BUILDING REGULATION & FIRE SAFETY ENGINEERING CONSULTANTS

Project:	**CARDINAL FREEMAN VILLAGE – S75W MODIFICATION STAGE 1**
Report:	**BCA ASSESSMENT REPORT**
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DOCUMENT CONTROL

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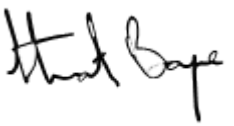
100108-r15/sb	**18th October 2012**	**Description:**	Revised Final BCA Assessment Report on Stage 1 – Buildings 1, 2, 3, 4 and RACF Building	
		Prepared by:	**Stuart Boyce** Accredited Certifier Grade A1, No BPB0044	Signature 
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PART 1 BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report, is located within the existing Cardinal Freeman Village at 137 Victoria Street, Ashfield and is known as the Stage 1 works. The development consists of the RACF Building and Buildings 1, 2, 3 and 4, The RACF Building comprises a basement carpark and back of house area with ground, level 1, 2 and 3 being an Aged Care Facility. Buildings 1, 2 and 3 share a common basement car park area with Part B2, B1, Ground and Levels 1, 2, 3 and 4 of residential Independent Living units (ILU's). Building 4 consists of a basement car park, part basement level of entry lobby and administration offices, ground floor comprising Residential units, Activity Rooms and Pool / Gym area, and levels 1, 2, 3 and 4 comprising further Residential ILU's. The Village Green works also comprise the refurbishment of the Chapel under croft area to create as a Cafe.

The subject overall site is bounded by Clissold Street to the North, Seaview Street to the south, Victoria Street to the east and Queen Street to the west.

Vehicular access to the site can be gained direct from Queen Street, Clissold Street or Victoria Street to the basement carpark areas beneath the proposed buildings.

Site Plan Courtesy of Google Earth

1.2 Purpose

The purpose of this report is to assess the current design proposal against the Deemed-to-Satisfy Provisions of BCA2010, and to clearly outline those areas (if any) where compliance is not achieved, where areas may warrant redesign to achieve strict BCA compliance or where areas may be able to be assessed against the relevant performance criteria of BCA2012. Such assessment against relevant performance criteria will need to be addressed by means of a separate Performance Based Fire Safety Engineered Assessment Report to be prepared under separate cover at the Main Building works Construction Certificate Stage.

1.3 Building Code of Australia

This report is based on the Deemed-to-Satisfy Provisions of the National Construction Code Series Volume 1 - Building Code of Australia, 2010 Edition (BCA) incorporating the State variations where applicable. Please note that the version of the BCA applicable to new building works is the version applicable at the time of the lodgement of the Construction Certificate Application to the Accredited Certifying Authority. The BCA is updated generally on the 1st of May each year. As the Construction Certificate application has already been lodged to the Accredited Certifying Authority prior to 1st May 2011, the relevant provisions of BCA2010 are applicable to the Stage 1 portion of the development.

1.4 Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for: -

(a) the structural adequacy or design of the building;

(b) the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and

(c) the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

(a) the National Construction Code – Plumbing Code of Australia Volume 3

(b) the Disability Discrimination Act 1992 including the Disability (Access to Premises – Buildings) Standards 2010 – unless specifically referred to), (The provision of disabled access to the subject development has been assessed against the deemed to satisfy provisions of Part D3 and F2.4 of BCA2010 only) ;

(c) Demolition Standards not referred to by the BCA;

(d) Work Health and Safety Act 2011;

(e) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Sydney Water, Electricity Supply Authority, WorkCover, Roads and Maritime Services (RMS), Ashfield Council, Department of Planning and the like; and

(f) Conditions of Development Consent issued by Ashfield Council or the Department of Planning.

1.5 Design Documentation

This report has been based on the Design plans and Specifications listed in Annexure A of this Report.

PART 2 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia (BCA) the Stage 1 portion of the development may be described as follows.

2.1 Rise in Storeys (Clause C1.2)

The Stage 1 portion of the development comprises three separate buildings being the RACF, Buildings 1, 2 and 3 that sit over a common car park (thus considered to form the one single building) and Building 4. As such the buildings have a rise in storeys as follows:

- RACF – Rise in Storeys of Five (5)
- Buildings 1, 2 and 3 – Rise in Storeys of Seven (7) (this is due to the fact that the lowest level that is counted as a storey is that of B2 to Building 2 to the top floor being level 4 of Buildings 1 and 3).
- Building 4 – Rise in Storeys of six (6)

2.2 Classification (Clause A3.2)

The proposed buildings have been classified as follows.

Class	Level	Description
7a	Basement B2 and B1	Carpark to Buildings 1, 2, 3, 4 and RACF
9c	B1, Ground, Level 1 and 2	Residential Aged Care Facility
2	Part Basement 2, Part Basement 1 and Ground, level 1, 2, 3 and 4	Independent Living Units – Residential Buildings 1, 2 and 3
2	Part Ground, level 1, 2, 3 and 4	Independent Living Units – Residential Building 4
5	Part Basement Level	Administration Offices – Building 4
9b	Part Ground Level	Assembly Building Including pool / Gym and Activities Rooms – Building 4

N.B. There are ancillary areas located at basement and ground level including plant rooms, store areas and toilets. However as these areas represent less than 10% of the floor area they assume the same classification as the basement car park and ground floor administration areas in accordance with A3.3(a) of BCA2010.

2.3 Effective Height (Clause A1.1)

All Buildings including the RACF, Buildings 1, 2, 3 and 4 have an effective height of less than 25.0 metres however greater than 12.0m. Buildings 1, 2 and 3 Effective Height of 18.9m.

2.4 Type of Construction Required (Table C1.1)

Type A Construction required for all buildings.

2.5 Floor Area and Volume Limitations (Table C2.2)

The proposed buildings required to be of Type A Construction are subject to maximum floor area and volume limits as follows:-

- Class 7a - The car park areas have greater than 40 vehicles, thus will be required to be sprinkler protected under E1.5 of BCA2010. Thus the compartmentation restrictions of C2.2 of BCA2010 are not applicable with the car park fire compartment being fully sprinkler protected to all buildings.
- Class 2 - There are no floor area or volume limitations applicable to class 2 building portions. The compartmentation and separation provisions of these classes are regulated by table 3 of Specification C1.1 of BCA2010 and C3.11 of BCA2010.
- Class 5 and 9b - Maximum Floor Area – 8,000m^2
  Maximum Volume - 48,000m^3
- Class 9c - Maximum Floor Area of Smoke Compartment - 500m^2
  Maximum Fire Compartment - 8,000m^3
  Maximum Volume - 48,000m^3

2.6 Fire Compartments

The following fire compartments have been assumed for the RACF, and Buildings 1, 2 and 3:

1. Basement carpark level forms its own fire compartment.
2. Each floor level forms a separate fire compartment.
3. The ground floor ILU's to Building 3 form a separate fire compartment to the adjoining carpark area.

The following fire compartments have been assumed for Building 4:

1. Basement carpark level forms its own fire compartment.
2. Basement level administration and entry lobby forms a separate fire compartment to the adjoining carpark area,
3. Each floor level forms a separate fire compartment.
4. At ground level the ILU's form a separate fire compartment to the adjoining Class 9b activities and common area.

2.7 Climate Zone (Clause A1.1)

The site is located within Climate Zone 5.

PART 3 ESSENTIAL FIRE SAFETY MEASURES

The following fire safety measures will be required to be installed in or to serve the RACF portion of the subject building. Note that this is a preliminary schedule for guidance at this stage only to be further refined during the Construction Certificate documentation phase.

Item	Proposed Essential Fire Safety Measures to RACF Building	Minimum Standard of Performance
1.	Access panels, doors and hoppers to fire resisting shafts	BCA2010 Clause C3.13
2.	Automatic fail safe devices	Manufacturer's Specification
3.	Automatic fire detection and alarm system	BCA2010 Clause E2.2a, AS1670.1-2004
4.	Automatic fire suppression system (sprinkler system) throughout entire RACF building portion including throughout the basement car park portion	BCA2010 Clause E1.5, AS2118.1-1999
5.	Emergency lighting	BCA2010 Clauses E4.2 & E4.4, AS/NZS2293.1-2005
6.	Stretcher and Accessible lifts	BCA2010 Clause E3.2, E3.6 and AS1735.12
7.	Exit signs	BCA2010 Clauses E4.5, E4.6 & E4.8, AS/NZS2293.1-2005
8.	Fire dampers	BCA2010 Clause / Specification C3.15 and AS/NZS1668.1-1998, AS1682.1 and 2
9.	Fire doors	BCA2010 Spec C3.4, AS/NZS1905.1-2005
10.	Fire hydrant system	BCA2010 Clause E1.3, AS2419.1-2005
11.	Fire seals protecting openings in fire resisting components of the building	BCA2010 Clause C3.15, Manufacturer's Specification
12.	Fire hose reel system to basement car park only	BCA2010 Clause E1.4, AS2441-2005
13.	Lightweight fire rated construction	Manufacturer's Specification and Specification C1.8 of BCA2009
14.	Mechanical air handling systems Including auto shut down of air handling systems	BCA2010 Table E2.2a, AS/NZS1668.1-1998 and AS1668.2-1991
15.	Paths of travel, stairways, passageways or ramps	BCA2010 Section D
16.	Portable fire extinguishers	BCA2010 Clause E1.6, AS2444-2001
17.	Smoke control system (Assumed to be Sprinkler system with fast response heads to RACF Portion)	BCA2010 Table E2.2a, AS2118.1-1999
18.	Stair pressurisation system to FIS's to RACF Portion	BCA2010 Table E2.2a, AS1668.1-1998
19.	Smoke doors	BCA2010 Spec C3.4 and C2.5
20.	Warning and operational signs	BCA2010 Clause D2.23, E3.3, EP&A Reg. 2000 Clause 183

The following fire safety measures are required to be installed in or to serve the Building 4. Note that this is a preliminary schedule for guidance at this stage only to be further refined during the Construction Certificate documentation phase. Additional Fire Safety Measures may be required as a result of the Fire Engineering assessment that will be required to justify the extended travel distances referred to in Part 5.2 of the report

Item	Proposed Essential Fire Safety Measures to Building 4	Minimum Standard of Performance
1.	Access panels, doors and hoppers to fire resisting shafts	BCA2010 Clause C3.13
2.	Automatic fail safe devices	Manufacturer's Specification
3.	Automatic fire suppression system (sprinkler system) throughout basement car park portion	BCA2010 Clause E1.5, AS2118.1-1999
4.	Automatic fire detection and alarm system to basement level offices, ground floor activities areas and pool / Gym portion	BCA2010 Clause 3(c)(ii), 4 and 6 of Specification E2.2a and AS1670.1-2004
5.	Emergency lighting	BCA2010 Clauses E4.2 & E4.4, AS/NZS2293.1-2005
6.	Stretcher and Accessible lifts	BCA2010 Clause E3.2, E3.6 and AS1735.12
7.	Exit signs	BCA2010 Clauses E4.5, E4.6 & E4.8, AS/NZS2293.1-2005
8.	Fire dampers	BCA2010 Clause / Specification C3.15 and AS/NZS1668.1-1998, AS1682.1 and 2

9.	Fire doors	BCA2010 Spec C3.4, AS/NZS1905.1-2005
10.	Fire hydrant system	BCA2010 Clause E1.3, AS2419.1-2005
11.	Fire seals protecting openings in fire resisting components of the building	BCA2010 Clause C3.15, Manufacturer's Specification
12.	Fire hose reel system to basement car park and offices, Pool / Gym portion and Residential levels / areas only	BCA2010 Clause E1.4, AS2441-2005
13.	Lightweight fire rated construction	Manufacturer's Specification and Specification C1.8 of BCA2010
14.	Mechanical air handling systems Including auto shut down of air handling systems	BCA2010 Table E2.2a, AS/NZS1668.1-1998 and AS1668.2-1991
15.	Paths of travel, stairways, passageways or ramps	BCA2010 Section D and as per Alternate Solution Assessment Report to be prepared
16.	Portable fire extinguishers	BCA2010 Clause E1.6, AS2444-2001
15.	Smoke doors	BCA2010 Spec C3.4 and C2.5
16.	Smoke alarms within SOU's to ILU portion	BCA2010 Clause 3, 3(c) (ii) and 6 of Specification E2.2a and AS3786-1993
17.	Warning and operational signs	BCA2010 Clause D2.23, E3.3, EP&A Reg. 2000 Clause 183
18.	Wall Wetting Drenchers / Fire Shutters to Openings at ground Level where egress path from FIS is within 6.0m	BCA2010 Clause C3.4 and D1.7

The following fire safety measures are required to be installed in or to serve the Building 1, 2 and 3. Note that this is a preliminary schedule for guidance at this stage only to be further refined during the Construction Certificate documentation phase. Additional Fire Safety Measures may be required as a result of the Fire Engineering assessment that will be required to justify the extended travel distances referred to in Part 5.2 of the report.

