BUILDING CODE OF AUSTRALIA REPORT

Masters Repurposing
Forrester Road, St. Marys NSW
Prepared for Home Consortium

Revision A dated 7/12/2016

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Date	Rev No	No. of Pages	Issue or Description of Amendment	Checked By	Approved By	Date Approved
7.12.16	A	18	Preliminary	Joel Lewis	Geoffrey Pearce	7.12.16

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Executive Summary

Development Overview

The proposed development is for the repurposing of the Masters located at Forrester Road, St. Marys NSW for Home Consortium. The existing building is large single storey retail & trade building of approximately 12,202m2 in floor area.

The proposed development seeks to modify the existing building to incorporate eight no.8 new bulky goods tenancies with a common mall area and café.

Compliance Summary Overview

As Accredited Certifiers, we have reviewed architectural design documents prepared by The Buchan Group (refer appendix A) for compliance with the Building Code of Australia 2016, and the state-based legislative provisions relating to existing buildings.

The compliance approach for the repurposing can be summarised as follows:

(1) Establish the original building design principles through a detailed review of the available documentation and approvals history for the site; and
(2) Undertake a detailed BCA compliance assessment of the proposed works to assess the implications of the changes on the original compliance approach adopted for the building; and
(3) Engage with the project Fire Safety Engineer in areas where the original fire safety outcomes need to be reanalysed as part of the proposed works.

Performance Solutions

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

No.	Alternative Solution Description	DTS Clause	Performance Requirement
1.	Extended travel distances of up to 110m in lieu of 40m where two exits are available. Extended travel distance between exits of 100m in lieu of 60m.	D1.4, D1.5	DP1.4 & EP2.2
2.	Smoke exhaust system to be rationalised on a performance basis.	E2.2	DP4 & EP2.2
3.	Aggregate egress width of 19m has been provided in lieu of 27.5m. To be addressed through a Fire Engineered Performance Solution or further design development.	D1.6	DP6

The fire engineered solution relating to EP2.2 will need to be approved after consultation with the NSW Fire Brigade as part of the Construction Certificate process.

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

Assessed by,

Joel Lewis
McKenzie Group Consulting

1 INTRODUCTION

The proposed development is for the repurposing of the existing Masters store located at Forrester Road, St. Marys NSW for Home Consortium. The existing building is large single storey retail and trade building of approximately 12,202m2 in floor area, and from the information available was originally constructed in the year 2014 under BCA 2014 provisions.

The proposed development seeks to modify the existing building to incorporate eight no.8 new retail tenancies with a common mall area and Café.

This report is based upon the review of the design documentation listed in Appendix A of this Report. The report is intended as an overview of the relevant provisions of the Building Code of Australia for assistance only. Detailed drawings and associated review will still be required as the final design is developed.

1.1 Applicable Legislation

The applicable legislation governing the design of buildings is the Environmental Planning and Assessment Act 1979. This Act requires that all new building works must be designed to comply with the BCA.

The version of the BCA applicable to the development, is version that in place at the time of the application to the Certifying authority for the Construction Certificate.

Therefore the applicable BCA year to the proposed work is BCA 2016.

1.2 Upgrade to Existing Buildings

The local authority when assessing the development application may require that the existing building be brought into partial on full compliance with the current provisions at the BCA. The trigger for upgrade includes:

- Where the building works, together with any other works completed or authorised within the previous 3 years, represents more than half the total volume of the building; or
- Where Council are not satisfied that the measures contained in the building are adequate for the safety of the present use of the building.

As mentioned above, it is recommended that an upgrade strategy that has been agreed upon by the design team be submitted as part of the Development Application process. This is to include the upgrade works proposed, the alternate solutions proposed and a schedule of items that are not being altered and not proposed to be upgraded. Timing for proposed upgrade works should also be included in the strategy.

