

FINAL BUILDING CODE OF AUSTRALIA 2022 (VOLUME 2) REPORT

PROPOSED LAHC GENERAL HOUSING DEVELOPMENT CONSISTING OF 8 TOWNHOUSE DWELLINGS LOCATED AT 70-72 GORDON AVENUE, SOUTH GRANVILLE NSW

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REVISION HISTORY

Revision No.	Prepared by	Description	Date
R01	Frank De Pasquale	Draft Report for review and comment for DA submission	15/03/21
R02	Emrys Jones Coles	Final BCA Report for Part 5 Activity Determination	23/09/21
R03	Emrys Jones Coles	Final BCA Report for Part 5 Activity Determination	09/11/21
R04	Frank De Pasquale	Final BCA Report for Part 5 Activity Determination	25/10/22
R05	Mona Elkassar	Updated BCA Report to NCC 2022	16/06/23
R06	Rhoebee Clemente	Final BCA 2022 report for Part 5 Activity Determination	05/10/23

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1.0 Introduction and Documentation

At the request of NSW Land and Housing Corporation, we offer comments and recommendations in respect to Building Code of Australia 2022 – Volume 2 compliance for the proposed general housing development located at 70-72 Gordon Avenue, South Granville, NSW 2142.

This report contains a review concerning the capability of the proposed design to meet Volume 2 of the Building Code of Australia 2022 (BCA 2022) requirements as applicable in NSW. Areas of the design are still being refined so that resolution will be possible prior to the issue of a Crown Design Verification Certificate (S6.28 CDVC) in accordance with S6.28 of the Environmental Planning and Assessment Act 1979 for the works.

This report does not assess the impact of the Disability Discrimination Act (DDA) which is outside the scope of the BCA. BCA Volume Two does not reference compliance for access for people with disability. Accordingly, any access design amendments or additional information from a third-party Access Consultant (as recommended) shall be addressed prior to the issue of a Crown Design Verification Certificate (S6.28 CDVC).

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Documentation available and assessed:

The drawings assessed are those issued by Stanton Dahl Architects titled "90% Construction Certificate".

Drawing No. / Revision	Titled	Dated
DA00/01	Cover Sheet & Location Plan	27/09/2023
DA01/01	Site & Block Analysis Plan	27/09/2023
DA02/01	Demolition Plan	27/09/2023
DA03/01	Cut and Fill Plan	27/09/2023
DA04/01	Site & External Works Plan – Ground Plan	27/09/2023
DA05/01	Site & External Works Plan – First Floor	27/09/2023
DA06/01	Landscape & Deep Soil Diagrams	27/09/2023
DA07/01	Floor & Roof Plans (Block A)	27/09/2023
DA08/01	Ground Floor Plan (Block B)	27/09/2023
DA09/01	First Floor Plan (Block B)	27/09/2023
DA10/01	Roof Plan (Block B)	27/09/2023
DA11/01	Elevations (Sheet 12)	27/09/2023
DA12/01	Elevations (Sheet 13)	27/09/2023
DA13/01	Sections (Sheet 14)	27/09/2023
DA14/01	Sections (Sheet 15)	27/09/2023
DA18/01	External Colour Selection	27/09/2023

2.0 Building Code of Australia Assessment

Use and Class of Building

According to the Building Code of Australia the following definitions assist in the classification of the buildings and their various parts.

A6G1 Determining a building classification

- (1) The classification of a building or part of a building is determined by the purpose for which it is designed, constructed or adapted to be used.
- (2) Each part of a building must be classified according to its purpose and comply with all the appropriate requirements for its classification
- (3) A room that contains a mechanical, thermal or electrical facility or the like that serves the building must have the same classification as the major part or principal use of the building or fire compartment in which it is situated.
- (4) Unless another classification is more suitable an occupiable outdoor area must have the same classification as the part of the building to which it is associated.

Explanatory information:

- 1. Class 1 and 10 buildings are classified in accordance with this Part; and
- 2. Class 2 to 9 buildings are classified in accordance with <u>Section A</u> of BCA, Volume One.
- 3. Access requirements for people with a disability for certain Class 1b and Class 10a buildings, and certain Class 10b <u>swimming pools</u>, are contained in Volume One of the BCA. These requirements are based on the Disability (Access to Premises Buildings) Standards which are available from the Australian Government Attorney-General's Department website at <u>www.ag.gov.au</u>.

A6G2 Building Classifications:

Class 1 building is a dwelling and includes the following sub-classifications:

- (a) Class 1a is one or more buildings, which together form a single dwelling including the following:
 - (i) A detached house.
 - (ii) **One of a group of two or more attached dwellings**, each being a building, separated by a fireresisting wall, including a row house, terrace house, town house or villa unit.