Item	Proposed Essential Fire Safety Measures to Building 1, 2 and 3	Minimum Standard of Performance
1.	Automatic fire detection and alarm system to common areas	BCA2010 Clause 3 (c) (ii) and 6 of Specification E2.2a and AS1670.1-2004
2.	Emergency lighting	BCA2010 Clauses E4.2 & E4.4, AS/NZS2293.1-2005
3.	Exit signs	BCA2010 Clauses E4.5, E4.6 & E4.8, AS/ZS2293.1-2005
4.	Fire doors to Main switch room (if it sustains equipment required to operate in the emergency mode) and FIS's	BCA2010 Spec C3.4, AS/NZS1905.1-2005
5.	Fire hydrant system	BCA2010 Clause E1.3, AS2419.1-2005
6.	Fire hose reel system	BCA2010 Clause E1.4, AS2441-2005
7.	Fire seals protecting openings in fire resisting components of the building	BCA2010 Clause C3.15, Manufacturer's Specification
8.	Lightweight fire rated construction (Fire rated ceilings and walls)	Manufacturer's Specification and Specification C1.8 of BCA2010
9.	Paths of travel, stairways, passageways or ramps	BCA2010 Section D
10.	Portable fire extinguishers	BCA2010 Clause E1.6, AS2444-2001
11.	Smoke Alarm System within SOU's	BCA2010 Clause 3 of Specification E2.2a and AS3786-1993
12.	Fire Doors to SOU's	BCA2010 Clause C3.11(g) and AS1905.1-2005
13.	Automatic fire suppression system (sprinkler system) throughout the basement car park portions that accommodate greater than 40 vehicles	BCA2010 Clause E1.5, AS2118.1-1999
14.	Smoke doors	BCA2010 Spec C3.4 and C2.5
15.	Warning and operational signs	BCA2010 Clause D2.23, E3.3, EP&A Reg. 2000 Clause 183
16.	Wall Wetting Drenchers / Fire Shutters to Openings at ground Level where egress path from FIS is within 6.0m	BCA2010 Clause C3.4 and D1.7

PART 4 FIRE RESISTANCE LEVELS

The following fire resistance levels (FRL's) required for the various structural elements of the building, with a fire source feature being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure.

Type A Construction

Item	Class 2 part	Class 5, 7a, 9b and 9c
Load bearing External Walls • less than 1.5m to a fire source feature • 1.5 – 3m from fire source feature; • more than 3m from a fire source feature.	 90/90/90 90/60/60 90/60/30	 120/120/120 120/90/90 120/60/30
Non-Load bearing External Walls • less than 1.5m to a fire source feature • 1.5 – 3m from fire source feature; • more than 3m from a fire source feature.	 -/90/90 -/60/60 -/-/-	 -/120/120 -/90/90 -/-/-
External Columns • Less than 3m • 3m or more	90/-/- -/-/-	120/-/- -/-/-
Fire Walls	90/90/90	120/120/120
Stair and Lift Shafts • Loadbearing • Non loadbearing	 90/90/90 -/90/90	 120/120/120 -/120/120
Internal walls bounding sole occupancy units • Loadbearing • Non loadbearing	 90/90/90 -/60/60	 120/-/- -/-/-
Internal walls bounding public corridors, hallways and the like: • Loadbearing • Non loadbearing	 90/90/90 -/60/60	 120/-/- -/-/-
Ventilating, pipe garbage and the like shafts: • Loadbearing • Non loadbearing	 90/90/90 -/90/90	 120/90/90 -/90/90
Other load bearing internal walls, beams trusses and columns	90/-/-	120/-/-
Floors	90/90/90	120/120/120
Roofs [1]	90/60/30	120/60/30

N.B. There are FRL concessions applicable for fully sprinkler protected car park portions under Clause 3.9 of BCA Specification C1.1, reducing the car park FRL's down from 120/120/120 to 60/60/60. However as portions of the roof deck of the Car park may be used as open space for the purposes of egress from the building, the car park supporting structure to these Ground floor slabs must possess a minimum FRL of 120/120/120 as required by BCA Clause D2.12.

[1] The roof need not comply with FRL specified above for the residential portion if the roof covering is of non-combustible construction and the walls bounding the SOU's extend fully up to the underside of the roof sheeting material. As the top storey is Class 2, a concession is granted under Clause 3.5 of Specification C1.1 of BCA2009.

The roof portion of the RACF also requires no FRL as the building portion is to be fully sprinkler protected.

[3] The internal walls separating the top floor Smoke walls must extend fully to the underside of the roofing material to the RACF Building.

The entire ground floor level to the building 4 containing the Activities rooms, lounge areas and Gym / Pool area will need to be constructed of the higher FRL being the class 9b usage thus requiring the 120/120/120 FRL criteria referred to in the table. A 120/120/120 FRL separating wall between the class 9b and Class 2 portions will be required to permit the class 2 portions at ground level to possess the 90/90/90 FRL's as detailed in the above table as permitted under C2.8 of BCA2010.

PART 5 MATTERS FOR FURTHER CONSIDERATION

5.1 General

Assessment of the S75W revised Architectural design documentation that forms the Stage 1 portion of the development against the Deemed-to-Satisfy Provisions of the Building Code of Australia, 2010 (BCA) has revealed the following areas where compliance with the BCA may require further consideration and/or may involve assessment as Performance Based (Fire Engineered) Alternative Solutions. Special consideration to clearly indicate methodologies for achieving compliance with the relevant Performance Requirements or Deemed-to-Satisfy Provisions of the BCA

Annexure B to this report provides a detailed assessment of the proposal against all relevant Deemed-to-Satisfy Provisions of the BCA.

Note: It is important that Annexure B is read in conjunction with the items below, as some matters may not have had sufficient information provided to allow a detailed assessment to be undertaken.

5.2 Performance Based Design – Alternate Solutions

There are specific areas throughout the development where strict Deemed-to-Satisfy BCA Compliance will not be achieved by the proposed design and site constraints. These matters will need to be addressed in a detailed Fire Safety Engineering Report to be prepared for this development under separate cover:

Item	Description of Alternate Solution	DTS Provision	Performance Requirement to be met
1.	Extended Travel distances in the residential portions of Buildings 1, 2, 3 and 4 greater than 6.0m to a point of choice or an exit being up to 9.0m.	D1.4 of BCA2010	DP4

At the time of the Construction Certificate Application submission for the main building works, the Final Fire Safety Engineering Assessment Report to be prepared will not be required to be formally referred to the NSW Fire Brigade under S144 of the Environmental Planning & Assessment Regulation 2000 who are required to formally comment and concur with the findings of the report as the performance clause DP4 is not a matter called up under S144 of the Regulations.

5.3 Common Buildings / Fire Source Features

As building portions 1, 2 and 3 essentially sit over the same common car park area, theses three building portions are considered to form the one single building, thus do not create a fire source feature to each other. As a result there is no requirement for fire separation of the Buildings 1, 2 and 3 at ground level.

The RACF building being a separate building to Buildings 1, 2 and 3 is located greater than 6.0m between the buildings, thus even though it is deemed to be a fire source feature requires no further protection of openings in external walls.

5.4 Section J Energy Efficiency

As of the 1st of May 2006 the Building Code of Australia 2005 version was replaced with the 2006 version (now BCA2010). Whilst there were generally minor changes from the previous BCA2005 version to the new BCA2006 (now BCA2010) the addition of Class 5 – 9 buildings to Section J “Energy Efficiency Installations” is a major change.

Due to the impact of the addition of Section J under BCA2006 (BCA2010) for these classes of buildings there was a transitional period until the 1st of November 2006 that the Section J provisions were not mandatory. However after this 6 month introductory period the energy efficiency provisions of BCA2006 have become compulsory on all building work carried out.

The date of the formal application / lodgement for the Construction Certificate to the Certifying Authority sets the applicable version of the BCA. As the application for the Construction Certificate has been submitted to the Accredited Certifying Authority after the period of 1st May 2010 for this development the requirements of Section J of BCA2010 will be applicable to the class 5, 7a, 9b and 9c portions of the development.

The class 2 portions of the development will be subject to separate BASIX Assessments that have been prepared to accompany the S75W revised submission under separate cover.

5.5 Disabled Access – Part D3

As required by this Part of BCA2010, disabled access is required to and within all common areas and throughout the class 5, 7a, 9b and 9c portions, however excluding the residential class 2 portions, utility rooms, store rooms and the like. The main impact of this is that a clear width of 800mm to all doorways where persons are required to pass through in a wheel chair is to be provided as well as circulation spaces at doorways in accordance with AS1428.1-2001.

Also entry to the Class 9c RACF Facility must be via a 1:14 access ramp from the principal public entrance and the general footpath area and the accessible sanitary facilities must be constructed dimensionally in accordance with AS1428.1-2001.

A separate Access Consultants report has been prepared to address the Access issues to the required building portions.

5.6 BCA Compliance Specification

The following BCA matters are to be addressed by specific BCA Design Certifications to be issued by the relevant architectural, services and engineering consultants at the Construction Certification Stage. This schedule should be forwarded to all consultants to obtain verification that these items have and will be included in the design documentation / specifications:

Architectural Design Certification:

1. The FRL's of the structural elements for the proposed works have been designed in accordance with table 3 for a building of Type A Construction of Specification C1.1 of BCA2010.

2. Materials, floor and wall linings/coverings, surface finishes and air-handling ductwork used in the works will comply with the fire hazard properties in accordance with Clause C1.10, NSW Clause C1.10, Specification C1.10 and NSW Specification C1.10 of BCA2010.

3. The RACF building will be separated into 500m^2 maximum smoke compartments in accordance with Clause C2.5, and NSW Clause C2.5 of BCA2010.

4. Vertical separation will be provided to the openings in the external walls to Buildings 1, 2, 3 and 4 in accordance with Clause C2.6 of BCA2010. It is noted that no spandrel separation is required in the RACF building that is fully sprinkler protected.

5. The buildings will be separated into separate fire compartments by fire walls compliant with Clause C2.7 and Specification C1.1 of BCA2010.

6. The parts of different classifications located alongside one another in the same storey will be separated in accordance with Clause C2.8 and specification C1.1 of BCA2010 to Building 4 at ground and level 1 and Building 3 at basement 2 level.

7. The parts of different classifications situated one above another in adjoining stories, will to be separated in accordance with Clause C2.9 and Specification C1.1 of BCA2010.

8. The electricity substation, any main switch room sustaining emergency equipment required to operate in emergency mode, will be separated from the remaining building with construction having a FRL of 120/120/120 and provided with self-closing -/120/30 fire doors in accordance with Clause C2.13 of BCA2010.

9. The public corridors to Building 1 and 4 will be divided into at intervals of not more than 40m in length with smoke proof walls in accordance with Clause C2.14, and Clause 2 of Specification C2.5 of BCA2010.

10. Doorways in any fire walls separating fire compartments will be protected in accordance with Clause C3.5 of BCA2010.

11. Doors in a fire-isolated exit will be self-closing or automatic closing fire doors with a FRL of not less than -/60/30 in accordance with Clause C3.8 of BCA2010.

12. Services penetrating elements required to possess a FRL including the floor slabs, walls, shafts, etc. will be protected in accordance with Clause C3.9, C3.12, C3.13 and C3.15 and Specification C3.15 of BCA2010.

13. The lift doors will be --/60/- fire doors complying with AS1735.11 in accordance Clause C3.10 of BCA2010.

14. Doorways and other openings in internal walls required to have an FRL will be protected in accordance with Clause C3.11, and NSW Clause C3.11 of BCA2010.

15. A lintel must have the FRL required for the part of the building in which it is situated, unless it does not contribute to the support of a fire door, fire window or fire shutter, and it spans an opening in masonry which is not more than 150 mm thick and is not more than 3m 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, or it spans an opening in a non-loadbearing wall of the Class 2 or 3 building, in accordance with Clause 2.3 of BCA2010.

16. All attachments to the external facade of the buildings will be of a non-combustible material in accordance with Clause 2.4 of Specification C1.1 of BCA2010.

17. The top and bottom of the riser shafts will achieve an FRL not less than the FRL required for the walls of the shaft in accordance with Clause 2.7 of Specification C1.1 of BCA2010.

18. Smoke-proof walls and doorways required in the RACF building will be in accordance with Specification C2.5 of BCA2010.

19. Fire doors will comply with AS1905.1 and Specification C3.4 of BCA2010.

20. Smoke doors will be constructed so smoke will not pass from one side of the doorway to the other and in accordance with Specification C3.4 of BCA2010.

21. The required exits to all buildings will be fire-isolated in accordance with Clause D1.3 of BCA2010.

22. The dimensions of exits and paths of travel to exits will be provided in accordance with Clause D1.6, and NSW Clause D1.6 of BCA2010.

23. The fire-isolated exits will be in accordance with Clause D1.7 of BCA2010.

24. The non-fire-isolated exits will be in accordance with Clause D1.9 of BCA2010.

25. The discharge points of exits will be in accordance with Clause D1.10, and NSW Clause D1.10 of BCA2010.

26. Any ladders within the plant room areas will be in accordance with Clause D1.16 of BCA2010 and AS1657-1992.

27. Access to the lift pits will be in accordance with Clause D1.17 of BCA2010.

28. The stairways within the fire-isolated shafts are to be non-combustible, and if there is a local failure not cause structural damage or impair the fire resistance of the shafts, in accordance with Clause D2.2 of BCA2010.

29. The non-fire isolated stairs will be constructed in accordance with Clause D2.3 of BCA2010.

30. The construction separating rising and descending stairs in the fire-isolated exit stairways will be non-combustible and smoke proof, in accordance with Clause D2.4 of BCA2010.

31. The construction of EDB's will be in accordance with Clause D2.7 of BCA2010 with the enclosures bounded by a non-combustible or fire protective covering and smoke seals provided around the perimeter of the doors at each level.

32. All new pedestrian ramps will comply with AS1428.1-2001, Clause D2.10 and Part D3 of BCA2010.

33. The fire-isolated passageways will be in accordance with Clause D2.11 of BCA2010.

34. The roof of the buildings where the exit discharges (such as over the car park to Buildings 1, 2 and 3 and over the swimming pool to Building 4) will have an FRL of 120/120/120, and will not have roof lights or openings within 3m of the path of travel in accordance with Clause D2.12 of BCA2010.

35. Stair geometry to all the new stairways will be in accordance with Clause D2.13, and NSW Clause D2.13 of BCA2010.

36. Landings and door thresholds throughout the development will be provided in accordance with Clause D2.14 and D2.15, and NSW Clause D2.15 of BCA2010.