The State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 have the following requirements for commercial alterations and additions:

(a) If the building that is being altered is subject to an alternative solution relating to a fire safety requirement—the alteration must be consistent with that alternative solution,
(b) if the alteration involves an area of more than 500m^{2}of commercial premises, or an area of more than 1,000m^2 of premises used for light industry or a warehouse or distribution centre—that area must:
(i) Comply with the requirements set out in DP2–DP5 of Volume 1 of the *Building Code of Australia*, and
(ii) comply with the number of sanitary and other facilities set out in FP2.1, FP2.5 and FP2.6 of Volume 1 of the *Building Code of Australia*, and
(iii) Comply with the light and ventilation requirements set out in FP4.1–FP4.5 of Volume 1 of the *Building Code of Australia*,

2 PERFORMANCE SOLUTIONS

A review of the Occupancy Permit and the original Fire Engineering Report prepared by AECOM has identified that the original development was subject to performance solutions for the following items:

Existing Performance Solutions

No.	Alternative Solution Description	DTS Clause	Performance Requirement
1.	The automatic sliding door at the main entrance will not be provided with fail safe3 on fire trip during out of hours trading.	D2.19	DP4

Based on a review of the current design scheme for the building, the following performance solutions (which vary from the existing solutions) are to be considered by the project Fire Safety Engineer.

3 PRELIMINARIES

3.1 Building Assessment Data

Summary of Construction Determination: -

Part of Project	
Classification	6
Number of Storeys	1
Rise In Storeys	1
Type of Construction	Type C (Large isolated Building)
Effective Height (m)	<12m
Climate Zone	6

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

Part of Project	BCA Classification	Approx. Floor Area (m^2)	Approximate Volume (m^3)	Assumed Population
Tennant 1	6	845	TBC	282
Tennant 2	6	926	TBC	309
Tennant3	6	490	TBC	164
Tennant 4	6	980	TBC	327
Tennant 5	6	2,100	TBC	700

Tennant 6	6	522	TBC	174
Tennant 7	6	595	TBC	199
Tennant 8	6	915	TBC	305
Ancillary Café	6	86	TBC	86
Mall	6	1,058	TBC	353
Total	**6**	**8,517**	**TBC**	**2,899**

Notes:
1. The above populations have been based on the floor areas and calculations in accordance with Table D1.13 of the BCA.
2. 30% has been allowed off the specified floor areas to allow for racking and back of house areas

3.2 Structural Provisions BCA B1

Any new structural works associated with the project (e.g. closing in the garden roof) are to comply with the applicable requirements of AS/NZS 1170.0-2002, AS/NZS 1170-1-2002, and AS/NZS1170.2-2011.

Pursuant to Clause B1.2 (Table B1.2a and B1.b) of the BCA the importance level of the building is expected to be Level 2.

The structural engineer will need to consider the existing and any proposed precast walls to ensure they be designed to collapse inwards as per the requirements of BCA Clause C1.11, Specification C1.11.

Where fire shield walls are required to protect external fire hydrants, the design of panel is to ensure that a minimum 90/90/90 FRL can be achieved as per AS2419.1, alternatively the report and consent of the fire authority may be required to vary this requirement.

4 FIRE PROTECTION

4.1 Fire Compartmentation BCA C1.1

As the existing building exceeds the floor area and volume limitations of the BCA, the building is considered a large isolated building and the following provisions apply:

- Automatic sprinkler protection to AS2118.1 and BCA specifications E1.5 is required throughout the entire building; and
- Perimeter emergency vehicular access 6m wide located within 18m of the entire building perimeter.

It is noted that the existing perimeter vehicle access is not BCA deemed to satisfy and that a Fire Engineered Performance Solution is in place.

4.2 Fire Resistance BCA C1.1

The existing building should have been constructed in accordance with the relevant provisions of Specification C1.1 applicable to Type C Construction. Based on the proximity of the building to fire source features, no building elements would have been required to achieve an FRL.

The repurposing scope of works does not impose any additional fire rated construction requirements to that which would have existed at the time of construction.

4.3 Fire Hazard Properties — BCA C1.10 and BCA C1.12

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

Sprinkler Protected Areas

- Floor Coverings – Critical radiant Flux not less than 1.2 kW/m^2;
- Wall and Ceiling Linings – Material Group No. 1, 2 or 3;
- Other Materials – Spread of Flame Index not exceeding 9 and Smoke Developed Index not exceeding 8;
- Rigid and flexible air handling ductwork must comply with AS4254 parts 1 & 2 2012.

5 EGRESS PROVISIONS

5.1 Provisions for Escape — BCA D1

The egress provisions from the building comprise external perimeter doorways, most of which are proposed to be retained. As outlined below a detailed reassessment of the egress provisions has been undertaken to assess the implications of existing egress measures.