Part H1 - Structure

Clause	Requirement	
H1D2	 Structural provisions A Class 1 or Class 10 building must be constructed in accordance with— (a) Section 2 of the ABCB Housing Provisions; or (b) the relevant provisions of H1D3 to H1D12; or (c) any combination thereof. 	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D2 is to be provided prior to the issue of the S6.28 CDVC.
H1D3	 Site preparation (1) Earthworks are to be in accordance with Part 3.2 of the ABCB Housing Provisions, provided that the site is classified as A, S, M, H or E in accordance with 4.2.2 of the ABCB Housing Provision. (2) Earth retaining structures are to be designed and constructed in accordance with AS 4678. (3) Compliance with Part 3.4 of the ABCB Housing Provisions is required for termite risk management. 	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D3 is to be provided prior to the issue of the S6.28 CDVC. A termite management system installation certificate will be required prior to issue of a Crown Occupation Verification Certificate (COVC).
H1D4	 Footings and slabs (1) Footings and slabs are to be designed and constructed in accordance with either (a) or (b): (a) One of the following: (i) AS 2870. (ii) AS 3600. (b) Subject to (2), Section 4 of the ABCB Housing Provisions. 	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D4 is to be provided prior to the issue of the S6.28 CDVC.
H1D5	 Masonry (1) Masonry veneer is to be designed and constructed in accordance with— (a) AS 3700; or (b) AS 4773.1 and AS 4773.2; or (c) Subject to (c)(i) to (c)(vi), Part 5.2 of the ABCB Housing Provisions. (2) Cavity brick unreinforced masonry is to be designed and constructed in accordance with: (a) AS 3700; or (b) AS 4773.1 and AS 4773.2; or (c) Subject to (c)(i) to (c)(v), Part 5.3 of the ABCB Housing Provisions. (3) Single leaf unreinforced masonry is to be designed and constructed in accordance with: (a) AS 3700; or (b) AS 4773.1 and AS 4773.2; or (c) Subject to (c)(i) to (c)(v), Part 5.3 of the ABCB Housing Provisions. (3) Single leaf unreinforced masonry is to be designed and constructed in accordance with: (a) AS 3700; or (b) AS 4773.1 and AS 4773.2; or (c) Subject to (c)(i) to (c)(v), Part 5.4 of the ABCB Housing Provisions. (4) Reinforced masonry is to be designed and constructed in accordance with: (a) AS 3700, except – (i) '(for piers-isolated or engaged)' is removed from clause 8.5.1(d); and (ii) Where clause 8.5.1 requires design as for unreinforced masonry in accordace with 	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D5 is to be provided prior to the issue of the S6.28 CDVC.

	 Section 7, the member mmust also be designed as unreinforced masonry in accordance with Table 10.3 and 4.1(a)(i)(C) of AS 3700; or (b) AS 4773.1 and AS 4773.2. (5) An isolated masonry pier system is to be designed and constructed in accordance with one of the following, as appropriate: (a) AS 3700, except— (i) '(for piers—isolated or engaged)' is removed from clause 8.5.1(d); and (ii) where clause 8.5.1 requires design as for unreinforced masonry in accordance with Section 7, the member must also be designed as unreinforced masonry in accordance with Table 10.3 and 4.1(a)(i)(C) of AS 3700. (b) AS 4773.1 and AS 4773.2. (c) Subject to (c)(i) to (c)(vii), Part 5.5 of the ABCB Housing Provisions. 	
H1D6	 Framing (1) Diagrams depicting framing members and associated terminology used to describe them are set out in Figures H1D6c, H1D6d and H1D6e, and in most cases are applicable for both steel and timber frame members. (2) Terminology and spacing for structural steel members are set out in Tables H1D6a and H1D6b, and Figures H1D6a, H1D6b and H1D6f. (3) Steel framing is to be designed and constructed in accordance with one of the following: (a) Residential and low-rise steel framing: (i) Design: NASH Standard 'Residential and Low-Rise Steel Framing' Part 1. (ii) Design solutions: NASH Standard 'Residential and Low-Rise Steel Framing' Part 2. (b) Steel structures: AS 4100. (c) Cold-formed steel structures: AS/NZS 4600. (4) Timber framing is to be designed and constructed in accordance with the following, as appropriate: (a) Design of timber structures: AS 1720.1. (b) Design of nailplated timber roof trusses: AS 1720.5. (c) Residential timber-framed construction – noncyclonic areas: AS 1684.2 or AS 1684.4. (d) Residential timber-framed construction – cyclonic areas: AS 1684.3. (e) Installation of particleboard flooring: AS 1860.2. (5) Structural steel sections are to be designed and constructed in accordance with one of the following: (a) Steel structures: AS 4100. (b) Cold-formed steel structures: AS/NZS 4600. (c) For structural stability, strength and deflection, and subject to (6), Part 6.3 of the ABCB Housing Provisions. (d) For corrosion protection, clause 6.3.9 of Part 6.3 of the ABCB Housing Provisions. 	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D6 is to be provided prior to the issue of the S6.28 CDVC.