37. The handrails and balustrades to all stairs throughout the buildings will be in accordance with Clause D2.16, NSW Clause D2.16 and D2.17 of BCA2010.

38. The fixed platform, walkway, stairway and ladder and any associated going and riser, landing, handrail, balustrade, located within the plant-rooms are to comply with AS1657-1992 in lieu of Clause D2.12, D2.14, D2.16 and D2.17 of BCA2010.

39. The doorways and doors will be in accordance with Clause D2.19, NSW Clause D2.19 and D2.20 of BCA2010.

40. The door latching mechanisms to the proposed required exit doors will be in accordance with Clause D2.21 and NSW Clause D2.21 of BCA2010.

41. Signage will be provided on fire and smoke doors in accordance with Clause D2.23 of BCA2010.

42. The new works will be accessible in accordance with Clause D3.1 and table D3.1, D3.2, D3.3 of BCA2010, and with AS1428.1-2009, with particular note to door circulation spaces, accessway widths, turning spaces and floor coverings, in accordance with Part D3 of BCA2010.

43. Accessible carparking will be in accordance with Clause D3.5, and table D3.5 of BCA2010.

44. Braille and tactile signage will be in accordance with Clause D3.6, and specification D3.6 of BCA2010.

45. Tactile ground surface indicators will be provided in accordance with Clause D3.8 of BCA2010.

46. Accessible sanitary facilities will be designed and fitted out in accordance with AS1428.1-2001 and Clause F2.4 of BCA2010.

47. Fire precautions during construction will be provided in accordance with Clause E1.9 of BCA2010.

48. The new roof coverings will be in accordance with Clause F1.5 of BCA2010.

49. Any sarking proposed will be installed in accordance with Clause F1.6 of BCA2010.

50. Waterproofing of all wet areas to the buildings will be carried out in accordance with Clause F1.7 of BCA2010 and AS3740.

51. Damp proofing of the proposed structures will be carried out in accordance with Clause F1.9 and F1.10 of BCA2010.

52. Floor wastes will be installed to bathrooms and laundries above sole occupancy units or public space in accordance with clause F1.11 of BCA2010.

53. All new glazing to be installed throughout the development will be in accordance with Clause F1.13 of BCA2010 and AS1288-2006 / AS2047.

54. Sanitary facilities will be provided in the building in accordance with Clause F2.1, Table F2.1, Clause F2.3 and Table F2.3 of BCA2010.

55. Accessible sanitary facilities will be provided in the buildings in accordance with Clause F2.4, Table F2.4 (a) of BCA2010 and AS1428.1.

56. The construction of the sanitary facilities will be in accordance with Clause F2.5 of BCA2010.

57. A slop-hopper will be provided to the RACF in accordance with Clause F2.8 of BCA2010.

58. Ceiling heights to the new areas will be in accordance with Clause F3.1 of BCA2010.

59. Natural light will be provided in accordance with Clause F4.1, F4.2, and F4.3 of BCA2010.

60. Natural ventilation will be provided in accordance with Clause F4.5, F4.6 and F4.7 of BCA2010.

61. Water closets and urinals will be located in accordance with Clause F4.8 of BCA2010.

62. The sanitary compartments will be either be provided with mechanical exhaust ventilation or an airlock in accordance with Clause F4.9 of BCA2010.

63. A means of cleaning of windows in accordance with the Construction Safety Act and NSW Clause G1.101 of BCA2010 will be provided to all buildings.

64. The swimming pool associated with the new building 4 will comply with Clause G1.1 of the BCA2010 and The Swimming Pools Act 1992, Swimming Pools Regulation 2008, and AS1926 parts 1 and 2.

65. The refrigerated or cooling chamber to the RACF building kitchen area will be in accordance with Clause G1.2 of BCA2010.

66. The construction of the residential portions of the development will be undertaken in accordance with the relevant BASIX commitments that form part of the Development Consent approval (as amended).

67. Essential fire or other safety measures must be maintained and certified on an ongoing basis, in accordance with the provisions of the Environmental Planning and Assessment Regulation, 2000, and NSW Clause I1.1 of BCA2012.

68. Insulation will be in accordance with AS4859.1 and will be installed as required by NSW Part J1 of BCA2010.

69. Glazing to the class 5, 9b and 9c portions will be in accordance with Part J2 of BCA2010.

70. Access for maintenance to all services and their components will be provided in accordance with Clause NSW J8.2 of BCA2010.

71. Facilities for Energy Monitoring will be provided in accordance with Clause J8.3 of BCA2010.

Electrical Services Design Certification:

72. A smoke detection and alarm system will be installed throughout the buildings in accordance with Table E2.2a, NSW Table E2.2a and Specification E2.2a of BCA2010.

73. Emergency lighting will be installed throughout the buildings in accordance with Clause E4.2, E4.4 of BCA2010 and AS2293.1 - 2005

74. Exit signage will be installed in accordance with Clause E4.5, NSW Clause E4.6, E4.7, and E4.8 of BCA2010 and AS2293.1.

75. Artificial lighting will be installed throughout the buildings in accordance Clause F4.4 of BCA2010 and AS/NZS 1680.0.

76. Lighting power and controls will be installed in accordance with Part J6 of BCA2010.

Hydraulic Services Design Certification:

77. Storm water drainage will be provided in accordance with Clause F1.1 of BCA2010 and AS3500.3

78. Fire hydrants will be installed in accordance with Clause E1.3 of BCA2010 and AS2419.1-2005 as required.

79. Fire hose reels will be installed in accordance with Clause E1.4 of BCA2010 and AS2441-2005 other than within the RACF building B1 to Level 2.

80. A sprinkler system will be installed in accordance with Clause E1.5 of BCA 2010, Specification E1.5 and AS2118 throughout all basement car park areas beneath all buildings and within the RACF building.

81. Portable fire extinguishers will be installed in accordance with Clause E1.6 of BCA2010 and AS2444-2005.

82. The hot water supply systems will be designed and installed to Section 8 of AS3500.4 and Clause J7.2 of BCA2010.

Mechanical Services Design Certification:

83. The fire isolated stairs within the RACF will be provided with stair pressurisation in accordance with Table E2.2a of BCA2010 and AS1668.1-1998.

84. The buildings will be mechanically or naturally ventilated in accordance with Clause F4.5, NSW F4.5 of BCA2010 and AS1668.2-1991.

85. Every storey of the car park will be mechanically ventilated in accordance with Clause F4.11 of BCA2010 and AS1668.2-1991 as applicable.

86. The commercial kitchen will be provided with a kitchen exhaust hood in accordance with Clause F4.12 of BCA2010, and AS/NZS 1668.1 and AS1668.2.

87. The air-conditioning and ventilations systems will be designed and installed in accordance with Part J5 of BCA 2010.

Structural Engineers Design Certification:

88. The material and forms of construction for the proposed works will be in accordance with Clause B1.2, B1.3 and B1.4 of BCA2010 as follows:

    - Dead and Live Loads – AS1170.1
    - Wind Loads – AS1170.2
    - Masonry – AS3700
    - Concrete Construction – AS3600
    - Steel Construction – AS4100
    - Aluminium Construction – AS/NZS1664.1 or 2

89. The FRL's of the structural elements for the proposed works have been designed in accordance with table 3 for a building of Type A Construction of BCA2012.

90. The lift shafts will have a FRL in accordance with Clause C2.10 and Specification C1.1 of BCA2010.

91. Lightweight construction used to achieve required fire resistance levels will comply with Specification C1.8 of BCA2010.

92. The construction joints to the structure will be in accordance with Clause C3.16 of BCA2010 to maintain the FRL integrity of the element concerned.

93. Upon completion of the works, the structural engineer will certify local failure in accordance with Clause D2.2 of BCA2010 of the fire isolated stairs.

Lift Services Design Certification:

94. The lifts throughout the development will be provided with stretcher facilities to all buildings in accordance with Clause E3.2 of BCA2010 and will be capable of accommodating a stretcher with a patient lying on it horizontally by providing a clear space not less than 600mm wide x 2000mm long x 1400mm high above the floor level.

95. Warning signage in accordance with Clause E3.3 of BCA2010 will be provided to the lifts to advise not to use the lifts in a fire.

96. Access and egress to the lift well landings will comply with the Deemed-to-Satisfy Provisions of D3 of the BCA2010, and will suitable to accommodate disabled persons.

97. The type lifts will also be suitable to accommodate disabled persons in accordance with Clause E3.6, Table E3.6a, and will have accessible features in accordance with table E3.6b of BCA2010.

98. The new lifts will comply with AS1735.12 in accordance with Clause E3.6 of BCA2010.

Acoustic Services Design Certification:

99. The sound transmission and insulation of the residential portions of the development and RACF building will comply with Part F5 of BCA2010.

5.7 Further Information

Outlined below are areas in the design of the development where further information is required to ensure compliance is achievable – such information to be provided at the Construction Certificate Stage of the approval process:

a. Vertical separation is not required to be provided to the RACF portion as this portion of the building will be fully sprinkler protected. However to Buildings 1, 2, 3 and 4 that are not sprinkler protected will need to be provided with compliant spandrels. No details of spandrel separation provided at this stage – to be further assess at CC stage.
b. All attachments proposed to the external façade of the building are to be of non-combustible materials that are permitted by this clause. Further details on the type of facade attachments are to be provided for assessment.
c. The building is required to be accessible for people with disabilities under BCA2010 to the class 7a car park and class 9c portion to the common areas on the storey incorporating the principal public entrance, excluding resident use sanitary facilities, utility rooms store rooms or the like and any facility required to be accessible. Accessible rooms are also to be provided on the basis of one accessible unit per 20 units.
d. Further details of staff numbers to be provided to verify compliance of staff sanitary facilities within the RACF Building Portion.

PART 6 STATEMENT OF COMPLIANCE

The S75W Modified Architectural Design Documentation as referred to in this report has been assessed against the applicable provisions of the Building Code of Australia, (BCA) and it is considered that such documentation complies or is capable of complying (as outlined in Annexure B) with that Code (with the ongoing design development through to the Construction Certificate Stage).

ANNEXURE A

DESIGN DOCUMENTATION

This report has been based on the following design documentation.

Architectural Plans Prepared by Allen Jack + Cottier dated 18th October 2012 Project No 12018		
Drawing Number	**Revision**	**Title**
DA0000	D	COVER SHEET
DA1002	G	STAGE 1 SITE PLAN
DA2101	F	PRECINCT NW B2
DA2102	F	PRECINCT NW B1
DA2103	F	PRECINCT NW GND
DA2104	F	PRECINCT NW L1
DA2105	F	PRECINCT NW L2
DA2106	E	PRECINCT NW L3
DA2107	E	PRECINCT NW L4
DA2108	D	PRECINCT NW L5
DA2121	F	PRECINCT SW B1
DA2122	F	PRECINCT SW GND
DA2123	F	PRECINCT SW L1
DA2124	F	PRECINCT SW L2
DA2125	F	PRECINCT SW L3
DA2126	E	PRECINCT SW L4
DA2127	D	PRECINCT SW L5
DA3101	C	SITE ELEVATIONS
DA3102	E	BUILDING 1 ELEVATIONS
DA3103	E	BUILDING 2, 3 ELEVATIONS
DA3104	E	BUILDING 4 ELEVATIONS
DA3105	A	RACF ELEVATIONS
DA3201	D	SITE SECTIONS – SHEET 1
DA3202	D	SITE SECTIONS – SHEET 2
DA5101	A	TYPICAL APARTMENT PLANS SHEET 1 1:100
DA5102	A	TYPICAL APARTMENT PLANS SHEET 2 1:100
DA9710	B	EXTERIOR FINISHES & COLOUR SCHEDULE
DA0201	B	SHADOW DIAGRAMS
DA0202	B	SHADOW DIAGRAMS
DA0203	B	SHADOW DIAGRAMS
DA0204	B	SHADOW DIAGRAMS
DA0205	B	SHADOW DIAGRAMS

ANNEXURE B

DETAILED ASSESSMENT OF THE DEEMED-TO-SATISFY PROVISIONS OF BCA2010

BUILDING ASSESSMENT

Outlined below is a detailed assessment of the Deemed-to-Satisfy Provisions of the Building Code of Australia (BCA) including the State variations where applicable.

All Deemed-to-Satisfy clauses that are applicable to the subject building have been referred to below, including a comment adjacent to each clause of the proposal's ability to satisfy each respective clause.

The abbreviations outlined below have been used in the following tables.