5.2 Exit Travel Distances — BCA D1.4 and D1.5

The prescribed travel distances to exits are as follows under the BCA:

Class 5-9

- For Class 5 or 6 tenancies that open directly to the outside, a maximum distance of 30m to a single exit is permitted.
- 20m to a single exit or point of choice and where two exits are provided, a maximum of 40m to one of those exits; and
- Exits shall be located to not be more than 60m apart and not closer than 9m

The original building included extended travel distances and distances between alternative exits. As the repurposing works will alter the existing egress a measure, a reassessment has been completed which has revealed the following:

- Extended travel distances of up to 110m in lieu of 40m where two exits are available.
- Up to 100m between alternative exits in lieu of 60m.

The Fire Safety Engineer will need to assess/reassess the above extended travel distances and distances between alternative exits as a performance solution using BCA Performance Requirements DP4 and EP2.2.

5.3 Dimensions of Exits — BCA D1.6

Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm.
The following table summarises the exit widths required by BCA Clause D1.6:

Area	Number of People	Exit Width Required	Exit Width Provided
Tennant 1	282	3m	3m
Tennant 2	309	3m	0m

Tennant3	164	1.75m	1m
Tennant 4	327	3m	0m
Tennant 5	700	5.5m	3m
Tennant 6	174	1.75m	0m
Tennant 7	199	2m	0m
Tennant 8	305	3m	8m
Café	86	1m	0m
Mall	353	3.5m	4m
Total Population	**2,899**	**27.5m**	**19m**

Fire engineering may be sought for additional reduced aggregate egress width or additional doors may be provided.

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm, with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 920 mm doors).

5.4 Balustrading and Handrails — BCA D2.16 and BCA D2.17

Generally

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

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

5.5 Slip Resistance

Pursuant to Clause D2.14 of the BCA, the following provisions relate to slip resistance of stairway treads and ramp surfaces:

Application	Surface conditions	
	Dry	Wet
Ramp steeper than 1:14	P4 or R11	P5 or R12
Ramp not steeper than 1:14	P3 or R10	P4 or R11
Tread or landing surface	P3 or R10	P4 or R11
Nosing or landing edge strip	P3	P4

5.6 Sliding Doors & Roller Shutter Doors

Power operated sliding doors that open directly to open space must open automatically if there is a power failure to the door or on the activation of the fire or smoke alarm anywhere in the fire compartment linked to the door.

Roller shutter doors must not be fitted within a required exit or door forming part of a required exit unless the building or part has a floor area not more than 200m², and the doorway is the only required exit from the building or part, and the door is held in the open position while the building or part is lawfully occupied.

6 ACCESS FOR PEOPLE WITH DISABILITIES

6.1 General Building Access Requirements BCA D3.1

Access for people with disabilities shall be provided to and within all areas normally used by the occupants in accordance with the requirements of Clause D3.2, D3.3 and D3.4 of the BCA 2016. Parts of the building required to be accessible shall comply with the requirements of:-

- AS1428.1-2009 General Requirements for Access – New Building Work;
- AS1428.4-2009 Tactile Ground Surface Indicators
- AS2890.6-2009 Car Parking for People with Disabilities

6.2 Provision for Access to Buildings

The BCA prescribes access to be provided to and within the building as follows:

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

In buildings over 500m2 in floor area, a non-accessible entrance must not be located more than 50m from an accessible entrance.

Given the relatively recent construction of the building, the external access ways are expected to generally comply with current provisions.

6.3 Provisions for Access within Buildings BCA D3.3

Within the building the following are required;

- Door circulation space as per AS1428.1 Clause 13.3;
- Doorways must have a clear opening of 850mm (920mm minimum door leaf);
- Passing spaces (1.8m wide passages) must be provided at maximum of 20m intervals
- Within 2.0m of end access ways/corridors, turning areas spaces are required to be provided.
- Carpet pile height of not more than 11mm to an adjacent surface
- Any glazed capable of being mistaken for a doorway or opening must be clearly marked (or contain chair rail, hand rail or transom as per AS 1288 requirements)

The base building design would generally comply with the prescriptive provisions of the BCA with additional ongoing review being undertaken to determine compliant door widths, doorway and corridor circulation, etc.

6.4 Car parking BCA D3.5

Accessible car parking spaces are required to be provided within the off-street car park based on a ratio of 1 space per 50 car spaces (where up to 1000 car spaces are proposed). The existing carpark layout includes 354 spaces, thus requiring 8 dedicated car spaces.

