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23 October 2020

Tony and Lee-Anne Neville
4 Pusan Place
Belrose NSW 2085

Dear Tony and Lee-Anne,

Re: BCA Assessment Report – 4 Pusan Place, Belrose

This statement provides a Building Code of Australia 2019 (BCA) Assessment for submission with the Development Application / Building Information Certificate Application to be lodged with Northern Beaches Council in relation to works associated with the detached building partially constructed without approval that is proposed to be used as a Secondary Dwelling at the above premises. This is in response to Council's Notice of Intention to give a Development Control Order dated 26 August 2020.

1) Building Description & Assessment

The building works the subject of this Report is concrete slab on ground, timber framework, lightweight external cladding and metal roof. The building is in 2 parts shown in Figure 1 below as follows;

- a) Original garage structure; converted to studio with bathroom installed by previous owners.
- b) Rear portion is a recently built room and hall connecting the pre-existing structure.

An inspection of this existing 'as built' building works was carried out on 21 October 2020 and it is proposed to carry out a BCA assessment of the structures.

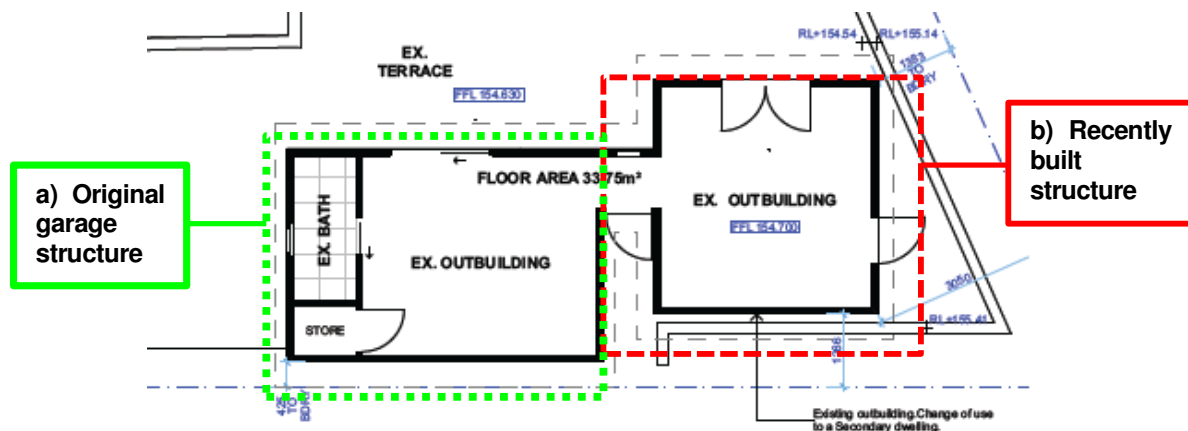


Figure 1 – Detached Proposed Secondary Dwelling

2) **Documentation**

The following documentation has been utilised for this Report;

- a) Architectural Plans prepared by Action Plans dated 7 October 2020, Drawing No. DA01 to DA09.

3) **BCA Description**

The subject detached building is assessed under the Building Code of Australia 2019 [Volume 2] (BCA). The proposed Secondary Dwelling is separate from the main dwelling. This detached Secondary Dwelling is in 2 components, being the front portion (i.e. pre-existing garage) plus the recently completed building works to the rear comprising bedroom and hall as shown in Figure 1 above.

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

a) **Classification**

The proposed detached Secondary Dwelling assessed is classified as follows:

- Class 1a (Dwelling part of structure)

b) **Number of Storeys**

One (1)

c) **Type of Construction**

NA – Due to Class 1a

d) **Building Setback**

- External wall less than 900mm setback (i.e. approximately 425mm for pre-existing part of the Secondary Dwelling) and external walls more 900mm setback (i.e. 1.25m for recently built part to the rear portion of the Secondary Dwelling). Setback is based on dimensions shown on architectural drawings and may be verified by survey if necessary.

4) **BCA Assessment and Comments**

Following an inspection of the 'as built' building works carried out on 21 October 2020, it is evident that there are elements that do not satisfy the BCA or verification is necessary to confirm how compliance may be achieved. The primary purpose of this statement is to accompany a Development Application / Building Information Certificate Application to be lodged with the Northern Beaches Council.