N/A	-	Not Applicable. The Deemed-to-Satisfy clause does not apply to the subject building.
Complies	-	The relevant provisions of the Deemed-to-Satisfy clause have been satisfied by the proposed design.
CRA	-	'COMPLIANCE READILY ACHIEVABLE'. It is considered that there was not enough information included in the documentation to accurately determine strict compliance with the individual clause requirements. However, subject to noting the requirements of each clause, compliance can be readily achieved. This information may be included in other documentation, which was not forwarded to this office for assessment, such as door schedules, electrical, mechanical and hydraulic design documentation or architectural specifications.
FI	-	Further Information is necessary to determine the compliance potential of the building design.
AS	-	Alternative Solution with respect to this Deemed-to-Satisfy Provision is necessary to satisfy the relevant Performance Requirements.
DNC	-	Does Not Comply
Noted	-	BCA Clause simply provides a statement not requiring specific design comment or confirmation

DEEMED TO SATISFY CLAUSE ASSESSMENT SUMMARY

Clause	Comment	Status
SECTION B: STRUCTURE		
PART B1 – STRUCTURAL PROVISIONS		
B1.0: Deemed-to-Satisfy Provisions	Noted	-
B1.1: Resistance to Actions	For Information Only – Structural Engineer to certify at CC stage.	CRA
B1.2: Determination of Individual Actions	No details of loads imposed upon the building – Structural Engineer to certify at CC stage.	CRA
B1.4: Determination of Structural Resistance of Materials and Forms of Construction	No details of materials and forms of construction – Structural Engineer, Architect and Manufacturers to certify at CC stage.	CRA
B1.5 Structural Software	Structural software used in computer aided design of a building or structure within the geometrical limits of (b) of this Clause must comply with the ABCB Protocol for Structural Software. Structural Engineer to certify.	CRA
SECTION C: FIRE RESISTANCE		
PART C1 – FIRE RESISTANCE AND STABILITY		
C1.0: Deemed-to-Satisfy Provisions	Noted	-
C1.1: Type of Construction Required	Type A Construction Required for all buildings.	Noted
C1.2: Calculation of Rise in Storeys	The overall buildings has a rise in storeys as follows: • RACF – five (5) • Buildings 1, 2 and 3 – seven (7) • Building 4 – Six (6) This is due to the fact that to the northern elevation of all buildings the basement level B2 projects out of the ground greater than 1.0m thus is counted in the overall rise in storeys.	Noted
C1.3: Buildings of Multiple Classification	Type A Construction required for all the buildings as a class 2 or 9c class occupies the top floors of the respective building portions.	Noted
C1.4: Mixed Types of Construction	The buildings are required to be of Type A Construction being a single form of construction.	Noted
C1.8: Lightweight Construction	Lightweight construction may be used to achieve required fire resistance levels. Should lightweight construction be proposed it is to comply with Specification C1.8 of BCA2010. No details for the use of lightweight construction to obtain the required fire resistance levels. To be further assessed at CC stage.	CRA
C1.10: Fire Hazard Properties	No details of the fire hazard properties of the materials and assemblies in the proposed building. Fire hazard indices to comply with Specification C1.10. To be Further assessed at CC stage.	CRA
C1.12: Non-combustible Materials	For information only.	Noted
PART C2 - COMPARTMENTATION AND SEPARATION		
C2.0: Deemed-to-Satisfy Provisions	Noted	-
C2.1: Application of Part	Noted	-
C2.2: General Floor Area and Volume Limitations	Floor area and volume limitations of this clause are applicable to the class 5, 9b and 9c portions. The area and volume of these class 5, 9b and 9c portions that are deemed to create separate fire compartments are well within the floor area and volume limitations of this clause. The basement car park areas beneath all buildings being fully sprinkler protected are not required to be fire compartmented by this clause. There are no floor area or volume limitations applicable to the class 2 building portions. The fire compartmentation of these areas are regulated by Table 3 of Specification C1.1 and C3.11 of BCA2010.	CRA

C2.5: Class 9a and 9c Buildings	The area and volume of the class 9c RACF portion that is deemed to form its own fire compartment per floor is broken down into 500m^2 smoke compartments as per this clause. Kitchen and laundry areas greater than 30m^2 are also to be smoke separated smoke proof walls as well as any store rooms that exceed 10m^2 and contain medical records storage. Note the kitchen and laundry is to be contained within its own fire compartment at basement level. Currently there are no details of construction of the smoke walls, however such smoke walls will need to be nominated on the future CC Plans.	CRA
C2.6: Vertical Separation of Openings in External Walls	Vertical spandrel separation is required to be provided to all building portions that are not sprinkler protected via compliant spandrel walls or horizontal balcony slab projections. This includes the walls bounding the common lift landings at each level. No details of spandrel separation provided at this stage – to be further assessed at CC stage.	FI Refer Part 5.7 of Report
C2.7: Separation by Fire Walls	The fire walls that are required to the subject development are those located at the basement level to fire separate the car park portions from the laundry / kitchen areas, Staff areas and basement portion of the ILU building. Further details of FRL of these fire separating walls to be provided at CC stage with such walls requiring a 120/120/120 FRL. To Building 4, such walls requiring a 120/120/120 FRL to ensure separation of the class 5 and 9b portions from the adjacent class 2 portions and the Activity areas from the adjacent Gym / Pool portion.	CRA
C2.8: Separation of Classifications in the Same Storey	At each level a single classification occupies the entire storey, thus requiring no further fire separation by this clause other than at basement level. Fire separation by 120/120/120 fire walls will be required to separate the car park portions from the laundry / kitchen areas, Staff areas and basement portion of the ILU buildings. Further details of FRL of these fire separating walls to be provided at CC stage with such walls requiring a 120/120/120 FRL.	CRA
C2.9: Separation of Classifications in Different Storeys	The floor between adjoining levels must have an FRL not less than that prescribed for the classification of the lower storey. The RACF building is primarily of class 9c classification to all levels, thus floor slabs simply require a 120/120/120 FRL. The floors to the Buildings 1, 2, 3 and 4 will require a 90/90/90 FRL other than the floor above the car park and Administration level and above the lounge and activities area to ground level Building 4 that will require a 120/120/120 FRL.	CRA Refer Part 4.0 of Report
C2.10: Separation of Lift Shafts	As all the lifts connect greater than 3 storeys they are to be contained in a fire isolated shafts. See Part 4 of this report for more details on the required FRL's. To be further assessed at CC stage.	CRA Refer Part 4.0 of Report
C2.11: Stairways and Lifts in One Shaft	As required the fire isolated lift shafts are to be contained in separate shafts to the fire isolated stairs throughout the development as currently detailed.	Complies
C2.12: Separation of Equipment	Equipment including lift motor rooms, emergency generators sustaining emergency equipment operating in emergency mode, boilers or battery areas with a voltage exceeding 24 volts and a capacity exceeding 10 ampere hours are required to be fire separated from the remainder of the building in accordance with this clause. The only equipment required by this clause to be fire separated within the buildings are the hydrant pump rooms that are to be enclosed in construction possessing a minimum FRL of 120/120/120. To be further assessed at CC stage as the lifts proposed appear to be the type of lifts that do not require a separate LMR.	CRA

C2.13: Electricity Supply System	With the main switch room located at the basement level sustaining emergency equipment required to operate in emergency mode, the room is required to be separated from the building with construction having a FRL of 120/120/120. It is noted that a sub-station is not currently proposed to be located within the building at this stage. To be further assessed at CC stage.	CRA
C2.14: Public Corridors in Class 2 and 3 Buildings	The public corridors in buildings 1 and 4 exceed 40m in length thus will require to be smoke separated by smoke doors as per this clause.	CRA
PART C3 – PROTECTION OF OPENINGS		
C3.0: Deemed-to-Satisfy Provisions	Noted	-
C3.1: Application of Part	Noted	-
C3.2: Protection of Openings in External Walls	Based on the site plan provided, all the buildings are located greater than 6m from all fire source features and 3.0m clear of any side or rear boundaries, thus no additional protection is required to the openings in the external walls by this clause. The RACF is greater than 6.0m from Buildings 1, 2 and 3 thus no further protection of openings are required by this clause. Note that as the Buildings 1, 2, 3 all sit on a common car park, they are not deemed to be a fire source feature to each other however are required to satisfy C3.3 below for separation of different fire compartments.	Complies
C3.3: Separation of External Walls and Associated Openings in Different Fire Compartments	As the building is to be compartmentalised as discussed in C2.2 above on a floor by floor basis no further protection to openings in external walls of the RACF in adjoining fire compartments is required by this clause. In Building 4 the class 5 and 9b portions extend fully to the external walls that are located 180^{o} to the Class 2 external wall portions, thus do not require any further protection of openings under this clause.	N/A
C3.4: Acceptable Methods of Protection	No protection required by this clause to any openings being greater than 6.0m apart between buildings. However there will be instances where the discharge of FIS's involves passing within 6.0m of an opening of the same building thus will require internal protection under D1.7 of BCA and this clause.	CRA
C3.5: Doorways in Fire Walls	No details of doors in required fire walls at basement car park levels to RACF and Basement and ground level of Building 4 that will need to be self closing or automatic closing -/120/30 fire doors. To be further assessed at CC stage.	CRA
C3.6: Sliding Fire Doors	No sliding fire doors proposed.	N/A
C3.7: Protection of Doorways in Horizontal Exits	No Horizontal exits proposed other than at B1 level to Building 4.	CRA
C3.8: Openings in Fire-isolated Exits	No details of the doors leading to the fire isolated stairs that are required to be -/60/30 fire doors. To be further assessed at CC stage.	CRA
C3.9: Service Penetrations in Fire-isolated Exits	No details of any service penetrations to the fire isolated stairs. To be further assessed at CC stage.	CRA
C3.10: Openings in Fire-isolated Lift Shafts	The doorways to the lift shafts are to be protected with -/60/- fire doors complying with AS1735.11 and set to remain closed except when discharging of receiving. To be further assessed at CC stage.	CRA
C3.11: Bounding Construction: Class 2, 3 and 4 Buildings	The doors that open into the common corridor areas to the class 2 portions are to be self closing -/60/30 fire doors. To be further assessed at CC stage.	CRA
C3.12: Openings in Floors and Ceilings for Services	Any services shafts are to have a FRL as specified in Part 4 of this report. To be further assessed at CC stage.	CRA
C3.13: Openings in Shafts	Access to any service shafts is to be through an access panel, or self-closing fire door, having a FRL of not less than -/60/30. To be further assessed at CC stage.	CRA
C3.15: Openings for Service Installations	Installations through fire rated walls, smoke walls, floors and other elements are to be protected via a method having a FRL relative to the wall they are penetrating. To be further assessed at CC stage.	CRA

C3.16: Construction Joints	Construction joints are to have the required FRL with respect to integrity and insulation relative to the building element they are joining. Structural engineer to certify at CC stage.	Noted
C3.17: Columns Protected with Lightweight Construction to Achieve an FRL	It is assumed that all columns will be of concrete construction and therefore will have sufficient fire resistance without the need for light weight fire rated construction to provide a FRL under this clause. To be certified by Structural Engineer.	Noted
SPECIFICATION C1.1 – FIRE-RESISTING CONSTRUCTION		
2.0: General Requirements	Noted	-
2.1: Exposure to Fire-Source Features	As the buildings are required to be constructed of Type A Construction the load bearing building elements require a FRL even if not exposed to a fire source feature. The subject buildings being located greater than 6.0m to a FSF (being the far side of a roadway adjoining the allotment or another building on the site) is not considered to be exposed to a FSF under this clause. The Buildings 1, 2 and 3 being the one building are also not deemed to create a fire source feature to each other, however are deemed to be separate fire compartments to each other.	Noted
2.2: Fire Protection for a Support of Another Part	Elements contained within the same fire compartment require the same FRL.	Noted
2.3: Lintels	Lintels are required to have the FRL required for the part of the building in which they are located, unless they are located in a non-load bearing external wall to the Class 9c portions. To be further assessed at CC stage.	N/A
2.4: Attachments Not to Impair Fire-resistance	All attachments proposed to the external façade of the building are to be of non combustible materials that are permitted by this clause. Insufficient details of any attachments to the external façade shown on design documentation at this stage. A combustible material may be used provided it possesses the required fire hazard indices. To be further assessed at CC stage.	CRA
2.5: General Concessions	No concessions are currently applicable for the architectural design under this clause. There are however concessions for rooftop plant areas. To be further assessed at CC stage with regards to any rooftop plant areas.	CRA
2.6: Mezzanine Floors: Concession	No mezzanines proposed to any buildings.	N/A
2.7: Enclosure of Shafts	Fire rated shafts are required to be enclosed, at the top and bottom, with construction having a FRL required for the walls of a non-load-bearing shaft in the same building, unless the shaft extends beyond the roof covering, with the exception of fire isolated stair and lift shafts that are to have lids with a FRL regardless.	CRA
2.8: Carparks in Class 2 and 3 Buildings	Concessions under this clause are not applicable due to all the buildings containing a rise in storeys greater than 4.	N/A
2.9: Residential Aged Care Building: Concession	Not applicable as there are no class 3 portions.	N/A
3.0: Type A Fire-resisting Construction	Insufficient details on the proposed fire resistance levels of the building elements see Part 4 of this report for details on required FRL's. To be further assessed at CC stage.	CRA
3.1: Fire-resistance of Building Elements	Insufficient details on the proposed fire resistance levels of the building elements see Part 4 of this report for details on required FRL's. To be further assessed at CC stage.	CRA
3.2: Concessions for Floors	The portion of the basement floor that is laid directly on the ground surface is not required to have a FRL under this clause.	Noted
3.3: Floor Loading of Class 5 and 9b Buildings: Concession	No concession applicable under this clause for the subject development.	N/A
3.4: Roof Superimposed on Concrete Slab: Concession	It is assumed the walls separating each SOU to the top floor will extend fully to the underside of the roofing material thus alleviating the need for the roof to possess a FRL.	Noted

