



# BUILDING REPORTS PTY LTD

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29 March 2019

Rick and Jenny Mirabito  
5 Tamworth Place,  
Allambie Heights NSW 2097

Dear Rick and Jenny,

**Re: 5 Tamworth Place, Allambie Heights – BCA Report**

This statement provides a BCA Assessment Report, for the purposes of the Development Application being submitted to the Northern Beaches Council, for a proposed Secondary Dwelling within the existing dwelling.

**1. Current Building Layout and Proposal**

The plans reviewed for the proposed secondary dwelling are as detailed in Drawing Nos 5A Sheets 1 to 4 prepared by Peter Formosa dated 27 March 2019. This includes;

- a) Basement Level – Secondary Dwelling to incorporate kitchen, family room, lounge room, bedroom, pantry and bathroom / laundry. The remainder of the floor is to be subfloor storage to be accessed via an existing internal stair and external doorway. It is understood this level was developed as habitable space as detailed in Building Approval No 1158/88 issued by Warringah Council. Access to the Secondary Dwelling is proposed via the rear external doorway via a series of stairways, ramp and or pathway at the rear and on the north-eastern side of the building.
- b) Ground Floor & Upper Floor Level – Ground Floor of Main Dwelling contains double garage, entry, rumpus, billiard room, study, bedroom, bathroom and laundry, with Upper Floor having kitchen / dining, lounge, entry, 3 bedrooms. Internal stairs connects the Basement, Ground Floor and Upper Floor level of the Main Dwelling. Access to the Main Dwelling is proposed via the existing external stairs at the front of the building.

**2. BCA Description**

The existing building is predominantly constructed from cavity brick external walls and masonry internal walls at Basement, Ground and First Floor.

The Basement has concrete slab on ground, Ground Floor garage has a concrete slab floor and the majority of the remainder of the floors appear to be generally timber frame, rear terraces being concrete supported on steel columns. At Basement level there are two (2) steel columns with one in the pantry and a second supporting the terrace slab outside the lounge room. There are also columns directly above these columns supporting the First Floor terrace slab.

For the purposes of the BCA, the building may be described as follows:

**a) Classification**

The building is classified as follows:

- Class 2 (Residential Sole Occupancy Units)

**b) Rise in Storeys**

The building has a rise in storeys of Three (3).

**c) Type of Construction**

The building is required to be of Type A Construction.

**d) Effective Height**

The building contains an effective height of less than 12m.

**e) Floor Area / Volume**

No floor area or volume sizes are applicable to Class 2 Sole Occupancy Units.

**f) Fire Source Feature**

The distances from the nearest Fire Source Features (FSF) for the building are:

- North-western Boundary - > 6.0 metres to far side of Tamworth Place
- South-western Boundary - < 3.0 metres (i.e. approx. 1.235m to 1.245m)
- South-eastern Boundary - > 3.0 metres
- North-eastern Boundary - < 3.0 metres (i.e. approx. 1.25m to 1.285m)

Setbacks are as detailed on Survey Plan Total Surveying Solutions, Plan No. 190464\_A dated 27/02/2019.

### **3. BCA Assessment and Comments**

Following an inspection of the building on 27 December 2018 and 22 March 2019, it is evident that there are existing elements that do not satisfy the BCA or verification is necessary to confirm how compliance may be achieved.

The assessment includes a review of DA plans, Drawing Nos 5A Sheets 1 to 4 prepared by Peter Formosa dated 27 March 2019. It is understood the Basement level was previously developed as habitable space as detailed in Building Approval No 1158/88 issued by Warringah Council.

The following is a BCA assessment of the proposal.

**A. Type A Construction - Fire Resistance Levels (FRL's).**

As a result of the proposed secondary dwelling in a building having a Rise in Storeys of three (3), therefore Type A Construction applies and the building elements are required to contain a certain Fire Resistance Level (FRL) in accordance with Specification C1.1 and Table 3 of the BCA as detailed below:

BUILDING ELEMENT	Class 2
<b>EXTERNAL WALL</b> (including any column and other building element incorporated therein) or other external building element, where the distance from any fire-source feature to which it is exposed is – For loadbearing parts- less than 1.5m 1.5m to less than 3m 3m or more For non-loadbearing parts less than 1.5m 1.5 to less than 3m 3m or more	 90/90/90 90/60/60 90/60/30  -/90/90 -/60/60 -/-/-
<b>EXTERNAL COLUMN</b> not incorporated in an external wall, Loadbearing parts Non-loadbearing parts	 90/-/- -/-/-
<b>INTERNAL WALLS</b> Between or bounding SOU's. Bounding public corridors, public lobby or the like– <ul style="list-style-type: none"> <li>Loadbearing parts</li> <li>Non-loadbearing parts</li> </ul>	 90/90/90 -/60/60
<b>OTHER LOADBEARING INTERNAL WALLS AND COLUMNS</b> Internal walls & columns, except in storey below roof	 90/-/-
<b>FLOORS</b>	90/90/90