H1D7	 Roof and wall cladding (1) Diagrams depicting relevant roofing and supporting members and associated terminology used to describe them are set out in Figure H1D7a and Figure H1D7b. (2) Performance Requirement H1P1 is satisfied for sheet roofing if it complies with one or a combination of the following: (a) Metal roofing: (i) AS 1562.1; and (ii) in wind regions C and D in accordance with Figure 2.2.3 in Section 2 of the ABCB Housing Provisions (cyclonic areas), metal roof assemblies, their connections and immediate supporting members must be capable of remaining in position notwithstanding any permanent distortion, fracture or damage that might occur in the sheet or fastenings under the pressure sequences A to G defined in Table H1D7. (b) Plastic sheet roofing: Part 7.2 of the ABCB Housing Provisions, provided the building is located in an area with a wind class of not more than N3. (3) Performance Requirement H1P1 is satisfied for roof cladding if it complies with one or a combination of the following: (a) Terracotta, fibre-cement and timber slates and shingles: AS 4597. (b) For roof tiles— (i) AS 2050; or (ii) Subject to (ii)(A) to (ii)(C), Part 7.3 of the ABCB Housing Provisions. (4) Timber and composite wall cladding is to be designed and constructed in accordance with— (a) for autoclaved aerated concrete wall cladding, AS 5146.1; or (b) for wall cladding, Part 7.5 of the ABCB Housing Provisions. 	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D7 is to be provided prior to the issue of the S6.28 CDVC.
	(5) Metal wall cladding is to be designed and constructed in accordance with AS 1562.1.	
H1D8	 Glazing (1) Glazing and windows are to be— (a) designed and constructed in accordance with AS 2047 for glazed assemblies in an external wall including— (i) windows, other than those listed in (2); and (ii) sliding and swinging glazed doors with a frame, including French and bi-fold doors with a frame; and (iii) adjustable louvres; and (iv) window walls with one-piece framing; and (b) installed such that they comply with— (i) AS 2047; and (ii) Subject to (ii)(A) to (ii)(B), Part 8.2 of the ABCB Housing Provisions. 	A glazing installation certificate is to be provided prior to issue of the S6.28 COVC. Vision bands are required to full height glazed doors / panels.

	 (b) be designed and constructed in accordance with AS 1288 (3) Glazed assemblies at risk of human impact are to – (a) Be designed, constructed and installed in accordance with (1) For glass, AS 1288; and (2) For windows, AS 2047; or (b) Comply with Part 8.4 of the ABCB housing Provisions. 	
H1D9	Earthquake areas Buildings in areas subject to seismic activity must be constructed in accordance with Section 2 of the ABCB housing Provisions.	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D9 is to be provided prior to the issue of the S6.28 CDVC.
H1D10	Flood hazard areas Buildings in a flood hazard area must be constructed in accordance with the ABCB Standard for Construction of Buildings in Flood Hazard Areas.	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D10 is to be provided prior to the issue of the S6.28 CDVC.
H1D11	Attachment of framed decks and balconies to external walls of buildings using a waling plate The attachment of a deck or balcony to an external wall is to comply with Part 12.3 of the ABCB Housing Provisions, subject to (a) to (I).	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D11 is to be provided prior to the issue of the S6.28 CDVC.
H1D12	Piled footings Piled footings are to be designed and installed in accordance with AS 2159	A structural design certificate, drawings and specifications specifying compliance with the requirements of H1D12 is to be provided prior to the issue of the S6.28 CDVC.