The following BCA Comments are made following an inspection of the 'as built' building works and proposed change of use to a Secondary Dwelling. Recommendations are proposed to provide verification or upgrade the building elements to address BCA requirements associated with the structures reviewed. Where works are to be completed, this is assumed to necessitate a Construction Certificate application.

A. **Structural Adequacy**

The building works the subject of this Report is of concrete slab on ground with timber frame lightweight external cladding and metal roof sheeting. The building is in 2 parts as shown in Figure 1 above that are as follows: -

- a) Original garage structure; converted to studio with bathroom installed by previous owners. The only recent change to this relates to the new opening for sliding doors in the northern wall and infill framework to a pre-existing window in the rear (eastern) wall.

- b) Recently built structure with hall connection to pre-existing structure. This is entirely new works forming the rear portion of the proposed Secondary Dwelling.

Comment:

Other than minor modifications it is assumed the pre-existing structure is as originally approved by Council. The changes to the pre-existing structure and the new works forming the rear portion of the proposed Secondary Dwelling require verification from a Structural Engineer to confirm these building elements are structural adequate to satisfy the relevant Australian Standards.

Recommendation:

- a) ***That the works undertaken be reviewed for structural adequacy to include: -***

- ***Modifications to walls of pre-existing (original garage) that is the front portion of the proposed secondary dwelling, and***
- ***New floor slab to rear portion of proposed secondary dwelling, and***
- ***New wall and roof timber framework to rear portion of proposed secondary dwelling.***

Certification is to be obtained from a structural engineer to confirm these various building elements are structurally adequate to satisfy the relevant Australian Standards (e.g. AS/NZS1170.0-2002, AS/NZS1170.1-2002, AS/NZS1170.2-2011, AS1170.4-2007, AS1684.2-2010, AS1684.4-2010, AS2870-2011).

Reason – This is to confirm the building is structural adequate.

B. External Walls - Fire Resistance Level (FRL).

As a result of the Dwelling building being Class 1a the following FRL's apply;

- (i) Walls less than 900mm from boundary must be provided with a FRL of 60/60/60. The 60/60/60 FRL need only be measured from outside the building, and
- (ii) Encroachments such as eaves, fascias, gutters and the like if within 450mm of the boundary must be of non-combustible construction, and
- (iii) No FRL applies to external walls within 900mm of the side boundary if the wall is 90° or more to the boundary, and
- (iv) Openings in the external walls required to be fire-resisting (i.e. < 900mm from boundary) must be protected by:-
 - Non-openable fire windows or other construction with FRL not less than -/60/-, or
 - Self-closing solid core doors not less than 35mm thick.

Comment:

The southern external wall of the front (pre-existing) portion of the proposed Secondary Dwelling is less than 900mm from the side boundary (i.e. approximately 425mm) and requires upgrade with materials to achieve an FRL of 60/60/60 measured from outside the building. The roof, eave, fascia and gutter to this portion of the building are non-combustible, therefore satisfy the BCA and need not be upgraded.

Windows or door openings in the proposed Secondary Dwelling are more than 900mm from the boundary or perpendicular to the boundary, therefore need not be upgraded.

The external walls to the rear (new) portion of the proposed Secondary Dwelling are more than 900mm from the boundary with eaves, fascia and gutter more than 450mm from the boundary, therefore satisfy the BCA and need not be upgraded.

Recommendation:

- b) That the front (pre-existing) portion of the proposed Secondary Dwelling as shown in Figure 1 of this Report, be upgraded so that the southern external walls less than 900mm from the side boundary be upgraded with constructed having an FRL of 60/60/60 measured externally.**

Reason – This is to minimise the risk of fire spread.

C. Termite risk management.

The BCA necessitates that Primary Building Elements must be provided with a Termite Management System in accordance with Table 3.1.4.1, AS3660.1-2014, or a system passing the tests required by Section 5 of AS3660.3-2014.

Comment:

The 'as built' works is understood to include timber frame floor, wall and roof construction. An option for compliance with AS3660.1 is the use preservative-treated timbers in accordance with AS (AS/NZS) 1604 (series) and specified for the appropriate hazard level in accordance with Appendix D (e.g. H2 for Interior above ground or H3 for exterior above ground). Note: Where preservative-treated timbers are cut notched or planed, the affected surface must be treated with a suitable remedial preservative. The termite risk management system incorporated requires confirmation.

No comment is made with respect to the existing timber framework as this should be subject to regular review for termite risk management.