**Table 3 – Fire Resistance Levels**

The following additional information is provided:

- External walls must be of non-combustible construction.
- Internal loadbearing walls must be of concrete or masonry construction.
- Internal walls required to have an FRL must extend to the underside of the floor next above, or the underside of a ceiling with a resistance to the incipient spread of fire or non-combustible roof covering in accordance with subclause (e) below.
- Non-loadbearing walls required to have an FRL must be non-combustible construction.
- Roof need not have an FRL where its covering is non-combustible and the ceiling immediately below the roof has a resistance to the incipient spread of fire to the roof space of not less than 60 minutes, or the building is Class 2.
- Internal loadbearing walls in the top floor may have a reduced FRL of 60/-/-.
- Floors within a Class 2 SOU need not have an FRL.

**B. External Walls, Internal Walls and Columns - FRL's.**

As noted in Item '2 f)' above the external walls of the building appear to be 1.25m to 1.285m from the side boundaries, therefore external walls are required to have an FRL of 90/90/90 (external walls up to 1.5m from boundary), 90/60/60 (external walls 1.5m to 3.0m from boundary) or 90/60/30 (external walls more than 3.0m from boundary).

a) **External Walls & Columns incorporated therein** in a building of Type A located from the boundary (or FSF) must be as follows;

- (i) Loadbearing walls are required to achieve an FRL of 90/90/90 (up to 1.5m from FSF), 90/60/60 (up to 3.0m from FSF) or 90/60/30 (> 3.0m from FSF).
- (ii) Fire rated external wall construction must be non-combustible.
- (iii) A lintel must have the FRL required for the part of the building in which it is situated, unless it spans an opening in masonry which is not more than 150mm thick and;
  - Not more than 3.0m wide if the masonry is non-loadbearing, or
  - Not more than 1.8m wide if the masonry is loadbearing and part of a solid wall or one of the leaves of a cavity wall.
- (iv) Internal load-bearing columns not incorporated in an external wall must be provided with an FRL of 90/-/-.
- (v) Non-loadbearing walls more than 3.0m from the boundary (or FSF) are not required to have an FRL.

**Comment (External Walls):**

The following comments are made in relation to the external walls including areas identified to require clarification or further review: -

- External loadbearing walls to the building appear to be cavity brick construction throughout. These walls are therefore likely to have an inherent FRL that if not to the level as required to satisfy the BCA Deemed-to-Satisfy Provisions; are expected to achieve a reasonable FRL having regard to the configuration of the building including that the building is 2 storeys in the north-western (front) elevation and parts of the north-eastern and south-western (side) elevations with only south-eastern (rear) elevation having 3 levels full levels above ground. It is therefore proposed that Council accept these external walls.
- The purpose of requiring lintels to be fire rated is to minimise the risk that the failure of a lintel over an opening in a wall required to have a fire-resistance level (FRL) will result in the failure of the wall during a fire. The degree of fire rating for the existing lintels to the external walls is unknown. The openings that are more than 1.8m are at Ground or Upper Ground Floor levels. These openings are in the north-western (front) and south-eastern (rear) elevations and are summarised as follows:
  - (i) Garage Door openings – These lintels provide support for several rows of brick work with a concrete slab / balcony above. As this is single level only, any failure is likely to be localised only; therefore this is considered to need no further review.
  - (ii) North-western (Front) openings at Ground Floor (i.e. Bed 4 and Study) – These lintels are at Ground Floor in a portion of the building that is 2 storeys only in elevation, hence could be equated to a building of Type B or C Construction, in which case fire rated lintels are not required; therefore this is considered to need no further review.

- (iii) North-western (front) openings at Upper Ground Floor (i.e. Kitchen , Bed 2 and Bed 3) – These openings are in the top floor supporting the roof and are not supporting an external wall. The top floor roof need not be provided with an FRL; therefore this is considered to need no further review.
- (iv) South-eastern (rear) openings at Ground Floor (i.e. Billiard and Rumpus Room) - These lintels provide support for several rows of brick work with the main rear concrete slab / balcony above. This slab is also supported on steel columns that are not fire rated. On this basis it is proposed that these elements require further review.
- (v) South-eastern (rear) openings at Upper Ground Floor (i.e. Lounge and Master Bed) - These openings are in the top floor supporting the roof and are not supporting an external wall, except for 1 opening that supports 3 rows of brickwork in which case any failure of the lintel / wall is likely to be localised only. The top floor roof need not be provided with an FRL; therefore this is considered to need no further review.

As discussed above, it is proposed that Council accept the existing cavity brick external walls and lintels to window openings, except that the lintels to window openings in the Ground Floor (i.e. Billiard and Rumpus Room) be reviewed to confirm the existing construction achieves compliance or be upgraded to achieve compliance unless this is addressed in an Alternative Solution Report addressed by a C10 Accredited Fire Engineer.

- b) Columns – Internal and External columns not incorporated in external walls:** are required to have an FRL of 90/-/-. This relates to internal and external columns that are load-bearing.

