/P); - Floor of Building N/P; - Roof of Building N/P (concessions do apply); - External Columns of all Buildings.	Consider
As these elements in Buildings A, E and Q appear to be more than 3m from a fire source feature, an FRL is not required under this concession.	Consider
Fire hazard properties are required to comply with BCA C1.10 and BCA Spec C1.10.	Consider
Vertical separation will be required for external walls of Building N/P in accordance with C2.6. Spandrels must be a minimum of 900mm in height, extend not less than 600mm above the floor and have construction with an FRL of not less than 60/60/60 in accordance with BCA C2.6. A number of areas achieve compliance through use of horizontal slab projections, however, some areas don't propose this projection. Further consideration is needed. We have been informed that spandrel construction in accordance with BCA C2.6 will be achieved in these areas. Some details are provided, however, some areas only show spandrels 600mm in height where a minimum 900mm is required as well as no spandrel proposed to walls of Withdrawal pop outs. Further information about the spandrel construction will be required prior to the approval stage.	Consider Action
Please refer to comments regarding openable windows to avoid construction of the spandrels/window sills in a manner that compromises openable window.	Consider
Further consideration should be given to sealing cavity/curtain walls around the edges of the slab, as the slab is required to achieve fire separation between storeys.	Consider
All external walls show setbacks >6m to the neighbouring buildings and side boundaries.	Note

Separation of services to 120 minutes is required for electrical equipment and electrical supply systems in accordance with BCA C2.12 & C2.13. A number of Comms Rooms have the potential to contain UPS installations that trigger the criteria outlined for fire separation. Please have the electrical engineer confirm and treat accordingly.	Consider Action
Penetrations to fire rated barriers (shafts, walls, floors) are required to be in accordance with BCA Clause C3.15.	Consider
BCA Section D - Access and Egress	
A minimum of 2 exits are provided from each storey.	Note
All stairs are not required to be fire-isolated as they do not contain egress paths through 3 storeys with the exception of Stairs N1 and P4. However, while Stairs N1 and Stair P4 connect 3 storeys, they are proposed to be fire separated from the building on the bottom floor, thus complying with BCA D1.3. Currently Stairs N1 and P4 are shown to be fire separated on all floors where it is only required on the bottom floor.	Note Consider
The conditions for distance with non-fire isolated exits also appear to be fulfilled including total distance travel of <80m from the most disadvantaged point to the discharge at the bottom of the stairs.	Note
Exit travel is generally 20m to a point of choice and 40m to the first exit. Distance between alternative exits is limited to 60m in accordance with BCA D1.4. Appropriate allowances have been made.	Note
Minimum dimensions for exits (clear width) are generally 1m though. However, the minimum width for the areas containing more than 100 persons will be based on the number of occupants. Building N/P will be as follows: a. Ground Floor can contain approx. 190 people and requires a minimum 2m aggregate exit width. 7.2m is achieved; b. Level 1 can contain approx. 410 people and requires a minimum 4m aggregate exit width. 12m is achieved; c. Level 2 can contain approx. 520 persons as calculated under BCA D1.13 and requires a minimum 5m aggregate exit width. 6m is achieved. d. Building Q can contain approx. 300 persons as calculated under BCA D1.13 and requires a minimum 3m aggregate exit width. It appears that 3m is only just achieved. Further consideration should be given to the clear width of the two doors between the door jambs.	Consider
Please note the comments in D3 regarding requirements for two handrails to ramps and stairs which will result in minimum widths being reduced by 160-200mm.	Consider
Installations in the path of travel are required to comply with D2.7, including the smoke sealing and non-combustible enclosure of distribution boards and central telecommunications boards. No such installations in the path of travel appear to be proposed at this point in time as DBs are proposed along the open balconies.	Note
A storage area is proposed underneath the stair in the presentation area of the Library. BCA D2.8 requires any enclosed areas underneath the stairs to be fire-rated to 60/60/60 with a --/60/30 fire door where no such construction appears to be proposed. Cupboards under tiered seating areas only do not require fire-rated construction. The WC is not regarded as a cupboard or the like and does not require an FRL. We have been informed that the area is to be fire-rated. Further information will be required prior to the approval stage.	Action