Part H2 – Damp and weatherproofing

Clause	Requirement	Comment
H2D2	 Drainage Drainage is to be designed and constructed in accordance with – (a) AS/NZS 3500.3; or (b) provided the stormwater drainage system otherwise complies with (a), Part 3.3 of the ABCB Housing Provisions for drainage of— (i) roofs in areas subject to 5 minute duration rainfall intensities of not more than 255 mm per hour over an annual exceedance probability of 5%, where a drainage system is required; and (ii) sub-soil areas where excessive soil moisture problems may occur; and (iii) land adjoining and under buildings. 	A civil design certificate, drawings and specifications specifying compliance with H2D2 is to be provided prior to the issue of the S6.28 CDVC.
H2D3	Footings and slabs Footings and slabs are to be installed in accordance with	A structural design certificate, drawings and specifications



	H1D4(1)(a) or (b).	specifying compliance with H1D4 is to be provided prior to the issue of the S6.28 CDVC.
H2D4	 Masonry Weatherproofing of masonry is to be carried out in accordance with the appropriate provisions of one of the following: (a) AS 3700. (b) AS 4773.1 and AS 4773.2. (c) Part 5.7 of the ABCB Housing Provisions provided masonry walls are constructed in accordance with H1D5. 	An architectural design certificate, drawings and specifications specifying compliance with H2D4 is to be provided prior to the issue of the S6.28 CDVC.
H2D5	Subfloor ventilation Subfloor ventilation is to be in accordance with Part 6.2 of the ABCB Housing Provisions.	A structural design certificate, drawings and specifications specifying compliance with H1D4 is to be provided prior to the issue of the S6.28 CDVC.
H2D6	 Roof and wall cladding (1) Gutters and downpipes are to be designed and constructed in accordance with one of the following: (a) Subject to (2), AS/NZS 3500.3. (b) Subject to (2) and (3), Part 7.4 of the ABCB Housing Provisions. (4) Roof and wall cladding is to be in accordance with H1D7(2), (3), (4), or (5) as appropriate. 	A civil design certificate, drawings and specifications specifying compliance with H2D6 is to be provided prior to the issue of the S6.28 CDVC.
H2D7	Glazing Weatherproofing for glazing is to be in accordance with H1D8(1).	An architectural design certificate, drawings and specifications specifying compliance with H2D7 is to be provided prior to the issue of the S6.28 CDVC.
H2D8	 External waterproofing (a) Membranes used in the external waterproofing system is to comply with H1D7(2) and (3); and (b) The design and installation of the external waterproofing system is in accordance with AS 4654.2. 	An architectural design certificate, drawings and specifications specifying compliance with H2D8 is to be provided prior to the issue of the S6.28 CDVC.

Part H3 - Fire Safety

Clause	Requirement	Comment
H3D2	 Fire hazard properties and non-combustible building elements (1) The following materials, though combustible or containing combustible fibres, may be used wherever a non-combustible material is required: (a) Plasterboard. (b) Perforated gypsum lath with a normal paper finish. (c) Fibrous-plaster sheet. (d) Fibre-reinforced cement sheeting. (e) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thick and where the Spread-of-Flame Index of the product is not more than 0. (f) Sarking-type materials that do not exceed 1 mm in 	Fire hazard indices test data sheets required for assessment if sarking- type materials are to be used in the ceiling/roof system. Details to be provided prior to issue of S6.28 CDVC.

	 thickness and have a Flammability Index not greater than 5. (g) Bonded laminated materials where— (i) each lamina, is non-combustible; and (ii) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and (iii) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively. (2) Fire hazard properties of materials, to comply with the following: (a) Sarking-type materials used in the roof must have a Flammability Index not greater than 5. (b) Flexible ductwork used for the transfer of products initiating from a heat source that contains a flame must comply with the fire hazard properties set out in AS 4254.1. 	
H3D3	Fire separation of external walls Fire separation of external walls are to comply with Part 9.2 of the ABCB Housing Provisions.	Current plans appear to comply. All external walls and openings of each building are greater than 900mm from any boundaries, and greater than 1.8m from other buildings on the same allotment. Hence, not applicable.
H3D4	Fire protection of separating walls and floor Fire protection of separating walls and floors are to comply with Part 9.3 of the ABCB Housing Provisions.	A structural design certificate, drawings and specification of the separating walls to be provided prior to the issue of the S6.29 CDVC. Where lightweight construction is used, test reports are to be provided.
H3D6	Smoke alarms and evacuation lighting smoke alarms and evacuation lighting are to comply with Part 9.5 of the ABCB Housing Provisions.	An electrical design certificate, drawings and specifications specifying compliance with the H3D6 is to be provided prior to the issue of the S6.28 CDVC.