The current carpark layout includes 8 dedicated spaces, which complies with the above requirements

Car spaces shall be designed in accordance with AS2890.6. The car park spaces shall be a minimum 2.4m wide x 5.4m (long). The same provisions apply to the shared spaces.

6.5 Tactile Indicators BCA D3.8

Tactile indicators are required to be provided to warn occupants of all stairs (except Fire Isolated stairs) and ramps regardless of public nature or private environment and where an overhead obstruction occurs less than 2.0m above the finished floor level.

7 FIRE SERVICES AND EQUIPMENT

The following section of this report describes the essential fire safety measures and the minimum performance requirements of those measures and is based on the existing information available for the building which outlines the existing measures currently in place.

7.1 Fire Hydrants BCA E1.3

A system of Fire Hydrants is understood to be provided in accordance with BCA Clause E1.3 and AS2419.1-2005, including a booster assembly. Standards of performance as confirmed by review of the Annual Fire Safety Statement.

The details of this existing system will need to be reviewed in relation to the following:

- The suitability of the existing booster and pump room locations;
- The presence of a fire hydrant ring main with accessible isolated valve locations;
- Confirmation as to the current standard of performance meets the requirements of AS2419.1-2005
- Coverage, design, pressures and flows to be demonstrated they are sufficient for base build and fit it out works.

7.2 Fire Hose Reels BCA E1.4

A fire hose reel system is understood to have been provided in accordance with BCA Clause E1.4 and AS2441-2005. Standards of performance as confirmed by review of the Annual Fire Safety Statement.

An assessment of fire hose reel coverage for the new layout will need to be undertaken, ensuring the appropriate flexibility is include for future tenant fitout, from the Hydraulic Consultant.

7.3 Fire Extinguishers

BCA Table E.6 details when portable fire extinguishers are required:

Occupancy Class	Risk Class (as defined in AS 2444)
General provisions	(a) To cover Class AE or E fire risks associated with emergency services switchboards. (b) To cover Class F fire risks involving cooking oils and fats in kitchens. (c) To cover Class B fire risks in locations where flammable liquids in excess of 50 litres are stored or used (not excluding that held in fuel tanks of vehicles).

7.4 Automatic Sprinkler Protection BCA E1.5

Automatic sprinkler protection is required to Specification E1.5 and AS2118.1-1999 throughout the entire building. Standards of performance as confirmed by review of the Annual Fire Safety Statement.

An assessment of the suitability of the existing installation is to be undertaken by the fire services consultant as part of the repurposing works.

Other items to note:

- Project fire engineer to determine whether fast response sprinkler heads will be required. in accordance with the outcomes of the Fire Engineering Report.
- Location of the sprinkler control valves and sprinkler zones are to be documented by fire services engineer.
- The capacity of the on-site static storage tank is to be determined and confirmed by the fire services engineer.
- The sprinkler hazard classification is to be determined by the fire services engineer.
- Coverage, and design to be demonstrated they are sufficient for base build and fit it out works.

7.5 Exit Signs and Emergency Lighting — BCA E4.2 and BCA E4.5

Emergency Lighting and Exit Signs indicating exit location paths of travel to exits to be provided in accordance with AS2293.1-2005 to suit the new layout.

7.6 Smoke Hazard Management — BCA E2.2

The building requires an automatic smoke exhaust system complying with BCA Specification E2.2b. It is understood that the building includes a performance based smoke exhaust system utilising Fusion Fans which were assessed as part of the original Fire Engineering Report, including:

- Rationalisation of smoke exhaust performance through Fire Engineering process to meet performance requirement EP2.2

The repurposing works seek to subdivide the building into a number of smaller retail tenancies separated by part-height intertenancy walls, with a common mall area. Whilst the building will still effectively operate as one smoke reservoir, the impact of this redesign on smoke exhaust performance and occupant/fire brigade safety will need to be reassessed by the Fire Safety Engineer as part of the project.

Based on the new internal building layout, smoke hazard management provisions required are as follows:

- Common mall; and
- Tenancies greater than 1000m² in floor area opening into the mall.