Stairs are required to comply with BCA D2.13 for tread construction and BCA D3.4, which references AS1428.1, Clause 11. Please refer to further comments in D3.4. Stair nosings and landings shall comply with BCA D2.14 for slip resistance.	Consider
Balustrades are to be a minimum height of 1m and if a fall >4m exists, the balustrade must not be climbable between the heights of 150-760mm. Please consider the clash of this non-climbable zone and the below requirement for second handrails to stairs and ramps.	Consider
D2.17 requires one handrail fixed between the height of 865mm and 1000mm and a second handrail fixed between 665mm and 750mm along the stairways. Refer to Part D3 for further comments on handrails (eg. to both sides of the stairs).	Consider
Where openable windows with falls of >4m occur, a minimum barrier height of 865mm is required, ensuring that no horizontal elements (including window sills and the like) are located between 150mm and 760mm. If spaces are accessible to kindergarten students the windows with openable components below 1.7m that have a falling distance of >2m to the surface beneath, must be fitted with a restricting device in addition to a barrier mentioned above. Please consider the impact of fire-rated spandrels and how the dimensions may affect this construction.	Consider
Where building entrances are also exits, consideration should be given to compliance with D2.19 – D2.21, including door swing, sliding doors and the like. Panic bars will be required for compliance where areas contain occupancy numbers in excess of 100 persons (ie. Library, Hall, etc.).	Consider
A number of Home Bases have been shown to only contain operable walls and sliding doors (ie. NR1001). Specific consideration will need to be given to the single hand downward action to the door latch to the doors from these Home Bases as well as other sliding doors located in the path of egress from rooms.	Action
This building is required to be accessible throughout. Paths connecting this building will others shall also comply with AS 1428.1 – 2009. The lifts will serve not only for access within the building but also for the connection of external pathways at different ground levels. Lifts will require accessible facilities.	Consider
A number of doors do not achieve the door circulation spaces required by AS1428.1.	Action
Gates have been proposed to the bottom of the entry ramp and the top of the entry stair along Ridgecorp Drive. These gates are required to meet the provision of AS1428.1. In previous projects with DoE, we have accepted a statement confirming that these gates are to locked in the open position during school operational times and that this forms part of the school's staff management policy.	Action
Please note that all stairs (and ramps) used for circulation will be required to comply with Clause 11 (and Clause 10 respectively) of AS 1428.1. Consideration will need to be given to the required 300mm handrail extension to stair landings.	Consider
Consideration should be given to the installation of barriers or TGSIs around the underside of stairs where the head height is less than 2m in height.	Consider

If an inbuilt amplification system is proposed for the new Hall Building, Library area of Presentation area, this will trigger the installation of a hearing augmentation. Hearing augmentation need not be provided in the Homebase areas provided that no inbuilt amplification system is not required to allow the room to function as intended. This has been confirmed in previous projects with DoE from their education advisory services and that schools have portable devices for their students with hearing needs which follows them each year to their new classrooms. We have been informed that hearing augmentation will be achieved in the Hall. Further information will be required prior to the approval stage.	Action
BCA Section E - Services and Equipment	
Fire hydrant coverage is required to Buildings N/P and Q in accordance with AS 2419.1 as they are >500m² in floor area. Please note the impacts that fire compartment sizes have on the supply of water and that the hydraulic design. Other aspects of compliance (flows and pressures) are assumed at this time.	Consider
Further information on the Floor area of Building C is needed as Building A and Building C form the one building. Building A is 300m², therefore, if Building C is >200m², then hydrant coverage will be required as well as FHR coverage to non-classroom areas.	Consider
Please note, if provided, the presence of internal hydrants within a building triggers FHR to all non-classroom areas of the buildings >500m² in floor area. It is assumed that internal hydrants will be required for Building N/P at this point in time.	Consider
The hydrant booster location is technically not strictly in accordance with the wording of AS2419.1 as it is not within sight of the main entrance of the Hall Building. However, a location strictly in accordance with AS2419.1 is not achievable on this site. The proposed location is located at the site boundary, adjacent to the principal vehicular access and is within sight of the main entrance into the site. This location is believed to meet the intent of the AS2419.1.	Note
Fire hose reels are required to cover the following areas: • Building N/P - non-classroom areas; • Building Q - all areas.	Consider
Installation shall be in accordance with AS2441 and locations shall be within 4m of an exit.	Consider
Fire extinguishers will be required in accordance with Table E1.6 of the BCA.	Consider
Sprinklers are not required for this building.	Note
No automatic smoke detection and alarm system is required for these buildings.	Note
The lift in Building N/P will need to comply with AS 1735.12 for accessibility.	Consider
Emergency lighting and illuminated exit signage is required to all buildings in accordance with Part E4. Compliance has been assumed at this time.	Consider
At least one lift will need to comply with AS 1735.12 for accessibility. Similarly, at least one lift will need to comply as a stretcher lift.	Consider
Emergency lighting and illuminated exit signage is required for this building. Compliance has been assumed at this time.	Consider