3.5:	Roof: Concession	The roof need not have the required FRL as it is assumed to be a non-combustible material with the entire building being fully sprinkler protected to the RACF and each SOU at top floor of buildings 1, 2, 3 and 4 extending fully up to the underside of the roof sheeting.	Noted Refer Part 4 of Report
3.6:	Rooflights	No roof lights proposed to development in the current design nominated on roof plans.	N/A
3.7:	Internal Columns and Walls: Concession	If the roof has no FRL in accordance with Clause 3.5, the top most storey, immediately below the roof may have internal walls, other than fire and shaft walls, with a reduced FRL of 60/60/60. To be further assessed at CC stage.	Noted
3.9:	Carparks	The FRL of the basement carpark areas that are to be fully sprinkler protected can reduce down under this clause from 120/120/120 to 60/60/60 FRL. However as portions of the slab over the basement car parks are used for egress purposes being open space, the FRL's need to be retained as 120/120/120 FRL to satisfy D2.12 of BCA.	N/A
SPECIFICATION C1.8 - STRUCTURAL TESTS FOR LIGHTWEIGHT CONSTRUCTION			
1.	Scope	Noted	-
2.	Application	No details of any lightweight construction proposed to achieve a FRL. To be further assessed at CC stage	CRA
3.	Tests	No details of any lightweight construction proposed to achieve a FRL. To be further assessed at CC stage	CRA
4.	Test Specimens	No details of any lightweight construction proposed to achieve a FRL. To be further assessed at CC stage	CRA
5.	Test Methods	No details of any lightweight construction proposed to achieve a FRL. To be further assessed at CC stage	CRA
6.	Criteria for Compliance	No details of any lightweight construction proposed to achieve a FRL. To be further assessed at CC stage	CRA
SPECIFICATION C1.10 - FIRE HAZARD PROPERTIES			
1.	Scope	Noted	-
2.	Application	For Information Only	Noted
3.	Floor linings and floor coverings	No details of Fire Hazard Indices of floor lining and floor covering materials proposed.	
4.	Wall and ceiling linings	No details of Fire Hazard Indices of wall and ceiling lining materials proposed.	
5.	Air-handling Ductwork	No details of Fire Hazard Indices of ductwork proposed.	
6.	Lift Cars	No details of Fire Hazard Indices of Lift Car linings proposed.	
7.	Other materials	No details of Fire Hazard Indices of all materials proposed.	
SPECIFICATION C2.5 – SMOKE-PROOF WALLS IN HEALTH-CARE AND AGED CARE BUILDINGS			
1.	Scope	Noted	-
2.	Class 9a Health-Care Buildings	For Information only	Noted
3.	Class 9c Aged Care Buildings	No detail of construction of smoke proof walls. However smoke doors have been nominated on the floor plans to the RACF building. Refer plans that show the smoke compartment wall locations to each level of the RACF Building portion. The area of each smoke compartment has been confirmed as less than 500m^2 as required. The kitchen and laundry being located at basement level are also to be contained within their own 60/60/60 fire compartment.	CRA
4.	Doorways in Smoke-Proof Walls	No detail of construction of smoke proof doors. Currently the smoke doors are documented on the floor plans, with these smoke doors where required swinging in both directions.	CRA
SPECIFICATION C3.4 – FIRE DOORS, SMOKE DOORS, FIRE WINDOWS AND SHUTTERS			
1.	Scope	Noted	-
2.	Fire Doors	The fire doors throughout the development are to comply with AS1905.1-2005.	CRA

3. Smoke Doors	The smoke doors throughout the RACF portion and the residential corridors that exceed 40m to Buildings 1 and 4 have been nominated in the smoke proof walls that are required to swing in the direction of egress. To be further assessed at CC stage.	CRA
SPECIFICATION C3.15 – PENETRATION OF WALLS, FLOORS AND CEILINGS BY SERVICES		
1. Scope	Noted	-
2. Application	For Information only	Noted
3. Metal Pipe Systems	No details of sealing of services penetrating fire rated elements. To be further assessed at CC stage	CRA
4. Pipes Penetrating Sanitary Compartments	No details of sealing of services penetrating fire rated elements. To be further assessed at CC stage	CRA
5. Wires and Cables	No details of sealing of services penetrating fire rated elements. To be further assessed at CC stage	CRA
6. Electrical Switches and Outlets	No details of sealing of services penetrating fire rated elements. To be further assessed at CC stage	CRA
7. Fire-stopping	No details of sealing of services penetrating fire rated elements. To be further assessed at CC stage	CRA

SECTION D: ACCESS AND EGRESS		
PART D1 – PROVISION FOR ESCAPE		
D1.0: Deemed-to-Satisfy Provisions	Noted	-
D1.1: Application of Part	Noted	-
D1.2: Number of Exits Required	As required at least one exit is provided to each level of the building portions including car park levels, RACF, and Buildings 1, 2, 3 and 4.	Complies
D1.3: When Fire-Isolated Stairways and Ramps are Required	The stairways providing egress from the class 9c portions and Class 2 portions of the building connect greater than 3 storeys thus have been designed as FIS's to all buildings. The egress stairs from the basement carpark levels that discharge direct to the outside are also deemed to be FIS's for the purpose of measuring travel distance compliance.	Complies
D1.4: Exit Travel Distances	The exit travel distances to all areas and levels are within the maximum allowable by this clause to the class 7a and 9c areas being within 20.0m of an exit or point of choice and maximum 40m to the nearest exit. However the egress travel distances from the end units to Buildings 1, 2, 3 and 4 in some instances exceed the 6.0m to an exit or point of choice. This item will need to be addressed as an Alternate Solution report against the relevant performance criteria at the CC stage.	AS Refer Part 5.2 of Report
D1.5: Distance Between Alternative Exits	Alternate exits within 60m as per this clause to the basement car park levels and administration, activities and gym areas are not less than 9.0m apart or not greater than 60m apart as required.	Complies
D1.6: Dimensions of Exits and Paths of Travel to Exits	Insufficient information on the exit width, including the stairways that are to be a minimum of 1m clear of all obstructions, and no less than 2m in height. To be further assessed at CC stage.	CRA
D1.7: Travel via Fire-Isolated Exits	The FIS's that discharge from all buildings discharge direct to a road or open space as required. However some FIS's that discharge direct to open space require the path of travel to the public roadway involves to pass within 6.0m of adjacent openings the same building. As such the window and other openings will require to be protected in accordance with C3.4 of BCA2010. To be further assessed at CC stage. The stairs that discharge up from the basement car park level to the ground level only connect two storeys thus are considered to be non fire isolated stairs albeit fire separated stairs from the basement to ground levels.	CRA Refer Part 5.6 of Report
D1.9: Travel by Non Fire-Isolated Stairways or Ramps	The stairways from the basement level being non fire-isolated discharge direct to a road or open space as required at ground level.	Complies

D1.10: Discharge from Exits	The discharge point of the exit doors from the building is as required and does not need to be protected from being blocked by vehicles or the like as they all discharge to landscaped areas. The path of travel from the exits to the road is to be via a pathway with ramps having a gradient of no more than 1:8 or stairways complying with D2.13 below. To be further assessed at CC stage.	CRA
D1.11: Horizontal Exits	There are no required or proposed horizontal exits.	N/A
D1.13: Number of Persons Accommodated	Less than 100 people will be accommodated on each level of each building.	Noted
D1.14: Measurement of Distances	Information only.	Noted
D1.15: Method of Measurement	Information only.	Noted
D1.16: Plant Rooms, Lift Motor Rooms and electricity network substations: Concession	No details of individual fitout of various plant rooms at this stage. To be further assessed at CC stage.	CRA
D1.17: Access to Lift Pits	Access to the lift pit is assumed to be through the bottom landing doors as the pit is assumed to be less than 3m deep.	CRA
PART D2 – CONSTRUCTION OF EXITS		
D2.0: Deemed-to-Satisfy Provisions	Noted	-
D2.1: Application of Part	Noted	-
D2.2: Fire-Isolated Stairways and Ramps	The fire isolated stairways appear to be of concrete construction. To be further assessed at CC stage	CRA
D2.3: Non-Fire-Isolated Stairways and Ramps	The non fire isolated stairways appear to be of concrete construction. To be further assessed at CC stage	CRA
D2.4: Separation of Rising and Descending Stair Flights	The descending fire isolated stairways discharge direct to open space as required by passing down to the basement level where discharge direct to open space is then achieved.	Complies
D2.7: Installations in Exits and Paths of Travel	Insufficient details, should the EDB cupboards be located in a path of travel they are to be enclosed in non-combustible construction and suitably smoke sealed. To be further assessed at CC stage.	CRA
D2.8: Enclosure of Space Under Stairs and Ramps	No enclosures proposed under the exit stairways as currently documented.	Complies
D2.9: Width of Stairways and Ramps	Insufficient information on the stair width, the stairways are to be a minimum of 1m clear of all obstructions including handrails, and no less than 2m in height. To be further assessed at CC stage.	CRA
D2.10: Pedestrian Ramps	No details of the ramps proposed at ground floor level to access the main entry that are required to possess a 1:14 gradient suitable for disabled persons. To be further assessed at CC stage once detailed RL's are included in the design documentation.	CRA
D2.11: Fire-Isolated Passageways	FIP's to possess the same FRL as the FIS's. To be further assessed at CC stage.	CRA
D2.12: Roof as Open Space	The slab over the basement car park to Buildings 1, 2 and 3 and over the Gym to Building 4 is in parts being used as a roof as open space for egress to pass over. As such the structure supporting this "open space" needs to achieve a 120/120/120 FRL. To be further assessed at CC stage.	CRA
D2.13: Goings and Risers	Stair geometry to all stairs throughout the development to comply with Table D2.13. To be further assessed at CC stage	CRA
D2.14: Landings	Landing size appears adequate. It is assumed that the landings will have either a non-slip finish or a non-skid strip.	CRA
D2.15: Thresholds	Further perimeter section details required to confirm no steps in the thresholds at the point of discharge at the doorways. To be further assessed at CC stage.	CRA
D2.16: Balustrades or Other Barriers	Balustrades are required to be 1m above the floor of any balcony, path or the like. Details of the dimensions and configurations of the balustrading to the stairways and balconies have not been supplied at this stage. To be further assessed at CC stage.	CRA

D2.17: Handrails	Handrails are to be provided to a least one side of all stairways and ramps. To be further assessed at CC stage.	CRA
D2.18: Fixed Platforms, Walkways Stairways and Ladders	No details of equipment to be contained within plant room areas to achieve compliance with AS1657. To be further assessed at CC stage.	CRA
D2.19: Doorways and Doors	All doors have been nominated as single leaf egress doors swinging in the direction of egress as required other than the main entry door to the administration lobby office area that will need to swing in the direction of egress.	CRA
D2.20: Swinging Doors	All doors have been nominated as single leaf egress doors swinging in the direction of egress as required other than the main entry door to the administration lobby office area that will need to swing in the direction of egress.	CRA
D2.21: Operation of Latch	No details of door latching mechanisms. To be further assessed at CC stage.	CRA
D2.23: Signs on Doors	Required signage is to be located on all fire and smoke doors stating “Fire Safety Door, Do Not Obstruct, Do Not Keep Open” and the discharge door from the fire isolated stairways are to state “Fire Safety Door – Do Not Obstruct” in capital letters not less than 20mm in height.	CRA
PART D3 - ACCESS FOR PEOPLE WITH A DISABILITY		
Assessment of Accessibility issued under Part D3 of BCA2010 are covered under a separate Consultants Report thus have not been included in this report.		

SECTION E: SERVICES AND EQUIPMENT		
PART E1 – FIRE FIGHTING EQUIPMENT		
E1.0: Deemed-to-Satisfy Provisions	Noted	-
E1.3: Fire Hydrants	Fire hydrants are to be installed to serve the subject buildings in accordance with AS 2419.1-2005 within the FIS’s at each level. It is proposed that fire hydrants are installed within the FIS’s at each level to serve the subject building. The location of the fire hydrant booster valve assembly is to be located adjacent to the vehicular entry to the basement car park that is to be located greater than 10.0m from the subject building, however possibly less than 10.0m to Building 2. As such a radiant heat wall will need to be constructed around the hydrant booster assembly extending 2.0m either side and 3.0m above ground level. The hydrant and sprinkler booster pump room is also to have direct access to open space as required. To be further assessed at CC stage.	CRA
E1.4: Fire Hose Reels	Fire hose reels are required to be installed within 4.0m of a required exit in accordance with AS2441-2005 to the class 7a portions and class 2 portions due to the internal hydrants being required. Thus FHR’s are required in all buildings 1, 2, 3 and 4 to all levels. No FHR’s are required in the B1, Ground and levels 1 and 2 portions of the RACF Building. There is a concession to not require any FHR’s within the class 9c portion. We would however suggest Hose Reels be provided within the Staff administration area at basement level of the RACF building. To be further assessed at CC stage.	CRA
E1.5: Sprinklers	Sprinklers are required to be provided to the entire RACF portion and to the basement car parks that contain greater than 40 cars.	CRA
E1.6: Portable Fire Extinguishers	PFE’s are to be installed in accordance with AS 2444-2001.	CRA
E1.8: Fire Control Centres	As the buildings are less than 25m in effective height, no FCC’s or FCR’s are required.	N/A