**Comment (Internal and External Columns):**

The existing steel columns require further review as follows:

- Basement level - There is an existing steel column within the Basement pantry and also an external column outside the Basement Lounge Room that is supporting the Concrete slab above. As these columns are supporting fire rated elements (i.e. floor separating SOU's and balcony spandrel separation), it is proposed that these columns be fire rated to achieve an FRL of 90/-/ and / or be reviewed by a structural engineer to confirm the load-bearing capacity and ability to provide structural support in a fire for 90 minutes.
  - Ground Floor level – There are external steel columns supporting the Concrete slab above. As these columns are supporting fire rated elements (i.e. balcony that is also supported by non-fire rated lintels), it is proposed that these columns be fire rated to achieve an FRL of 90/-/ and / or be reviewed by a structural engineer to confirm the load-bearing capacity and ability to provide structural support in a fire for 90 minutes.
  - Upper Ground Floor level - There are external steel columns supporting the roof above. As these columns are supporting a roof that is not required to be fire rated, it is proposed that these columns need not be fire rated.
- c) Internal loadbearing walls and beams:** are required to have an FRL of 90/-/ except for the top floor an FRL of 60/-/ is permitted for walls and columns. This relates to internal load-bearing walls throughout the building, except internal walls separating the Secondary Dwelling from portions of the Main Dwelling are addressed in Section E below.

Internal loadbearing walls must be of concrete or masonry construction.

**Comment (Internal Load-bearing Walls):**

The following comments are made in relation to the internal load-bearing walls (except see Section E for internal separating walls) including areas identified to require clarification or further review: -

- The inspection indicated that the majority of Basement Floor walls to the building are single leaf rendered masonry that requires an FRL of 90/-/- (load-bearing). This relates directly with providing fire separation between dwellings, due to these walls being at the lowest level and supporting a floor required to achieve an FRL of 90/90/90, it is proposed that these walls be reviewed by a structural engineer to confirm if the walls achieve an FRL of 90/-/- (load-bearing).
- The inspection indicated that the majority of Ground and Upper Floor walls to the Main Dwelling are single leaf rendered masonry that requires that requires an FRL of 90/-/- (load-bearing), reduced to 60/-/- for the top floor. It is assumed these walls are likely to achieve an FRL of at least 60/-/-. It is considered appropriate that this need not be upgraded or further reviewed on the basis of the upgrade works recommended in this Report. This includes fire separating the Dwellings and that the Main Dwelling in which these building elements are located has 2 means of egress and having regard to the configuration of the building including that the building is predominantly 2 storeys in the front and parts of the side elevations.

The assessment above proposes to use a strategy to address the fire separation of the Secondary Dwelling from the Main Dwelling to achieve compliance with the BCA as discussed in Sections E and F below. The existing construction of the internal / external walls and columns to the building are proposed to be recommended for acceptance by Council, due to the particular site circumstances as detailed above whilst having regard to the recommendations for upgrade as proposed, such as;

- Basement level internal walls and internal columns, and
- Basement level and Ground Floor external steel columns, and
- Lintels to Ground Floor South-east (rear) Billiard and Rumpus Room openings.

**Recommendation:**

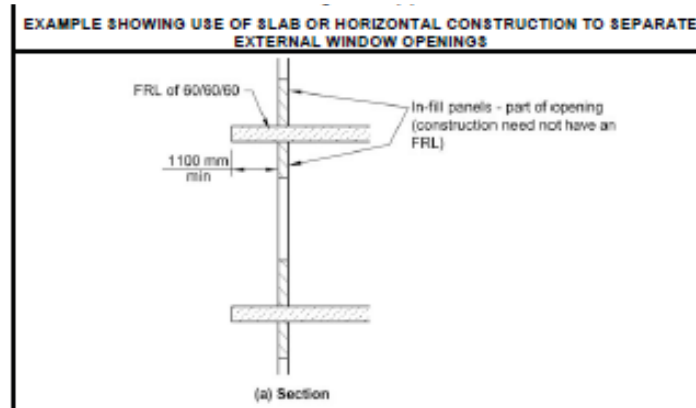
- a) ***That the existing internal brick walls, cavity brick external walls including lintels and columns, of the building be accepted by Council, except as noted in Recommendations b), c) and d) below, and***
- b) ***That the existing lintels to the Ground Floor South-eastern Billiards and Rumpus Room windows be reviewed by a structural engineer to confirm they are fire rated to achieve an FRL of 90/-/-, and***
- c) ***That the existing internal loadbearing steel columns and walls at Basement level be reviewed and if necessary upgraded to achieve an FRL of 90/-/-, and***
- d) ***That the existing external loadbearing steel columns at Basement and Ground Floor level be reviewed and if necessary upgraded to achieve an FRL of 90/-/-, and***

***Non-compliance noted in b) c) and d) are to achieve compliance with the BCA or an Alternative Solution is to be obtained from a C10 Accredited Fire Engineer. Details are to be submitted with the Construction Certificate prior to any works being carried out.***

Reason – This is to address requirements for fire rated external wall, internal wall and column construction in relation to the existing building.