Recommendation:

- c) That the new works undertaken (i.e. timber frame floor, wall and roof construction to the proposed Secondary Dwelling) be reviewed and verification obtained a Termite Risk Management System in accordance with AS3660.1-2014, a system passing the tests required by Section 5 of AS3660.3-2014. or confirmation that preservative-treated timbers in accordance with AS (AS/NZS) 1604 (series) have been used as specified for the appropriate hazard level in accordance with Appendix D, or system that satisfies the Performance Requirement of the BCA.**

That a durable notice be placed in a prominent position that confirms details of the termite treatment undertaken (Ref: BCA CI 3.1.4.4), i.e.

- (A) the termite management system used; and**
(B) the date of installation of the system; and
(C) where a chemical is used, its life expectancy as listed on the appropriate authority's pesticides register label; and
(D) the installer's or manufacturer's recommendations for the scope and frequency of future inspections for termite activity.

Reason – This is to ensure a suitable Termite Risk Management System is incorporated.

D. Surface and Stormwater Drainage.

Class 1a building (dwelling) and Class 10 structures must be provided with a stormwater drainage system that is designed and constructed in accordance with AS/NZS3500.3-2018 or Clause 5 of AS/NZS3500.5-2018. Also, the building must be designed so that any overland flow during heavy rain periods is prevented from flowing back into the building and for slab-on-ground construction must have;

- a) External finished surfaces surrounding the building drained to move water away from the building and graded to give a slope of not less than 50mm over the first 1.0m from the building, and
- b) The finished slab height must be not less than either 100mm above finished ground level (low rainfall intensity areas or sandy, well drained areas), or 50mm above impermeable (paved or concrete area) that slope away from the building as noted in a) above, or otherwise 150mm.

Comment:

It is understood the new roof and existing roof is proposed to be connected to the existing drainage system. This requires verification and certification the existing guttering / stormwater system is adequate in accordance with AS/NZS3500.3-2018.

The finished ground levels to the proposed Secondary Dwelling are currently unfinished. This requires completion with finished levels to prevent overland water during heavy rain from flowing into the building.

Recommendation:

- d) ***That the completion of works to the Secondary Dwelling, is to incorporate verification from a Licensed Plumber that the roof, guttering and the pre-existing drainage system is considered to be adequate and drained in accordance with BCA Parts 3.1.3, 3.5.3 and AS/NZS3500.3-2018, and***
- e) ***That the external levels surrounding the Secondary Dwelling are to be complete with finished height and levels to minimise the risk of heavy rain from flowing back into the building in accordance with BCA Clause 3.1.3.3, e.g.***
 - ***External finished surfaces surrounding the building drained to move water away from the building and graded to give a slope of not less than 50mm over the first 1.0m from the building, and***
 - ***The finished slab height must be not less than either 100mm above finished ground level (low rainfall intensity areas or sandy, well drained areas), or 50mm above impermeable (paved or concrete area) that slope away from the building as noted in a) above, or otherwise 150mm.***

Reason – This is to confirm the stormwater and site drainage for the Secondary Dwelling is adequate.

E. Glazing.

The BCA provides requirements for the thickness and type of glazing for various locations in a building. There are also requirements for visibility of glazing.

Comment:

The proposed Secondary Dwelling has glazed elements such as windows and doors. The thickness and type of glazing is unknown and should be verified to confirm the glazing is as required in accordance with AS2047-2014.

Recommendation:

- f) That Certification be provided to confirm the new external glazed doors and windows are in accordance with AS2047-2014.***

Reason – This is to ensure external glazing is as required.

F. Ceiling Heights.

Ceiling heights must be not less than:

- In a habitable room such as Living Room, Bedroom; excluding a kitchen – 2.4m;
- Bathroom, laundry, storeroom or the like – 2.1m;
- Kitchen - 2.1m.

In a room or space with a sloping ceiling or projections below the ceiling line within—

- (i) a habitable room—
 - (A) in an attic — a height of not less than 2.2 m for at least two-thirds of the floor area of the room or space; and
 - (B) in other rooms — a height of not less than 2.4 m over two-thirds of the floor area of the room or space; and
- (ii) a non-habitable room — a height of not less than 2.1 m for at least two-thirds of the floor area of the room or space,

Comment:

The ceiling height to the Secondary Dwelling reviewed is less than 2.4m (habitable), as follows;