E1.9: Fire Precautions During Construction	Information only. Whilst the building is under construction there is to be not less than one fire extinguisher provided at all times to each storey. Once the building has reached an effective height of over 12m the hydrants and hose reels and booster connections must be operational to all levels except the 2 uppermost storeys under construction.	Noted
E1.10: Provision for Special Hazards	There are no special hazards associated with the subject buildings	N/A
SPECIFICATION E1.5 - FIRE SPRINKLER SYSTEMS		
1. Scope	Noted	-
2. Adoption of AS 2118	Fort Information Only	Noted
3. Separation of Sprinklered and Non-Sprinklered Areas	The entire RACF building and basement levels beneath all buildings will be fully sprinkler protected. As such at basement level a fire wall with a 120/120/120 separating the sprinklered from the non sprinklered areas will be required beneath Building 2 and 4.	CRA
4. Protection of Openings	No details of sprinkler system proposed.	CRA
5. Fast Response Sprinklers	No details of any fast response sprinkler heads proposed to the RACF residential portions of the development.	CRA
6. Sprinkler Valve Enclosures	The location of the sprinkler valve enclosure is at this stage not known. Such enclosure must have access direct to open space. To be further assessed at CC stage	CRA
7. Water Supply	No details of sprinkler system proposed that is to have a grade 3 water supply.	CRA
8. Building Occupant Warning System	No details of sprinkler system proposed and connection to a BOW system.	CRA
9. Connection to Other Systems	No details of sprinkler system proposed.	CRA
10. Anti-tamper Devices	No details of sprinkler system proposed.	CRA
11. Sprinkler Systems in Carparks	The basement carpark areas beneath all buildings that will accommodate greater than 40 vehicles are to be sprinkler protected. To be further assessed at CC stage	CRA
12. Class 9c Aged Care Buildings	The RACF building is to be sprinkler protected throughout – To be further assessed at CC stage	CRA
PART E2 – SMOKE HAZARD MANAGEMENT		
E2.0: Deemed-to-Satisfy Provisions	Noted	-
E2.1: Application of Part	Noted	-
E2.2: General Requirements (including Tables E2.2a and E2.2b)	The Class 9c portion of the building is to be provided with an automatic smoke detection and alarm system complying with Specification E2.2a of BCA2010. The class 7a carpark portion is to be provided with a carpark exhaust system in accordance with F4.11 of BCA2010 and AS1668.2-1991. The FIS's serving the RACF portion are also to be provided with a stair pressurisation system in accordance with AS1668.1-1998. A smoke alarm system in accordance with Clause 3 (c) (i) and (ii) of Specification E2.2a of BCA2010 is also required within each Class 2 SOU of the Buildings 1, 2, 3 and 4 portions and within the common corridors at each level. A smoke detection and alarm system in accordance with Clause 4 of Specification E2.2a of BCA2010 is also required within the basement and ground floor class 5 and 9b portions of Building 4. Auto shutdown for any common air handling system is also to be provided for the class 9b portions. To be further assessed at CC stage.	CRA
E2.3: Provisions for Special Hazards	There are no special hazard associated with the buildings to be considered.	N/A
SPECIFICATION E2.2a – SMOKE DETECTION AND ALARM SYSTEMS		
1. Scope	Noted	-

2. Type of System	The type of system to the class 5, 9b and 9c portions of Building 4 and RACF to the development must be in accordance with clause 4 and 6 of this specification. The type of system to the class 2 portions must be in accordance with clause 3. To be further assessed at CC stage.	CRA
3. Smoke Alarm System	No details of smoke alarm system proposed to the Class 2 portions of Buildings 1, 2, 3 and 4. To be further assessed at CC stage.	CRA
4. Smoke Detection System	No details of smoke detection and alarm system proposed to class 5, 9b and 9c portions of Building 4 and to the RACF Building. To be further assessed at CC stage.	CRA
6. Building Occupant Warning System	No details of smoke alarm system proposed. To be further assessed at CC stage.	CRA
7. System Monitoring	No details of smoke alarm system that must be monitored as per this clause. To be further assessed at CC stage.	CRA
PART E3 – LIFT INSTALLATIONS		
E3.0: Deemed-to-Satisfy Provisions	Noted	-
E3.2: Stretcher Facility in Lifts	As the buildings have an effective height of greater than 12.0m all the lifts are required to have a stretcher facility.	CRA
E3.3: Warning Against Use of Lifts in Fire	Signage warning against using the lifts during a fire are to be installed. To be further assessed at CC stage	CRA
E3.4: Emergency Lifts	Emergency lifts are not required in any of the buildings	N/A
E3.5: Landings	As required, landings appear to be of suitable size.	CRA
E3.6: Passenger Lifts	All lift facilities are to be designed and installed such that they are suitable for use by disabled persons in accordance with this clause and AS1735.12.	CRA
E3.7: Fire Service Controls	Fire service controls to be installed in accordance with AS 1735.2. To be further assessed at CC stage.	CRA
E3.8: Aged Care Buildings	As some class 9c levels do not have access direct to the outside one lift must be constructed as a stretcher lift.	CRA
PART E4 – EMERGENCY LIGHTING, EXIT SIGNS AND WARNING SYSTEMS		
E4.0: Deemed-to-Satisfy Provisions	Noted	-
E4.2: Emergency Lighting Requirements	Emergency lighting is to be installed in every fire-isolated exit, each floor level, common corridor and the like.	CRA
E4.3: Measurement of Distance	Information Only	Noted
E4.4: Design and Operation of Emergency Lighting	To comply with AS 2293.1-2005.	
E4.5: Exit Signs	Exits signs are to be provided above or adjacent to a door providing egress as well as directional signage throughout the entire development where necessary.	CRA
E4.6: Direction Signs	Where an exit is not readily apparent a directional sign is to be installed indicating the direction of egress being primarily within the carpark areas.	CRA
E4.7: Class 2 and 3 Buildings and Class 4 Parts: Exemptions	For Information Only	Noted
E4.8: Design and Operation of Exit Signs	To comply with AS 2293.1-2005.	CRA
E4.9: Sound Systems and Intercom Systems for Emergency Purposes	As the buildings are of class 2 and 9c primarily and less than 25m in effective height, a SSISEP is not required in any of the buildings	N/A

SECTION F: HEALTH AND AMENITY		
PART F1 – DAMP AND WEATHERPROOFING		
F1.0: Deemed-to-Satisfy Provisions	Noted	-
F1.1: Stormwater Drainage	Stormwater drainage to comply with AS 3500.3.2.	CRA
F1.5: Roof Coverings	It is assumed that all the building portions will have a metal roof and therefore are to comply with AS1562.1.	CRA
F1.6: Sarking	The sarking is to comply with AS 4200.	CRA
F1.7: Water Proofing of Wet Areas in Buildings	Waterproofing to wet areas to comply with AS 3740.	CRA
F1.9: Damp-proofing	Moisture is to be prevented from reaching the walls above a damp-proof course, and the underside of the suspended floors.	CRA

SECTION F: HEALTH AND AMENITY		
F1.10: Damp-proofing of Floors on the Ground	A vapour barrier in accordance with AS 2870 must be installed.	CRA
F1.11: Provision of Floor Wastes	In the residential units the bathrooms are to be graded to a floor waste.	CRA
F1.12: Sub-floor Ventilation	All floor slabs will be on ground with no sub floor areas.	N/A
F1.13: Glazed Assemblies	Glazed assemblies are to comply with AS 2047 and AS 1288.	CRA
PART F2 – SANITARY AND OTHER FACILITIES		
F2.0: Deemed-to-Satisfy Provisions	Noted	-
F2.1: Facilities in Residential Buildings (including Table F2.1)	In the Class 9c RACF, each resident's room will have its own ensuite containing WC, basin and shower as well as an assisted bath area. Central kitchen facilities are proposed as well as a basement central laundry services. The facilities within each Class 2 ILU unit appear to be suitably provided as well. To be further assessed at CC stage.	CRA
F2.2: Calculation of Number of Occupants and Facilities	Further details of staff numbers to be provided to verify compliance of staff facilities to RACF Building.	FI Refer Part 5.7 of Report
F2.3: Facilities in Class 3 to 9 Buildings (including Table F2.3)	Further details of staff numbers to be provided to verify compliance of staff facilities to RACF Building. To be further assessed at CC stage.	CRA
F2.4: Accessible Sanitary Facilities (including Table F2.4)	An accessible facility is proposed to be provided at each level. It is to fully comply with AS1428.1-2001. To be further assessed at CC stage	CRA
F2.5: Construction of Sanitary Compartments	Insufficient details of the sanitary facilities, where the pans to the bathroom areas are within 1.2m of the doorway however the doorways in all instances swing outwards as required. In these instances the doors are to be removable from outside the bathroom. To be further assessed at CC stage, although all bathroom WC's appear complaint with the sliding doors and >1.2m to the WC pan to the RACF. Further details to the ILU portions are required to verify compliance.	CRA
F2.6: Interpretation: Urinals and Washbasins	Individual washbasin and urinals proposed.	Noted
F2.8: Waste Management	Slop Hopper to be provided at each level in the form of a cleaner's room. Internal fitout to be assessed at CC stage to ensure compliance	
PART F3 – ROOM SIZES		
F3.0: Deemed-to-Satisfy Provisions	Noted	-
F3.1: Height of Rooms and Other Spaces	Based on the sections and elevations provided the ceiling heights appear to be able to meet the 2.4m minimum ceiling height requirement for corridors, habitable rooms and the like – To be further assessed at CC stage with RCP's.	CRA
PART F4 – LIGHT AND VENTILATION		
F4.0: Deemed-to-Satisfy Provisions	Noted	-
F4.1: Provision of Natural Light	Natural light is provided to all sleeping and habitable rooms via window / door openings as required.	Noted
F4.2: Methods and Extent of Natural Lighting	Natural light is required by Clause F4.1 of the BCA to be provided to all rooms used for sleeping purposes. Windows appear to have been proposed to provide the required natural light to these areas. Natural lighting to a room via the windows must have an aggregate light transmitting area of no less than 10% of the floor area of the room. Further detailed areas to be assessed at CC stage to ensure compliant natural light is available with the openings proposed.	CRA
F4.3: Natural Light Borrowed From Adjoining Room	There may be a need to borrow light to adjoining rooms being the study areas in the ILU and SSC building portions.	CRA
F4.4: Artificial Lighting	Lighting to all areas is to comply with AS 1680.0. To be further assessed at CC stage.	CRA

F4.5: Ventilation of Rooms	It is assumed that either mechanical or natural ventilation, complying with AS1668.2-1991 will be provided to the entire class 9c portion of the building and to the class 2 portions with mechanical exhaust provided throughout all sanitary facilities / bathrooms. To be further assessed at CC stage.	CRA
F4.6: Natural Ventilation	It is assumed that all bathrooms, ensuites and WC's will be mechanically exhausted. To be further assessed at CC stage.	CRA
F4.7: Ventilation Borrowed From Adjoining Room	It is assumed that all bathrooms, ensuites and WC's will be mechanically exhausted thus alleviating airlocks to be provided. To be further assessed at CC stage.	CRA
F4.8: Restriction on Position of Water Closets and Urinals	All sanitary facilities located as required and provided with mechanical ventilation.	Complies
F4.9: Airlocks	All sanitary facilities located as required and provided with mechanical ventilation, thus no airlocks required to common areas sanitary facilities.	N/A
F4.11: Carparks	It is assumed that mechanical exhaust system, complying with AS1668.2-1991 will be provided to the class 7a carpark portions. To be further assessed at CC stage.	CRA
F4.12: Kitchen Local Exhaust Ventilation	No details of kitchen exhaust system to the commercial kitchen within the RACF building that is to comply with AS1668.2-1991. To be further assessed at CC stage.	CRA
PART F5 – SOUND TRANSMISSION AND INSULATION		
F5.0: Deemed-to-Satisfy Provisions	Noted	-
F5.1: Application of Part	The provisions of this part apply to the class 2 and 9c portions of the development	Noted
F5.2: Determination of Airborne Sound Insulation Ratings	For Information Only	Noted
F5.3: Determination of Impact Sound Insulation Ratings	For Information Only	Noted
F5.4: Sound Insulation Rating of Floors	The floor separating the sole occupancy units must have a $R_w + C^t r$ (airborne) not less than 50 and an $L_{n,w} + C_1$ (impact) not more than 62 if it separates SOU's or SOU's from plant or other public areas.	CRA
F5.5: Sound Insulation Rating of Walls	The walls separating the sole occupancy units must have a $R_w + C^t r$ (airborne) not less than 50, and an R_w not less than 50 where the wall separates a SOU and public area or plant room. Doors to SOU's are to also have an R_w not less than 30.	CRA
F5.6: Sound Insulation Rating of Services	If a soil or waste pipe passes through more than one unit the pipe must be separated from the rooms with construction that has a $R_w + C^t r$ (airborne) not less than 45 if adjacent to a habitable room, or 25 if adjacent to a kitchen or other room.	CRA
F5.7: Sound Isolation of Pumps	For information only.	CRA

SECTION G: ANCILLARY PROVISIONS		
PART G1 - MINOR STRUCTURES AND COMPONENTS		
G1.0: Deemed-to-Satisfy Provisions	Noted	-
G1.2: Refrigerated Chambers, Strong-Rooms and Vaults	No details of cool room construction to RACF Building kitchen area. To be further assessed at CC stage.	CRA
NSW G1.101: Provision for Cleaning of Windows	As all the buildings are all greater than 3 storeys high provision for the cleaning of the windows in a safe manner is required. Thus provision for cleaning of windows to all elevations of the building will be required. Full details of means of window cleaning to be provided.	CRA

SECTION I: MAINTENANCE		
PART I1 – EQUIPMENT AND SAFETY INSTALLATIONS		
I1.0: Deemed-to-Satisfy Provisions	Noted	-
NSW I1.1: Essential Fire Safety Measures	Essential fire or other safety measures must be maintained and certified on an ongoing basis.	Noted

The following Section J Provisions are applicable to the Class 9c RACF Building, class 7a car parks to all buildings and class 5 and 9b areas to building 4