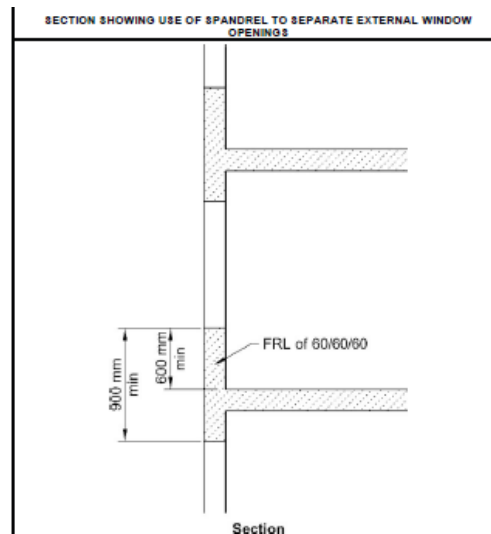
### C. Vertical Separation of Openings in External Walls.

Openings in external walls of a building of Type A Construction must be separated from openings in the storey next below either by 900mm high vertical spandrel panels or 1100mm horizontal projections no less than 450mm beyond the relevant openings as shown in Figure 1 below.



**Figure 1 – Horizontal Projection (Spandrel)**

Vertical separation of openings in external walls at different storeys must be separated with fire rated spandrel construction having an FRL of 60/60/60 in accordance with BCA Clause C2.6. A 900mm high vertical spandrel must extend 600mm above the intervening floor as shown in Figure 2 below.



**Figure 2 – Vertical Spandrel**

The spandrel requirements do not apply to openings in external walls where the floor separating storeys is not required to have an FRL, e.g. Upper Floor to Main Dwelling.

#### **Comment:**

The openings in the external walls of the Main Dwelling that are above the window / doors in the Secondary Dwelling are separated by either masonry greater than 900mm high or the intervening floor of a balcony that is greater than 1100mm. This is therefore considered to satisfy the BCA or is addressed in Section B above.

**D. Protection of Openings in External Walls.**

Openings in the external walls of a building of Type A Construction located less than 3.0m from the side boundaries are to be protected in accordance with Clause C3.4 of the BCA. The method of protection required by the BCA is either by; installing fire rated windows with an FRL of -/60/- that are automatic closing or permanently shut (eg fire rated glass blocks), or automatic closing fire rated shutters with an FRL of -/60/-, or external wall wetting drenchers on fixed / automatic closing windows, or fire doors with an FRL of -/60/30, or self-closing doors used with external wall wetting drenchers.

**Comment:**

There are numerous window and door openings in the external walls in each elevation of the building that are less than 3.0m from the north-eastern and south-western side boundary, therefore require protection.

This requires upgrade to achieve compliance with the BCA or is to be addressed in an Alternative Solution Report prepared by a C10 Accredited Fire Engineer.

***Recommendation:***

- e) ***That Council consider the window and door openings in the external walls that are within 3.0m of the western boundary need not be upgraded in accordance with BCA Clause C3.4 subject to acceptance of the Alternative Solution Report obtained from a C10 Accredited Fire Engineer.***

**Reason** – This is to address requirements for fire spread in relation to windows or doors in external walls.

**E. Internal Wall Separating SOU's (Fire Rating).**

The wall separating the Secondary Dwelling at Basement Floor level from the remainder of the building must be constructed having an FRL of 90/90/90 (load-bearing), -/60/60 (non load-bearing). See also Item 'G' below re: Acoustic requirements.

The fire rated separating wall must extend from footings through the building to the underside of a fire rated floor, or fire rated ceiling or the roof and must not be crossed by timber or other combustible elements except roof battens. Elements such as steel beams that pass through the wall must have gaps sealed with fire rated construction.

**Comment:**

The separating walls between the Secondary Dwelling at Basement Floor and the remainder of the building is generally as follows: -

- Wall separating the Family Room of Secondary Dwelling from the stairway of the Main Dwelling is masonry construction, except that the existing doorway at Basement level is required to be infilled, and
- Wall separating the Family Room / Bathroom of Secondary Dwelling from the Underfloor Storage of the Main Dwelling is masonry construction with some minor timber elements incorporated, and
- Wall between Bedroom / Family Room of Secondary Dwelling and subfloor of Main Dwelling is masonry construction.

The inspection indicated that these internal walls are single leaf rendered masonry that requires review by structural engineer to confirm if the walls achieve an FRL of 90/90/90 (load-bearing), -/60/60 (non load-bearing). This requires upgrade or to be addressed in an Alternative Solution Report prepared by a C10 Accredited Fire Engineer.