- The new rear portion of the building ranges from approximately 2.385-2.390m at the lowest parts to approximately 2.6m at the highest part which is at the centre of the room. This is measured to the existing bare concrete and with carpet or the like, when laid this may be reduced a further 10-15mm. Notwithstanding, due to the sloping ceiling in this new rear portion of the building, this has as least two-thirds of the floor area more than 2.4m ceiling height, therefore satisfies the BCA and further comment is not necessary.
- The pre-existing front portion of the building has a level ceiling with a height of approximately 2.395m to 2.4m. Due to the use of this space this necessitates a ceiling height of 2.4m to the Living area and 2.1m to the Kitchen area. Allowing for any new flooring as a result of the recommendations of this Report or new floor finishes, that may further reduce the ceiling height by 10-15mm, this is not considered to impact the amenity of this space. These circumstances may have regard to BCA Performance Requirement FP2.4.2 that states; “A building is to be constructed to provide height in a room or space suitable for the intended use”.

The combined kitchen / living room has been assessed to confirm the space has at least 5 times the minimum natural ventilation and 2 times the minimum natural lighting. On this basis, the minor ceiling height deficiency is offset by the increased natural lighting and ventilation to provide a space suitable for its intended function as a combined kitchen / living room. This is therefore considered to be acceptable to satisfy BCA Performance Requirement FP2.4.2.

Recommendation:

- g) That the existing ceiling height to the Living Room / Kitchen area to the front portion of the Secondary Dwelling be accepted by Council, subject to the ceiling height not being reduced to less than 2.380mm as a result of the implementation of any works to satisfy the recommendations of this Report.**

Reason – This is to ensure ceiling heights are as required.

G. Light.

Habitable rooms and sanitary compartments (e.g. Bathroom) must either be provided with windows or other glazing that achieve the minimum requirements for 10% natural light or an enclosed bathroom may be provided with artificial lighting in accordance with AS/NZS1680.0-2009.

Comment:

The proposed Secondary Dwelling has the provision for natural lighting consistent with and exceeding the minimum BCA requirements, therefore further review and comment is not necessary for the assessment.

H. Ventilation.

A dwelling must have habitable rooms (e.g. Living Room) or other room (e.g. Bathroom) with openable windows or doors that achieve the minimum requirements for 5% natural ventilation unless provided with a mechanical ventilation system. An enclosed bathroom may be provided with exhaust mechanical ventilation in accordance with AS1668.2-2012.

Comment:

The proposed Secondary Dwelling has natural ventilation consistent with the BCA, therefore further review and comment is not necessary for the assessment.

I. Wet Area Waterproofing.

Building elements in wet areas (i.e. bathroom, laundry and sanitary compartments) within a dwelling must be waterproof or water resistant in accordance with BCA Table 3.8.1.1 and AS3740-2010. This necessitates floors, walls, wall junctions, penetrations, other vessels (e.g. sink or laundry tub) to be suitably treated. The floors must also be adequately drained.

Comment:

It is understood the bathroom incorporating, shower, basin, and sanitary compartment (toilet) fixtures had been installed by the previous owners. Verification of waterproofing is unknown, however there is no evidence of waterproofing issues. This may be accepted by Council.

The proposed laundry requires floor and / or walls that are water resistant to satisfy BCA Table 3.8.1.1 and AS3740-2010.

Recommendation:

- h) That the existing bathroom be accepted by Council and that the proposed works to create a Laundry is to confirm elements to the wet areas are water resistant in accordance with BCA Table 3.8.1.1 and AS3740-2010.**

Reason – This is to confirm waterproofing of wet areas is adequately installed.

J. Vapour Barrier (Floor Slab).

A vapour barrier must be installed under slab on ground construction for all Class 1 Buildings with the material being is at least 0.2mm nominal thickness polyethylene film in accordance with BCA Clause 3.2.2.6 and / or AS2870-2011.

Comment:

The Secondary Dwelling has slab on ground construction. It is unknown if there is a waterproof membrane beneath the pre-existing slab. As this is understood to have been approved as a garage, this requires review and verification or upgrade as required.

It is evident that there is a waterproof membrane beneath the new slab, however this requires verification for this work.

Recommendation:

- i) That verification be obtained from a Licensed Builder, to confirm the floor slab to the Secondary Dwelling has a water proof membrane in accordance with BCA Clause 3.2.2.6 and / or AS2870-2011 as follows:**
- **Certification for new works to the rear portion of the building.**
 - **Verification for the pre-existing floor slab to the front portion of the building, to confirm a water proof membrane is provided, or other measures may be implemented to minimise the risk of rising damp from the ground entering the building throughout the floor slab, including also impacting timber framework.**

Reason – This is to confirm the slab on ground has waterproofing adequately installed.