SECTION J: ENERGY EFFICIENCY (Class 3 and 5-9)		
PART J0 – ENERGY EFFICIENCY		
J0.1: Application of Section J	Noted	-
J0.2: Heating & Cooling Loads of SOU's to Class 2 & 4 parts	Not applicable in NSW.	Noted
J0.3: Ceiling Fans	Not applicable in NSW.	Noted
PART J1 – BUILDING FABRIC		
J1.0: Deemed-to-Satisfy Provisions	Noted	-
J1.1: Application of Part	The RACF building and Building 4 basement and ground office and activities areas with the exception of the basement levels areas considered to be a conditioned space and therefore this part is applicable to all areas except the basement level. The proposed development is located in Climate Zone 5.	Noted
J1.2: Thermal Construction General	Where insulation is required it is to comply with AS4859.1 and be installed in accordance with this clause.	CRA
J1.3: Roof and Ceiling Construction	The roof to the RACF and floor slab over the ground level class 9b activities area of building 4 is to have an R-value of 3.2 measured from the outside of the roof and if the metal roof to the RACF building is to be fixed to metal framing then there is to be a thermal break installed between the framing and the roof covering using a material that has a R-value of not less than 0.2.	CRA
J1.4: Roof Lights	No roof lights are proposed to any buildings.	N/A
J1.5: Walls	The walls are required to be insulated to have an R Value of 1.8.	CRA
J1.6: Floors	The ground floor slab forms the floor of the envelope of the conditioned space of the building and as the floor is enclosed and it is assumed that the ground floor slab does not contain in floor heating then it does not require an R-value.	Noted
PART J2 – GLAZING		
J2.0: Deemed-to-Satisfy Provisions	Noted	-
J2.1: Application of Part	The RACF building and Building 4 basement and ground office and activities areas with the exception of the basement levels areas considered to be a conditioned space and therefore this part is applicable to all areas except the basement level. The proposed development is located in Climate Zone 5.	
J2.4: Glazing	The proposed glazing to the applicable portions are to comply with this clause. To be further assessed at CC Stage with detailed glazing assessment to be undertaken	CRA
J2.5: Shading	There currently appear to be no shading devices. To be further assessed at CC Stage	Noted
PART J3 – BUILDING SEALING		
J3.0: Deemed-to-Satisfy Provisions	Noted	-
J3.1: Application of Part	The RACF building and Building 4 basement and ground office and activities areas with the exception of the basement levels areas considered to be a conditioned space and therefore this part is applicable to all areas except the basement level. The proposed development is located in Climate Zone 5.	Noted
J3.2: Chimneys and Flues	No chimneys or flues proposed.	N/A
J3.3: Roof Lights	No roof lights proposed.	N/A
J3.4: External Windows and Doors	The doors in the external walls are to be provided with seal of foam or rubber compressible strips, or fibrous seal, to restrict air-infiltration.	CRA
J3.5: Exhaust Fans	The exhaust fans to the sanitary facilities in the this portion of the building, and any other miscellaneous exhaust fans to other conditioned spaces, are to pre-fitted with a sealing device, such as a self-closing damper of the like.	CRA

J3.6: Construction of Roofs, Walls and Floors	The roof, walls, floors and any other openings, such as window or doors, are to be constructed to minimise air leakage by being enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions or are sealed by caulking, skirting, architraves, cornices or the like.	CRA
PART J4 – AIR MOVEMENT		
J4.0: Deemed-to-Satisfy Provisions	Noted	-
J4.1: Application of Part	This part is not applicable as it is only applicable to Class 2 buildings which are exempted in NSW.	Noted
PART J5 – AIR-CONDITION AND VENTILATION SYSTEMS		
J5.0: Deemed-to-Satisfy Provisions	Noted	-
J5.2: Air-conditioning and Ventilation Systems	Air-condition and ventilation systems are to comply with the requirements of this clause.	CRA
J5.3: Time Switch	Time switches are to be provided to a/c systems with a power supply of more than 10kWr, to ventilation systems with an air flow rate of more than 1000L/s or heating systems providing more than 10 kW heating.	CRA
J5.4: Heating and Chilling Systems	Systems providing heating or chilling for a/c systems must be insulated and where water is circulated at more than 2L/2 must that a motor shaft power to the a/c pump of not more than 4W/m² and have a variable speed pump.	CRA
J5.5: Miscellaneous Exhaust Systems	If the kitchen to RACF provided with a range hood that has a flow rate of more than 1000L/s it must be fitted with a variable speed fan and be able to be stopped if not required ad is to be designed to minimise the amount of conditioned air it exhausts.	CRA
PART J6 – ARTIFICIAL LIGHTING AND POWER		
J6.0: Deemed-to-Satisfy Provisions	Noted	-
J6.1: Application of Part	This part applies to all buildings 1, 2, 3 and 4 and the RACF building	
J6.2: Artificial Lighting	The interior lighting is to comply with this clause.	CRA
J6.3: Interior Artificial Lighting and Power Control	Lighting controls are to be in accordance with this clause, which sets requirements on location of switching and sets limits on floor areas controlled by a switch.	CRA
J6.4: Interior Decorative and Display Lighting	Lighting falling under this clause is to be separately switched from other lighting, be under a manual switch and controlled with a time switch.	CRA
J6.5: Artificial Lighting Around the Perimeter of a Building	Perimeter lighting is to be controlled by a daylight sensor or time switch and where it exceeds 100W have an average light source density of 60 Lumens/W or be controlled by a motion sensor complying with Specification J6.	CRA
J6.6: Boiling Water and Chilled Water Storage Units	The power supply to a fixed boiling water or chilled water storage unit must be controlled by a time switch in accordance with Specification J6.	CRA
PART J7 – HOT WATER SUPPLY		
J7.0: Deemed-to-Satisfy Provisions	Noted	-
J7.2: Hot Water Supply	The hot water supply systems must be designed and installed in accordance with Section 8 of AS3500.4.	CRA
J7.3: Swimming Pool Heating and Pumping	Any heating for a swimming pool must be in accordance with this clause which sets out requirements for heating sources.	CRA
J7.4: Spa Pool Heating and Pumping	Spa pool heating and pumping is required to be in accordance with this clause.	CRA
PART J8 – ACCESS FOR MAINTENANCE		
J8.0: Deemed-to-Satisfy Provisions	Noted	-
J8.1: Application of Part	This part applies to all buildings 1, 2, 3 and 4 and the RACF building	
NSW J8.2: Access for Maintenance	Access for maintenance must be provided to all services and their components including time switches, motion detectors, thermostats, outside air dampers, reflectors, lenses and diffusers of light fittings, heat transfer equipment and adjustable or motorised shading devices.	CRA

J8.3: Facilities for Energy Monitoring	A building with a floor area of more than 500m^2 must have an energy monitoring facility to record the consumption of gas and electricity. A building with a floor area of more than 2,500m^2 must have the facility to individually record the consumption of air conditioning plant, artificial lighting, appliance power, central hot water supply, lifts, escalators and other ancillary plant .	CRA

The following NSW Variation Section J Provisions are applicable to the Class 2 portions of Buildings 1, 2, 3 and 4 as well as the separate BASIX Requirements

SECTION J: ENERGY EFFICIENCY (Class 2)		
NSW PART J(A)1 – BUILDING FABRIC		
NSW J(A)1.0: Deemed-to-Satisfy Provisions	Reference to BCA2009 is required to meet BCA2010 provisions	Noted
NSW J(A)1.1: Application of Part	Applies to the new Class 2 buildings where thermal insulation is required as a DA Condition.	Noted
NSW J(A)1.2: Compliance with BCA Provisions	To be included in the specification to AS/NZS4859.1 and Clause J1.2, for the new portion of the building. The installation is to be certified by an appropriate consultant.	CRA
NSW PART J(A)2 – BUILDING SEALING		
NSW J(A)2.0: Deemed-to-Satisfy Provisions	Noted	-
NSW J(A)2.1: Application of Part	Noted	-
NSW J(A)2.2: Compliance with BCA Provisions	Compliance is to be achieved with Clauses J3.2, J3.4, J3.5 and J3.6.	Noted
J3.3: Roof Lights	No rooflights.	Noted
J3.4: External Windows and Doors	The windows and doors must be sealed, or the windows may comply with AS2047, doors are still to be sealed.	CRA
J3.5: Exhaust Fans	The exhaust fans to the sanitary facilities in the this portion of the building, and any other miscellaneous exhaust fans to other conditioned spaces, are to pre-fitted with a sealing device, such as a self-closing damper of the like.	CRA
J3.6: Construction of Roofs, Walls and Floors	The roof, walls, floors and any other openings, such as window or doors, are to be constructed to minimise air leakage by being enclosed by internal lining systems that are close fitting at ceiling, wall and floor junctions or are sealed by caulking, skirting, architraves, cornices or the like.	CRA
NSW PART J(A)3 – AIR-CONDITIONING AND VENTILATING SYSTEMS		
NSW J(A)3.0: Deemed-to-Satisfy Provisions	Noted	-
NSW J(A)3.1: Application of Part	Noted	-
NSW J(A)3.2: Compliance with BCA Provisions	Compliance is to be achieved with Clauses J5.2, J5.3, J5.4 and J5.5.	Noted
J5.2: Air-conditioning and Ventilation Systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA
J5.3: Time Switch	Compliance required, design certification to be provided by Mechanical Engineer.	CRA
J5.4: Heating and Chilling Systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA
J5.5: Miscellaneous Exhaust Systems	Compliance required, design certification to be provided by Mechanical Engineer.	CRA
NSW PART J(A)4 – HOT WATER SUPPLY		
NSW J(A)4.0: Deemed-to-Satisfy Provisions	Noted	-
NSW J(A)4.1: Application of Part	Noted	-
NSW J(A)4.2: Compliance with BCA Provisions	The hot water supply system must comply with Clause J7.2.	Noted
J7.2: Hot Water Supply	The hot water supply systems must be designed and installed in accordance with Section 8 of AS3500.4.	CRA
NSW PART J(A)5 – ACCESS FOR MAINTENANCE		
NSW J(A)5.0: Deemed-to-Satisfy Provisions	Noted	-
NSW J(A)5.1: Application of Part	Noted	-

SECTION J: ENERGY EFFICIENCY (Class 2)		
NSW J(A)5.2: Access for Maintenance	Access for maintenance must be provided to all services and their components.	CRA

ANNEXURE C

SECTION J INFORMATION

ANNEXURE C - ENERGY EFFICIENCY – SECTION J

C1 Introduction

BCA 2006 (now BCA2010 for the purposes of this assessment) introduced requirements for Energy Efficiency for all buildings that contain conditioned spaces (heating or cooling).

This has an impact on the insulation of walls and ceilings in particular, and many existing standard types of construction no longer comply without insulation.

There are also controls on heating and cooling loads, and electrical loads.

The following is a summary of an assessment of the proposed building against the DTS provisions of the BCA, and outlines where further consideration is required by the designers or where specialised input from mechanical and electrical engineers is required.

In NSW the relevant Clauses of Section J are identified in NSW BCA Section J. This State variation is due to a BASIX certificate being required at the Development Application stage. This is so that there is not a doubling up of requirements on a residential building. The Class 7a portions of the building are required to comply with the national Section J requirements.

The BCA does outline one verification method being JV3 (JV1 & JV2 were deleted in the 2010 & 2008 BCA updates, respectively) which can also be used to demonstrate compliance with the performance requirements in lieu of the DTS provisions. This verification method requires detailed energy modelling to be carried out, however many of the items contained below may still be required to be satisfied.

The comments below relate to the class 5, 9b, 9c and 7a building portions only with the BASIX provisions covering the class 2 portions.

C2 General Assessment Criteria

The building has been assessed against Section J based on the following assumptions.

(a) Climate Zone – The building is assumed to be Climate Zone 5 based on the BCA Climate Zone map.

(b) Conditioned Space – The conditioned space for the subject buildings include all occupied floor areas provided with mechanical ventilation but excludes:

- Stairwells, lift shafts and other service shafts.
- Roof top and general plant rooms.
- Basement carpark levels

Please note that all buildings are considered conditioned even if in the base building construction active heating or cooling is not proposed but it is likely to be conditioned in the future

(c) Envelope – for the purposes of Section J, means the parts of a building's fabric that separate a conditioned space or habitable room from the exterior of the building or a non-conditioned space. For example the envelope of the conditioned space is formed by the external walls and the internal walls separating the Class 9c RACF and Class 5 and 9b portions to Building 4.

C3 Part J1 – Building Fabric

This Part applies to the building elements forming the envelope of the building:

(a) J1.2 – Thermal Construction

Insulation must comply with AS/NZS 4859.1 and be installed so that it overlaps adjoining insulation, forms a continuous barrier and does not affect the safe or effective operation of services or fittings.

Reflective insulation must be installed with the necessary airspace required to achieve the R value and be closely fitted against doors and windows and adequately supported by framing members.

Reflective insulation must be overlapped not less than 50mm and taped together.

Bulk insulation must be installed so that it maintains its position and thickness, and overlaps walls by 50mm where no insulation is provided in the walls.

(b) R Values Required

The subject building is required, under Clauses J1.3, J1.5 and J1.6 to obtain the following R Values for the elements as listed.

Item	R Value	Comment
Roof	3.2	Where exposed to the outside
Roof slab under plant room	1.6	Only for that part where a non conditioned space is located over the roof
Walls	2.8	Noted
Floors	Nil 2.0	Where the floors are laid directly on ground level Where the floors are above carpark levels

Notes:

1. The roof construction shown is a metal cladding on purlins with a suspended ceiling below, which has a typical R Value of 0.71. Therefore insulation to the ceiling cavity is required to achieve the above R Value.

2. The wall construction is shown as a cavity brick wall which has a typical R Value of 0.74. Therefore, cavity insulation is required in order to achieve the above R Value.

3. The floor is shown as concrete which has a typical R Value of 0.30. Therefore insulation to the underside will be required in order to achieve the required R Value.

4. A thermal break, using a material with an R-value of no less than 0.2 is required to be installed between the metal roof sheet and any metal framing where metal roof sheeting is fixed to metal roof framing and there is either no ceiling lining or the ceiling lining is fixed directly to metal purlins, rafters or battens.

C4 Part J2 – Glazing

This Part applies to the glazed elements in the envelope of the building:

(a) No assessment of the glazing in the RACF building and Building 4 has been undertaken using the glazing calculators. To be prepared at CC stage.