The fire separating walls must not be crossed by timber or other combustible elements. Where the separating wall has subfloor of the Main Dwelling on one side, the fire rated ceiling of the Secondary Dwelling is to be sealed to the masonry walls for the entire perimeter of each room only, due to the BCA concession to permit the floor of the subfloor (ie not used for storage or other purpose) to not need a fire rating.

Upgrade works / verification is to include the following;

***Recommendation:***

- f) That the internal masonry walls separating the Basement Floor Secondary Dwelling from the remainder of the building (i.e. subfloor, stairway and storage of Main Dwelling) be reviewed by a structural engineer and the construction confirmed or upgraded to achieve an FRL of 90/90/90 (load-bearing) or -/60/60 (non load-bearing), and***

***Details are to be submitted with the Construction Certificate prior to any works being carried out.***

Reason – This is to address the fire spread within the building between different SOU's.

**F. Internal Floor Separating SOU's (Fire Rating).**

The floor separating the Basement Floor Secondary Dwelling from the Ground Floor of the Main Dwelling is required to be provided with a fire rating having an FRL of 90/90/90. See also Item 'G' below re: Acoustic requirements.

**Comment:**

The existing floor separating the Basement Floor Secondary Dwelling from the Ground Floor of the Main Dwelling is noted as follows: -

- It is understood that the floor / ceiling above the Secondary Dwelling Bedroom and Lounge areas is a concrete slab. There are also other areas of the Secondary Dwelling with concrete slab above. This requires verification or upgrade to confirm the ceiling achieves an FRL of 90/90/90. See also Section G and H below (re: Acoustic).
- The floor / ceiling above the Secondary Dwelling Family and Kitchen areas is timber joists with standard plasterboard. This requires upgrade to confirm the ceiling achieves an FRL of 90/90/90. See also Section G and H below (re: Acoustic).

***Recommendation:***

- g) That the existing concrete slab/s separating the Basement Floor Secondary Dwelling from the Main Dwelling at Ground Floor Level is to be reviewed by a suitably qualified structural engineer and upgrade works is to be undertaken if required to enable certification to be obtained confirming an FRL of 90/90/90 is achieved.***

- h) That the remainder of the ceiling of the Secondary Dwelling be upgraded and certification is to be obtained to confirm a fire rating is provided with an FRL of 90/90/90. The ceiling is to include; encasing any beams, and service penetrations are to be fire sealed.***

***Details are to be submitted with the Construction Certificate prior to any works being carried out.***

Reason – This is to address fire spread between different SOU's in different storeys in relation to the existing building.

**G. Internal Wall and Floor Separating SOU's (Acoustic Rating).**

- (i) Floor. The floor separating the Basement Floor Secondary Dwelling from the Ground Floor Main Dwelling is to be provided with a Weighted Sound Reduction Index with Spectrum Adaption Term [ $R_w + C_{tr}$ ] (airborne) not less than 50 and a Weighted Normalised Impact Sound Pressure level with Spectrum Adaption Term [ $L_{n,w}$ ] (impact) not more than 62.

A typical concrete floor constructed to achieve this is as follows;

- 150mm thick concrete slab, and
- 65mm thick polyester insulation with a density of 8kg/m<sup>3</sup> positions between furring channels, and
- 28mm metal furring channels and isolation mounts fixed to underside of slab at 600mm centres, and
- One layers of 13mm plasterboard fixed to furring channels.

A typical timber floor constructed to achieve this is as follows;

- 19mm thick particleboard, and
- 190 x 45mm timber joists @ 450mm centres, and
- R2.5 glass wool insulation position between joists, and
- 28mm metal furring channels and isolation mounts fixed to underside of joists. Mounts to be of natural rubber with dynamic factor not > 1.1 and static deflection of not less than 3mm at actual operation load, and
- Two layers of 16mm fire grade plasterboard fixed to furring channels.

- (ii) Walls. The wall separating the Secondary Dwelling at Basement Floor from the stair / storage area of the Main Dwelling, must be construction having —

- have an  $R_w + C_{tr}$  (airborne) not less than 50, if it separates SOU's; and
- have a Weighted Sound Reduction Index [ $R_w$ ] (airborne) not less than 50, if it separates a SOU from a stairway, or the like; and
- have discontinuous construction if it separates a bathroom, sanitary compartment, laundry or kitchen in one SOU from a habitable room (other than a kitchen) in an adjoining SOU. Discontinuous construction means a wall having a 20mm cavity between separate leaves, and;
  - for masonry, where wall ties are required to connect leaves, the ties are of the resilient type; and
  - for other than masonry, there is not mechanical linkage between leaves except at the periphery.

- (iii) Services. The separating construction between the Secondary Dwelling at Basement Floor requires review. Upgrade works / verification is to include the following; A waste or water supply pipe that is located in a wall or floor cavity, that serves or passes through more than one SOU, then the pipe must be separated from the other SOU by construction with a  $R_w + C_{tr}$  (airborne) not less than

- 40 if the adjacent room is a habitable room (ie living room, bedroom); or
- 25 if the adjacent room is a non-habitable room (ie bathroom or laundry).