K. Facilities.

A dwelling must be provided with kitchen, shower, closet pan, washbasin, space for a washing machine and a laundry tub for use as facilities in accordance with BCA Part 3.8.3.

Comment:

The Secondary Dwelling has bathroom only and requires a kitchen and laundry with washbasin facilities in accordance with BCA Part 3.8.3.

Recommendation:

- j) That the proposal works for the Secondary Dwelling is to provide a kitchen and laundry facilities in accordance with BCA Part 3.8.3.**

Reason – This is to confirm the provision of suitable facilities for a dwelling are provided.

L. Location of Sanitary Compartments.

A sanitary compartment must not open directly into a kitchen or pantry unless—

- (a) access is by an airlock, hallway or other room, or
- (b) the sanitary compartment is provided with an exhaust fan or other means of mechanical exhaust ventilation

Comment:

The proposed Secondary Dwelling has a bathroom that opens directly to the Living / Kitchen space, therefore is considered to require an exhaust fan in addition to the existing natural ventilation.

Recommendation:

- k) That the existing bathroom be provided with an exhaust fan that discharges outside the building in accordance with BCA Part 3.8.7.***

Reason – This is to ensure the health, amenity and condensation management is as required.

M. Metal Roof Sheetting and Flashings.

A Class 1a building (dwelling) with metal roof sheetting must be provided with metal sheetting that has materials and installation in accordance with AS1562.1-1992 OR is installed with the relevant parts of BCA Section 3.5.1.3 in relation to materials, flashings and fixings

Comment:

The metal roof sheetting including associated flashings and fixings to the Secondary Dwelling requires verification that the works are in accordance with AS1562.1-1992 or BCA Section 3.5.1.3.

Recommendation:

- l) That verification be obtained from a Licensed Builder / Contractor for the entire Secondary Dwelling, to confirm the metal roof sheetting, metal flashings and fixings to the Secondary Dwelling are installed to comply with BCA Section 3.5.1.3 OR AS1562.1- 1992.***

Reason – This is to confirm the metal roofing and associated flashings are adequately installed.

N. Smoke Alarm.

A Class 1a building (dwelling) must be provided with hard wired smoke/s alarm in accordance with AS3786 - 2014. The smoke alarms must be located on or near the ceiling of every storey between each part of the dwelling containing bedrooms and the remainder of the dwelling, and where bedrooms are served by a hallway, in that hallway.

Comment:

There is an existing smoke alarm in the Living / Kitchen area of the proposed Secondary Dwelling. This requires relocation to the hallway outside the bedroom with certification from a licensed electrician.

Recommendation:

- m) That the existing smoke alarm be relocated to the hallway outside the bedroom with certification being obtained from a licensed electrical contractor that the smoke alarm to the Secondary Dwelling is hard wired, connected to the consumer mains and installed to comply with BCA Part 3.7.2 and AS3786- 2014.**

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

O. 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 existing elements that would have existing since the original building was constructed or any modifications have taken place. Depending on the status of the existing building, other aspects that may need to be considered include;

- (a) Structural Adequacy of existing building elements.
- (b) Termite risk management of existing building elements.
- (c) Glazing type of existing building elements.
- (d) Roof drainage and existing stormwater disposal system except as noted.

5) Limitations:

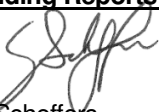
This report and assessment does not address issues in relation to the following:

- a) The Main Dwelling. This review relates to the Secondary Dwelling only.
- b) The provisions of the BCA, except as outlined above. The recommendations are not intended to provide a building that satisfies the current provisions of BCA as upgrading to achieve full compliance is normally deemed unreasonable. Acceptance and review of the level of any upgrade is at the discretion of Council.
- c) The BCA Structural Provisions of the building elements (unless specifically referred to).
- d) The design, maintenance or operation of any existing or proposed electrical, mechanical, hydraulic or fire protection services.
- e) Development Consent conditions of approval issued by the Consent Authority.
- f) Environmental Planning and Assessment Act, associated Regulations, Local Government Act and Regulations unless where nominated.
- g) Work Health & Safety Act / Regulations and WorkCover Authority requirements.
- h) Water, drainage, gas, telecommunications and electricity supply authority requirements.
- i) 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
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