The following DTS provisions are referenced in BCA Specification E2.2a & E2.2b:

- Smoke detectors are to be installed in location as prescribed by AS1670.1-2015
- Activate a building occupant warning system designed as per the requirements of Clause 6 of Specification E2.2a.
- Smoke reservoirs are not permitted to exceed 2000m² or 60m in length in enclosed malls, unless addressed through a Fire Engineered Performance Solution.
- A provision for make-up air via automatic or permanent ventilation openings needs to be considered and articulated through the Fire Engineering process.

Variations to the above requirements will need to be presented by the mechanical services engineer and supported by the project fire engineer.

8 HEALTH AND AMENITY

8.1 Sanitary Facilities — BCA F2.2 and BCA F2.3

<u>Retail</u>

Sanitary facilities are required to be provided for employees and the public in accordance with BCA Clause F2.3 requirements.

The exact number of staff is to be provided by Home Consortium for further analysis.

The anticipated design populations are as follows:

- Staff – Assume 116 persons
- Public – Assume 2,899 persons

The above numbers are based on a ratio of 25:1, public to staff.

Public

For the main part of the building, to cater for up to 2685 patrons, which includes patrons within all tenancies (including cafe), the following minimum sanitary facilities are required:

Sanitary Facilities Required			
	WC	Urinals	Basins
Male	1	2	1
Female	1	-	2
Accessible	1	-	1

It is noted the proposed amenities shown is sufficient for the public numbers above.

Staff

For staff:

To cater for up to 88 staff occupying the tenancies, the following minimum sanitary facilities are required:

Sanitary Facilities Required			
	WC	Urinals	Basins
Male	2	2	1
Female	3	-	1
Accessible	1	-	1

Notes
The Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2009.

8.2 Floor Wastes **BCA F1.11**

Floor wastes are required to be provided where wall hung urinals are provided and the floor shall be sloped towards these wastes.

8.3 Light and Ventilation **BCA Part F4**

The implications of the redesign on light and ventilation provisions will need to assess including:

- New or altered mechanical ventilation systems must comply with AS1668.2-2012
- New or altered artificial lighting must comply with AS/NZS1680.0-2009

If tenancy fit out works over 500m2 are carried out under the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 the light and ventilation is required to comply with the light and ventilation requirements set out in FP4.1–FP4.5 of Volume 1 of the Building Code of Australia.

9 ENERGY EFFICIENCY

The existing building is assumed to have been assessed against the relevant provisions of BCA Section J, as applicable at the time construction. The proposed works do not seek to significantly alter the existing building fabric, and as the use has not changed, a reassessment and/or upgrade to meet current Section J requirements is not considered necessary.

The following approach should be adopted with respect to Section J compliance for the project:

- The new roof and walls of the garden centre (which are to be enclosed) shall comply with current Section J1 requirements
- New or altered mechanical ventilation and air conditioning systems shall comply with current Section J5 requirements;
- New or altered artificial lighting and power installations shall comply with current Section J6 requirements.
- Energy monitoring facilities shall comply with Section J8 requirements.

Appendix A - Design Documentation

The following documentation was used in the assessment and preparation of this report: -

Drawing No.	Title	Date	Drawn By	Revision
ATP-1001	Site Plan	21/11/16	The Buchan Group	P01
ATP-2001	Proposed Plan	21/11/16	The Buchan Group	P01
ATP-2002	Roof Plan	21/11/16	The Buchan Group	P01
ATP-4001	Elevations	21/11/16	The Buchan Group	P01
ATP-5001	Sections	21/11/16	The Buchan Group	P01

Appendix B – Fire Resistance Levels
Table 5 TYPE C CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	Class of building—FRL: (in minutes)			
	Structural adequacy/*Integrity*/*Insulation*			
	2, 3 or 4 part	5, 7a or 9	6	7b or 8
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any *fire-source feature* to which it is exposed is—				
Less than 1.5 m	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
1.5 to less than 3 m	–/–/–	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is—				
Less than 1.5 m	90/–/–	90/–/–	90/–/–	90/–/–
1.5 to less than 3 m	–/–/–	60/–/–	60/–/–	60/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90	90/ 90/ 90
INTERNAL WALLS-				
Bounding *public corridors*, public lobbies and the like—	60 / 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—	60/ 60/ 60	–/–/–	–/–/–	–/–/–
Bounding a stair if *required* to be rated—	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60	60/ 60/ 60
ROOFS	–/–/–	–/–/–	–/–/–	–/–/–

Appendix C – BCA Mark Up's