Part H4 – Health and amenity

Clause	Requirement	Comment
H4D2	Wet areas Compliance with AS 3740 or Part 10.2 of the ABCB Housing Provisions satisfies Performance Requirement H4P1 for wet areas provided the wet areas are protected in accordance with the appropriate requirements of 10.2.1 to 10.2.6 and 10.2.12 of the ABCB Housing Provisions.	Compliance achievable. An architectural design certificate, drawings and specifications specifying compliance with H4D2 is to be provided prior to the issue of the S6.28 CDVC.
H4D3	Materials and installation of wet area components and systems Performance Requirement H4P1 is satisfied for materials and the installation of wet area components and systems if— (a) building elements in wet areas are water resistant or	Compliance achievable. An architectural design certificate, drawings and specifications specifying compliance with H4D3 is to be provided prior to the issue of

	 waterproof in accordance with clauses 10.2.1 to 10.2.6 of the ABCB Housing Provisions; and (b) they comply with either— (i) AS 3740 and clause 10.2.12 of the ABCB Housing Provisions; or (ii) 10.2.7 to 10.2.32 of the ABCB Housing Provisions. 	the S6.28 CDVC.
H4D4	Room heights Room heights to comply with Part 10.3 of the ABCB Housing Provisions.	Current plans appear to comply.
H4D5	Facilities Facilities to comply with Part 10.4 of the ABCB Housing Provisions.	Current plans appear to comply.
H4D6	Light Lighting to comply with Part 10.5 of the ABCB Housing Provisions.	An electrical design certificate, drawings and specifications specifying compliance with H4D6 is to be provided prior to the issue of the S6.28 CDVC.
H4D7	 Ventilation (1) Except for an exhaust fan from a sanitary compartment, laundry, kitchen or bathroom, Performance Requirement H4P5 is satisfied for a mechanical ventilation system if it is installed in accordance with AS 1668.2. (2) Ventilation to comply with Part 10.6 of the ABCB Housing Provisions. 	Compliance achievable. A mechanical design certificate, drawings and specifications specifying compliance H4D7 is to be provided prior to the issue of the S6.28 CDVC.
H4D8	Sound insulation Sound insulation to comply with Part 10.7 of the ABCB Housing provisions.	Compliance achievable. An acoustic or architectural design certificate, drawings and specifications specifying compliance with H4D8 is to be provided prior to the issue of the S6.28 CDVC.
H4D9	Condensation management Condensation management to comply with Part 10.8 of the ABCB Housing Provisions.	Compliance achievable. An architectural design certificate, drawings and specifications specifying compliance with H4D9 is to be provided prior to the issue of the S6.28 CDVC.

Part H5 – Safe movement and access

Clause	Requirement	Comment
H5D2	Stairway and ramp construction Stairway and ramp construction to comply with Part 11.2 of the ABCB Housing Provisions.	Compliance readily achievable. An architectural design certificate, drawings and specifications specifying compliance with the requirements of H5D2 is to be provided prior to the issue of the S6.28 CDVC.
H5D3	Barriers and handrails Barriers and handrails to comply with Part 11.3 of the ABCB Housing Provisions.	Compliance readily achievable. An architectural design certificate, drawings and specifications specifying compliance with the requirements of H5D3 is to be

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Part H6 – Energy Efficiency

Clause	Requirement	Comment
H6D2	 Energy Efficiency (1) The thermal performance of the building is to— (a) comply with S42C2, using house energy rating software and S42C4(1); or (b) comply with the following parts of the ABCB Housing Provisions— (i) Part 13.2, for the building fabric; and (ii) Part 13.3, for the external glazing and shading; and (iii) Part 13.4, for building sealing; and (iv) Part 13.5, for ceiling fans. (2) Energy usage of the building is to — (a) comply with S42C3 using house energy rating software and S42C4(2); or (b) comply with Parts 13.6 and 13.7 of the ABCB Housing Provisions for a building with a total floor area not greater than 500 m². 	A BASIX certificate is to accompany the Activity Submission or REF to ensure compliance. A copy of the BASIX certificate is to be provided prior to issue of a S6.28 CDVC.

Part H7 – Ancillary provisions and additional construction requirements

Clause	Requirement	Comment
H7D4	 Construction in bushfire prone areas The building is to be constructed in accordance with— (a) AS 3959; or (b) NASH Standard – Steel Framed Construction in Bushfire Areas. 	The subject land is not identified as bush fire prone.

3.0 Conclusion

We have assessed the drawings with respect to the Building Code of Australia 2022 (Volume 2). We are confident that the design is generally capable of meeting the Deemed-to-Satisfy and Performance Requirements of the Building Code of Australia 2022 (Volume 2). Areas of the design are still being developed but are unlikely to impact on the REF Submission, these areas of the design will be addressed prior to issue to issue of S6.28CDVC.