**Comment:**

This necessitates the separating wall and floor between the Basement level Secondary Dwelling and the Main Dwelling to be upgraded to achieve the necessary sound transmission and insulation including waste pipes or water supply pipes from one dwelling that passes through the wall or ceiling cavity common with the other dwelling.

Upgrade works / verification is to include the following;

**Recommendation:**

- i) ***That upgrade works is to be undertaken or verification of the following BCA Provisions for Acoustic Separation of different SOU's be addressed;***
- (i) That the construction of the wall separating the Secondary Dwelling at Basement Floor level from the stairway / storage area of the Main Dwelling is to be reviewed and upgraded to achieve an  $R_w + C_{tr}$  (airborne) not less than 50, and***
  - (ii) That the existing ceiling / floor separating the Secondary Dwelling at Basement Floor from the Main Dwelling at Ground Floor Level is to be reviewed and upgrade works is to be undertaken to confirm the construction achieves an  $R_w + C_{tr}$  (airborne) not less than 50 and an  $L_{n,w}$  (impact) not more than 62 installed in accordance with the manufacturers specification, and***
  - (iii) That the services or waste pipes from the Main Dwelling at Ground Floor Level be reviewed to confirm if they pass through the ceiling or walls of the Secondary Dwelling at the Basement Floor and if required is to be upgraded with construction (eg lagging and the like) to achieve an  $R_w + C_{tr}$  (airborne) not less than 25 for non-habitable room or not less than 40 for a habitable room of the Secondary Dwelling.***

***Details are to be submitted with the Construction Certificate prior to any works being carried out.***

Reason – This is to address the acoustic separation of floor, walls and services within the building that are separating SOU's or in different SOU's.

**H. Penetration of Services in Fire Rated Building Elements.**

Where electrical, plumbing or other services pass through an element of construction required to have an FRL, the installation must be installed so as not to compromise the elements fire rating. This relates to the floor and wall separating the Secondary Dwelling at Ground Floor from the remainder of the building.

**Comment:**

Any penetrations in the proposed ceiling above the Secondary Dwelling, such for downlights, electrical or plumbing services requires protection with fire covers or the like to maintain this FRL. Such details are to be included in the Construction Certificate.

**Recommendation:**

- j) *That fire stopping be undertaken where Services penetrate the ceiling or walls (e.g. downlights or pipes) separating the Secondary Dwelling at Basement Floor from the Main Dwelling. The works are to be carried so that certification is achieved to confirm any services passing through the fire rated wall or ceiling is protected with fire collars, fire seals or downlight covers to maintain an FRL of 90/90/90 (ceiling or loadbearing walls) or -/60/60 (non-loadbearing walls) in accordance with BCA Clause C3.15 and AS1530.4-2005 and AS4072.1-2005.*

*Details are to be submitted with the Construction Certificate prior to any works being carried out.*

Reason – This is to address fire spread between different SOU's in relation to the existing building.

### I. Door Thresholds.

The threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless the doorway opens to a road, open space, external balcony or the like.

**Comment:**

There are a number of existing internal doorways that have a step at the doorway within the proposed Secondary Dwelling. This includes a step at the doorway to the bathroom and step at the doorway from the Family Room to the room proposed as the Lounge. As these steps are existing and not proposed to be altered, it is considered appropriate that Council accept this, particularly as occupants in this Secondary Dwelling will use this level only and therefore be more familiar with this configuration.

**Recommendation:**

- k) *That existing steps at the internal doorways of the Secondary Dwelling be accepted by Council to remain.*

Reason – This is to address the existing steps at internal doorways in relation to the building.

### J. Stair Construction.

Stairway riser dimensions (R) are to be a minimum of 115mm and maximum of 190mm. Treads are to have minimum going dimensions (G) of 250mm (240mm private stair) to 355mm maximum going. The Quantity (2R + G) of the stairs must be a maximum of 700mm and minimum of 550mm. Also goings and risers are to be constant throughout each flight (ie not > 5mm variation between consecutive goings / rises and not > 10mm between smallest and largest. goings / rises in flight). Treads or nosings must have a slip resistance classification in accordance with Table D2.13 and AS4586-2013. Landings must have a maximum gradient of 1:50, be not less than 750mm with slip resistance classification as for treads and nosings.

Stairways must also be provided with a handrail to at least one side of each flight with the top surface of the handrails at a height of not less than 865mm. The clear height above a stairway must be 2.0m measured above the nosing line.

**Comment:**

There is no internal stairway proposed. An existing external stair is outside the lounge of the Secondary Dwelling and an external stair is proposed at the north-eastern side of the existing building that is to be used by the proposed Secondary Dwelling for access and egress. This is to be provided with risers and goings within the dimensions of the BCA including slip resistance classification of the stair.

The existing internal and external stairs relate to the Main Dwelling are not proposed to be altered, therefore no further comment is made for these areas in this assessment.