BCA Section F - Health and Amenity	
BCA Performance Requirement FP1.4 cannot be satisfied by a DtS clause. Therefore, it will need to be addressed by either one of the following: a. A certificate from the designer stating that the design satisfies the intention of BCA FP1.4; b. A Performance Solution based on evidence supporting the use of the materials (eg. Codemark); c. A Performance Solution based on BCA Volume 2 DTS weatherproofing; d. A Performance Solution Based on BCA FV1.	Action
Wet areas are required to be waterproofed in accordance with AS 3740.	Consider
Appropriate facilities for 1000x students and 58x staff have been allowed for as 2x student PWD WCs, 10x male WCs, 17 female WCs and the facilities provided in the Hall as well as 2x staff PWD WCs have been provided and 4x other WCs have been provided.	Note
The Hall Building is proposed to be open to the public when the remainder of the school is closed off, the Hall sanitary compartments will need to facilitate all hall occupants. The Hall can contain approx. 350 persons, which requires 5x WCs for females and 2x WCs+4x urinals for males. Currently the Hall contains 2x unisex ambulant WCs, 1x PWD WC, 1x male WC and 1x female WC. Therefore, the 1x additional WC is required for females and 2x urinals or WCs for males.	Action
Building N/P achieves the provisions for PWD accessible WCs. Please note that a number of additional ambulant facilities have been proposed in part P of the building where they are not required by the BCA as no PWD WC is provided at the bank of WCs.	Note/Consider
Appropriate provisions appear to have been allowed for room sizes for PWD and ambulant WCs.	Note
Ceiling heights on RCPs show adequate allowances for compliant room heights.	Note
Natural light is required to all rooms used for teaching purposes at 10% of the floor area. Allowances for this provision are evident. Ventilation may be achieved by natural or mechanical means. Compliance is assumed at this time.	Consider
BCA Section G - Ancillary Provisions	
This building will be subject to bushfire requirements as it is located on bushfire prone land under Council's LEP map. A bushfire consultant will need to carry out an assessment of the surrounding land to establish the Bushfire Attack Levels (BAL) of the proposed new building. AS3959 outlines the construction requirements of different BALs that will apply to the new building. Council and/or the Rural Fire Service may choose to enforce more stringent requirements than that of AS3959. We have been informed that buildings will be constructed to BAL 12.5. Further information will be required prior to the approval stage. NOTE: Existing construction of Building A will need to be upgraded to meet the current requirements of AS3959 as it is being reclassified. As mentioned in Section 4 of this report, a request to the Consent Authority as part of the DA submission should be considered whether it would be appropriate to only partially conform to the currently enforced BCA.	Action
BCA Section H - Special Use Buildings	
Compliance with H1.4 is achieved in the Library Presentation area. No details of the seating area around Building Q has been provided and compliance with H1.4 is assumed at this time.	Consider
The Library Presentation area will require aisle lighting in accordance with H1.7.	Consider

BCA Section J - Energy Efficiency

Confirmation is needed as to whether an external consultant will be carrying out the Section J assessment of the proposed works.	Action
Generally, new buildings and new parts to existing buildings are required to comply with J1 and J2 for the building fabric and glazing. The extent of the conditioned space and the walls, floors and roof that bound it will need to be established so that these can be specified for compliance.	Consider
Building A is required to comply with the current provisions of the BCA (including energy efficiency) as it is being reclassified. As mentioned in Section 4 of this report, a request to the Consent Authority as part of the DA submission should be considered whether it would be appropriate to only partially conform to the currently enforced BCA.	Action
The roof will generally require a minimum R-value of 3.2 to 4.2 dependent on solar absorptance and the walls will require a minimum R-value of 3.3 with concessions available for shading, solar absorptance and orientation of the wall.	Consider
A review using a glazing calculator should be conducted as early as possible to prevent design progressing in a non-compliant manner.	Consider
As Building N/P is >2500m², it is required to contain facilities for energy monitoring in accordance with BCA J8.3.	Consider

6. Conclusion

This report provides an assessment of the referenced architectural documentation against the Environmental Planning and Assessment Act, referenced Australian Standards, as well as, the Performance Requirements and the Deemed to Satisfy provisions of the National Construction Code Series, Building Code of Australia (Volume 1) for the proposed development.

Key compliance issues have been identified through this assessment. These issues are to be resolved prior to the approval stage by means of; an altered design documentation or clarification of information on building plans.

Notwithstanding the above, it is considered that compliance with the provisions of the BCA is readily achievable, provided the above matters are appropriately addressed by the project team.