**Recommendation:**

- 1) That the existing external stairway and proposed external stairway / ramp providing access / egress to the Secondary Dwelling be provided in accordance with BCA Clauses D1.10, D2.10, D2.16, D2.17, BCA Clause D2.13 with a slip resistance classification in accordance with BCA Table D2.14 and AS4586-2013.***

***Details are to be submitted with the Construction Certificate prior to any works being carried out.***

Reason – This is to provide adequate egress for occupants using the Secondary Dwelling.

**K. Barriers to prevent Falls (Balustrades).**

The balustrade construction to balconies and floors more than 1.0m above the surface beneath must be constructed to be not less than 1.0m in height above the stair landings, floor surfaces and must not contain gaps greater than 125mm, ie does not permit a 125mm sphere to pass through it.

**Comment:**

The Secondary Dwelling has no balconies or areas of more than 1.0 above the finished ground level. Existing portions of the Main Dwelling are not proposed to be altered, therefore is outside the scope of this assessment. The owners should review this and consider risk minimisation where appropriate.

**L. Protection of Openable Windows**

A bedroom window opening must be provided with protection if the floor below the window is 2m or more above the surface beneath. Where the lower level of the window opening is less than 1.7m above the floor, a window must be protected with a device to restrict the window opening or a screen with secure fittings.

A device or screen required to protect a window must;

- Not permit a 125mm sphere to pass through window opening or screen, and
- Resist an outward horizontal action of 250N against the window restrained by a device or a screen protecting the opening, and
- Have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden.

**Comment:**

The Secondary Dwelling has no bedroom windows in rooms more than 2.0 above the external finished ground level. Existing portions of the Main Dwelling are not proposed to be altered, therefore are outside the scope of this assessment. The owners should review this and consider risk minimisation where appropriate.

**M. Access for People with Disabilities.**

The BCA necessitates a Class 2 building to be provided with access for people with disabilities from a pedestrian entrance required to be accessible to at least 1 floor containing SOU's.

**Comment:**

There are no common areas proposed for the Dwellings, therefore it is considered that access for people with disabilities to address the BCA is not required. On this basis, no further comment is made for this assessment.

**N. Ceiling Heights.**

Ceiling heights must be not less than:

- In a habitable room excluding a kitchen – 2.4m;
- Bathroom, laundry or the like – 2.1m
- Kitchen - 2.1m;

**Comment:**

The proposed Secondary Dwelling will readily achieve compliance having regard to the new ceilings required. This will require assessment at the Construction Certificate stage, therefore no further comment is made for this assessment.

***Recommendation:***

***m) That in conjunction with the upgrade works, the new ceilings to the Secondary Dwelling are to be detailed to achieve a minimum ceiling height of 2.4m (habitable rooms) and 2.1m (kitchen and bathroom).***

***Details are to be submitted with the Construction Certificate prior to any works being carried out.***

Reason – This is to provide rooms with adequate ceiling heights for the Secondary Dwelling.

**O. Floor Waste.**

A bathroom or laundry located above another SOU must have a floor waste and the floor graded to the floor waste to permit the drainage of water.

**Comment:**

The bathroom at Ground Floor of the Main Dwelling appears to be above the subfloor storage area of the Main Dwelling. On this basis a floor waste is not required, therefore no further comment is made for this assessment.

**P. Facilities.**

The BCA necessitates that each dwelling have a kitchen, shower or bath, closet pan, washbasin and clothes washing facilities in accordance with BCA Table F2.1. Laundry clothes washing facilities, comprising a washtub and space for a washing machine in the same room is necessary. The washtub must be separate to a hand basin or kitchen sink.

**Comment:**

The proposed secondary dwelling will readily achieve compliance. A laundry tub is required in accordance with the BCA. This will require assessment at the Construction Certificate stage.

**Recommendation:**

- n) *That a laundry tub and space for washing machine be provided to the laundry of the Secondary Dwelling in accordance with BCA Table F2.1.*

*Details are to be submitted with the Construction Certificate prior to any works being carried out.*

Reason – This is to provide adequate sanitary facilities for the Secondary Dwelling.

**Q. Light.**

The rooms of the Secondary dwellings must be provided with natural lighting or artificial lighting to satisfy the BCA Part F4, i.e. for natural lighting windows having a light transmitting area of not less than 10% of the room.

**Comment:**

The proposed secondary dwelling will readily achieve compliance. This will require assessment at the Construction Certificate stage.

**Recommendation:**

- o) *That the habitable rooms to Secondary Dwelling be provided with natural lighting in accordance with BCA Part F4.*

*Details are to be submitted with the Construction Certificate prior to any works being carried out.*

Reason – This is to provide adequate lighting for the Secondary Dwelling.

**R. Ventilation.**

The rooms of the Secondary dwellings must be provided with natural ventilation to satisfy the BCA Part F4, ie windows or doors having an openable area of not less than 5% of the room.

**Comment:**

The proposed Secondary dwelling will readily achieve compliance. This will require assessment at the Construction Certificate stage.

**Recommendation:**

- p) *That the habitable rooms to Secondary Dwelling be provided with natural ventilation in accordance with BCA Part F4.*

*Details are to be submitted with the Construction Certificate prior to any works being carried out.*

Reason – This is to provide adequate ventilation for the Secondary Dwelling.

**S. Fire Hydrant System.**

A building that has a floor area greater than 500m<sup>2</sup> must be provided with a fire hydrant system in accordance with Clause E1.3 of the BCA and AS 2419.1 - 2005.

**Comment:**

The building floor area is to less than 500m<sup>2</sup>, therefore the building is not required to be provided with a fire hydrant system.

**T. Portable Fire Extinguisher/s.**

A Class 2 building must be provided with portable fire extinguishers in accordance with AS2441-2004.

**Comment:**

Portable fire extinguishers are to be provided for each SOU, with verification to include;

***Recommendation:***

***q) That portable fire extinguisher/s are to be provided for each SOU located in accordance with BCA Clause E1.6 and AS2441 - 2005.***

***Details are to be submitted with the Construction Certificate prior to any works being carried out.***

Reason – This is to confirm portable fire extinguishers are adequately installed.

**U. Smoke Alarm.**

A Class 2 building (dwelling) must be provided with hard wired smoke/s alarm in accordance with AS3786-1993 or 2014. The smoke alarms must be located on or near the ceiling of every storey between each part of the SOU containing bedrooms and the remainder of the SOU, and where bedrooms are served by a hallway, in that hallway. The smoke alarms on each storey of the same SOU must be interconnected. The smoke alarms in different SOU's are not required to be interconnected.

**Comment:**

There are existing smoke alarms within the Main Dwelling that require upgrading with hard wired smoke alarms that are interconnected. A smoke alarm is also required in the Lounge Room of the Secondary Dwelling with the system requiring certification as follows;

***Recommendation:***

***r) That the smoke alarm/s be provided on each level of the building interconnected throughout each dwelling. That certification is to be obtained from a licensed electrical contractor that the smoke alarm/s are hard wired connected to the consumer mains, fully interconnected throughout each Dwelling being connected and installed to comply with BCA Specification E2.2a and AS3786 - 2014.***

***Details are to be submitted with the Construction Certificate prior to any works being carried out.***

Reason – This is to confirm the smoke alarm system is adequately installed.

**V. Other Aspects.**

There are a number of BCA aspects that relate to the existing structure that we are either unable to fully assess or are elements when the original building was constructed, including;

- (a) Structural Adequacy of existing building.
- (b) Damp-proofing membrane beneath the concrete slab to the Ground Floor and beneath the lowest floor timbers.
- (c) Glazing including human impact requirements.
- (d) Waterproofing of wet areas.
- (e) Stairways and balustrade construction for the existing Main Dwelling.



- (f) Protection of openable windows for the existing Main Dwelling.
- (g) Termite risk management.
- (h) Roof drainage and stormwater disposal.

#### **W. Schedule of Essential Fire Safety Measures (Existing and Proposed)**

The building is currently provided with the following existing essential fire safety measures and it is recommended that the building be provided with the following proposed essential fire safety measures, capable of performing and being maintained to the standard listed in the Schedule below. For the purposes of Clause 168 of the Environmental Planning and Assessment Regulation 2000, these standards will be considered to be the current fire safety schedule for the building.

#### **SCHEDULE**

Measure	Design/ Installation Standard	Existing	Proposed
Fire Seals	Manufacturers Specification, BCA Clause C3.15, AS1530.4 – 2014 & AS4072.1 - 2005	?	✓
Portable Fire Extinguishers	BCA Clause E1.6 & AS2444 – 2001	-	✓
Protection of Openings in External Walls	BCA Clause C3.2, C3.4 except where modified by Fire Engineering Report	-	✓
Smoke Alarm System within each dwelling	BCA Specification E2.2a and AS3786 –2014	?	✓

*The above list may vary with any Alternative Fire Engineered Solution Report.*

#### **4. Limitations:**

This report and assessment does not address issues in relation to the following:

- a) The recommendations are not intended to fully assess the existing or proposed building works except to review the Secondary Dwelling works subject of the Development Application. This is to be undertaken by the Certifier at CC Stage.
- b) The BCA Structural Provisions of the building elements (unless specifically referred to).
- c) The design, maintenance or operation of any existing or proposed electrical, mechanical, hydraulic or fire protection services.
- d) Development Consent conditions of approval issued by the Consent Authority.
- e) Environmental Planning and Assessment Act, associated Regulations, Local Government Act and Regulations unless where nominated.
- f) Work Health & Safety Act / Regulations and WorkCover Authority requirements.
- g) Water, drainage, gas, telecommunications and electricity supply authority requirements.
- h) Disability Discrimination Act (DDA) and Premises Standard.

Should you require any further details, please do not hesitate to call me on 0417 247 447.

Yours faithfully,

**GRS Building Reports Pty Ltd.**

  
Graham Scheffers