(b) Shading has been considered to be provided by fixed horizontal elements that shade at least 80% of the summer solar radiation. For the purpose of assessing the glazing the individual windows have been broken down into shaded and unshaded elements where required to comply with BCA Clause J2.5 “Shading”, with shading being considered from the sides of the shading element as well as from the front edge. Specifically BCA Clause J2.5 states that the shading element must extend horizontally past the window on both sides the same distance as out from the wall.

C5 Part J3 – Building Sealing

It has been considered that the building will not be air-conditioned using only an evaporative cooler and as such the building is to be provided with the following (with the exception of permanent ventilation openings for the safe use of gas appliances):

(a) A seal to restrict air infiltration must be fitted to each edge of an external door, openable window or the like.

This does not apply to windows complying with AS2047, fire doors, or shutters used only for security.

(b) The main entrance to the building must have an airlock, self closing door, revolving door or the like.

(c) Miscellaneous exhaust fans must be fitted with a sealing device such as a self closing damper or the like.

(d) Roofs, ceilings, walls, floors and any openings such as windows and doors and the like must be constructed to minimise air leakage when forming part of the thermal envelope of the building. Linings and the like are to be tight fitting or sealed by caulking, skirting, architraves, cornices or the like.

(e) An evaporative cooler must be fitted with a self closing damper or the like.

C6 Part J4 – Air Movement

Not applicable to Class 5 to 9 buildings

C7 Part J5 – Air Conditioning and Ventilation Systems

The mechanical engineer/designer is to certify that the air-conditioning and ventilation systems, including any carpark ventilation systems, comply with Part J5 of the BCA, which includes the following requirements:

(a) An air conditioning unit or system must be capable of being inactivated when the sole occupancy unit (tenancy) or part of the building is not occupied (Clause J5.2(a)(i)).

(b) Where the air conditioning system has motorised outside air and return dampers are provided, they must close when the system is deactivated (Clause J5.2(a)(ii)).

(c) All supply and return ductwork must be insulated and sealed in accordance with Specification J5.2 (Clause J5.2(a)(iv)).

(d) Must have an outdoor air economy cycle if the capacity is over 35kWr (Clause J5.2(a)(vii)).

(e) When the air flow is greater than 1,000 l/s be designed so that the total fan power of the fans in the system is in accordance with Table J5.2 (Clause J5.2(a)(ix)).

(f) Any other mechanical ventilation system must be capable of being inactivated when the building or part is not occupied, and if serving a conditioned space, must comply with the requirements of Clause J5.2(b).

(g) A time switch must be provided in accordance with Specification J6 when the power supply to:

- An air conditioning system is more than 10kWr; or
- A ventilation system with an air flow of more than 1000 l/s; or
- Heating systems of more than 10kW.

(h) Heating and chilling systems must comply with the energy efficiency requirements and pumping limitations outlined in Clause J5.4 of the BCA.

(i) Miscellaneous exhaust systems (e.g. kitchen exhaust) with a flow rate of more than 1000 l/s must have a variable speed fan and capable of being controlled or turned off by the operator (Clause J5.5).

C8 Part J6 – Artificial Lighting and Power

The electrical engineer/designer is to certify the design of the lighting and power systems to Part J6 of the BCA, which includes the following requirements and is applicable to all areas of the building including the non-conditioned areas:

(a) The aggregate design illumination power load must not exceed the following:-

Buildings other than class 2 and Class 4 parts must not exceed the maximum illumination power density in table J6.2a (below) for the areas concerned unless adjustment factors are applicable due to dimming or motion detection as outlined in table J6.2b. These include:

Location	**Maximum Illumination Power Density (W/m²)**
Auditorium, church and public hall	10
Board room and conference room	10
Carpark - general	6
Carpark – entry zone (first 20m of travel)	25
Common Rooms, spaces and corridors in a class 2 building	8
Corridors	8
Control Room, switch room, and the like	9
Entry Lobby from outside the building	15
Kitchen and food preparation area	8
Lounge area for communal use in a class 3 building or class 9c aged care building	10
Office – artificially lit to an ambient level of 200 lux or more	9
Office – artificially lit to an ambient level of less than 200 lux	7
Plant room	5
Sole occupancy unit of a class 3 building	5
Sole occupancy unit of a class 9c aged care building	7
Storage with shelving no higher than 75% of the height of the aisle lighting	8
Storage with shelving higher than 75% of the height of the aisle lighting	10
Service area, cleaner's room and the like	5
Toilet, locker room, staff room, rest room and the like	6

The requirement for the maximum lamp/illumination power density does not apply to emergency lighting and signage and display lighting within cabinets and display cases.

(b) Artificial lighting switches must be located in a visible position from the room being switched, and not operate an area of more than 250m² if the floor area is not more than 2,000m², or 1,000m² if the floor area of the space is more than 2,000m² (Clause J6.3 (c)).

(c) Artificial lighting in a building with a floor area of more than 250m² must be controlled by a time switch, or an occupant sensing device such as a security key card reader, or motion detector (Clause J6.3 (d)).

(d) Artificial lighting adjacent windows must be switched separately from other internal lighting (Clause J6.3 (e)).

(e) Interior decorative and display lighting to foyers or displays must be separately controlled by a manual switch and by a time switch if the lighting exceeds 7kW (Clause J6.4 (a)).

(f) Window display lighting must be controlled separately from other display lighting (Clause J6.4 (b)).

(g) Artificial lighting around a building must be controlled by either a daylight sensor or time switch in accordance with Specification J6, and when the total perimeter lighting load exceeds 100w, have a light source efficiency of not less than 60 lumens/w or be controlled by a motion detector in accordance with Specification J6 (Clause J6.5)).

(h) Power supply to any fixed boiling or chilled water storage units must be controlled by a time switch in accordance with Specification J6 (Clause J6.6)).

C9 Part J7 – Hot Water Supply

The hot water system must be designed and installed in accordance with Section 8 of AS/NZS 3500.4, which details requirements for the insulation of piping, heat traps, water storage containers and water flow rate efficiency, except if the hot water supply is provided by a solar hot water supply system in climate zones 1, 2 and 3.

Any heating for a swimming pool must be in accordance with Clause J7.3 which sets out requirements for heating sources. Spa pool heating and pumping is required to be in accordance with Clause J7.4.

C10 Part J8 – Access for Maintenance

Access for maintenance must be provided to all services and their components including time switches, thermostats, dampers, light fittings, heat transfer equipment and the like, and to adjustable or motorised shading devices (Clause J8.2).

A building with a floor area of more than 500m^2 must have an energy monitoring facility to record the consumption of gas and electricity (Clause J8.3).

A building with a floor area of more than 2500m^2 must have the facility to individually record the consumption of air conditioning plant, artificial lighting, appliance power, central hot water supply, lifts, escalators and other ancillary plant (Clause J8.3).

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18th October 2012

EPM Projects Pty Ltd
Suite 2, Level 5, 655 Pacific Highway,
ST LEONARDS NSW 2065

Attn: Kathryn Cuno

Dear Kathryn,

Re: Cardinal Freeman Village Ashfield
Stage 2 – Master plan Consent Modification
Buildings 5, 6 and 7 – BCA Overview Report

Reference is made to our recent engagement to undertake an assessment of the proposed Buildings 5, 6 and 7 that form the Stage 2 Master plan portion of the existing site to identify possible BCA Implications (if any) with the proposed buildings when the relevant provisions of the Building Code of Australia, 2012 are applied to the development.

We are now in receipt of the proposed plans for the buildings prepared by Allen Jack + Cottier Architects that include floor plans, elevations and sections (Drawing Numbers DA2111/C, DA2112/C, DA2113/B, DA2114/B, DA2131/C, DA2132/C, DA2133/C, DA2134/C, DA3105/B and DA3107/B.

Based on the above, a high level review of the Building Code of Australia 2012 (BCA2012), as it would apply to such proposed Development, has been completed and the following comments are provided for your information.

General Description

In accordance with the relevant provisions of the BCA the subject development known as Stage 2 may be described as follows:

Rise in storeys (BCA Clause C1.2)	The buildings have a rise in storeys as follows; • Buildings 5 & 6 - rise in storeys of six (6), (this due to the fact that at level B1 in the NW corner projects above natural ground level greater than 1.0m) • Building 7 – rise in storeys of four (4)
Classification (BCA Clause A3.1)	Class 2 – Independent Living units - Residential – ground to level 3 to Building 7, and ground to level 4 to buildings 5 & 6 (The recreation and storage areas to B21 level from less than 10% of the overall floor area thus assume the same classification as the carpark areas), Class 7a – Carparking Basement level to Buildings 5, 6 & 7
Type of Construction (BCA Clause C1.1, Table C1.1)	Buildings 5, 6 & 7 are required to be of Type A Construction
Effective Height (BCA Clause A1.1)	The buildings 5, 6 & 7 have an *effective height* less than 25.0 metres, however greater than 12 metres.
Climate Zone	5

Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for: -

- the structural adequacy or design of the existing building;
- the inherent derived fire-resistance ratings of any proposed structural elements of the building (unless specifically referred to); and
- the design basis and/or operating capabilities of any proposed electrical, mechanical or hydraulic fire protection services (unless specifically referred to).

This report does not include, or imply compliance with:

(a) The relevant provisions of the Disability Discrimination Act and the Disability (Access to Premises – Building) Standards 2010 (Separate Access Consultant engaged to provide Access Report;

(b) The relevant provisions of Sections B, D3, F2.4, H, I and J of BCA2012 (unless specifically referred to);

(c) Demolition Standards not referred to by the BCA;

(d) Occupational Health and Safety Act;

(e) Construction Safety Act;

(f) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Water Supply Authority, Electricity Supply Authority, Work Cover, Ashfield Council, Department of Planning, Railcorp and the like;

(g) Previous conditions of Development Consent issued by the local Consent Authority (Ashfield Council or Department of Planning) unless specifically referred to;

(h) This report does not assess the safety of the particular aspects of the building but merely the minimum standards called up by the provisions of BCA2012 where appropriate.

United Building / Common Building / Fire Source Feature

As buildings 5 & 6 and Buildings 4 & 7 essentially sit over the same common car park area, Buildings 5 & 6 and buildings 4 & 7 are deemed to form the one single building. To Buildings 4 & 7 the basement carpark will ultimately be interconnected to form the one carpark portion that will be fully sprinkler protected. To the above ground levels the Buildings 4 and 7 will be separated by greater than 6.0m, thus there will be no issues with regards to fire separation or protection of openings to these levels between the two building portions.

To Buildings 5 and 6 both these building portions sit over a common carpark thus considered to form the one building. As such to the levels above ground level, Building 5 & 6 do not form a fire source feature to each other and being located greater than 6.0m apart require no further protection of openings to the above ground levels.

Performance Based Design / Alternate Solutions

There are specific areas throughout the development where an opportunity exists where strict Deemed-to-Satisfy BCA Compliance may not be achieved by the design. These matters will need to be assessed in a detailed Fire Safety Engineering Report to be prepared at the Construction Certificate Stage. Such Report may need to address the following matters:

Item No	Description of Alternate Solution	DTS Provision	Performance Requirement to be met
1.	Extended Travel distances in Buildings 5, 6 & 7 greater than 6.0m to a point of choice or an exit being up to 9.0m.	D1.4 of BCA2012	DP4

The impact of the above items that will need to be addressed under an Alternate Solution Report to be prepared at the Construction Certificate Stage will be to the ILU building portion:

- In addition to the stand alone DTS AS3786 smoke detectors within all units to Buildings 5, 6 & 7, a thermal detector connected to the corridor detection and alarm system in accordance with clause 3(c) (ii) and Clause 6 of Specification E2.2a of the BCA are to be located within the entry lobby area of each unit to all levels.

- As well as these thermal detectors in lieu of the tone alarm signal from the building occupant warning system the alarm tone is to be replaced by a voice recorded message for evacuation throughout the entire development contained within the main Fire Indicator Panel serving the development.

- Pyropanel LSD-60-C/MS life safety doors or equivalent fire doors achieving and FRL of -/60/30 with cold and medium smoke seals are to be fitted to the doors on all four sides provided to all doors that open onto the common corridors on the residential levels of buildings 5, 6 & 7.

- The Main Fire Indicator Panel serving the development is to be connected to a monitoring service in accordance with Clause 7 of Specification E2.2a of BCA2012.

A Preliminary FEB (Fire Engineering Brief) will need to be prepared for discussion purposes that address the above issue. The final Fire Safety Engineering Assessment Report may need to identify significant additional fire safety measures and provisions to be incorporated within the subject development that forms the basis for the justification of the Alternate Solutions contained within the Fire Engineering Assessment Report.

This Final Fire Safety Engineering Assessment Report to be prepared will not however need to be formally referred to the NSW Fire Brigade under S144 of the Environmental Planning & Assessment Regulation 2000, prior to the issue of the main building works Construction Certificate for the subject development as the above items are not called up under S144 of the EP & A Regulation 2000.

BCA Assessment / Overview

A high level BCA overview has been undertaken to determine compliance with relevant Deemed to Satisfy and Performance Requirements of the BCA2012 is achievable. Comments have been added under the relevant headings of the BCA2012. Further detailed assessment will need to be undertaken with the ongoing design documentation process.

It is considered that all BCA Compliance matters have the ability to be addressed with the ongoing design development of the proposed Center upgrade works.

Section C - Fire Resistance and Stability

The buildings 5, 6 & 7 are required to achieve the fire resistance levels (FRL) for Type A construction being the highest resistant type required.

The following fire resistance levels (FRL's) are required for the various structural elements of the proposed new buildings, with a fire source feature being the far boundary of a road adjoining the allotment, a side or rear boundary or an external wall of another building on the allotment except a Class 10 structure. All buildings as identified in this report are required to be constructed out of Type A Construction in accordance with table 3 of Specification C1.1 of BCA2012.

Item	Class 2	Class 7a
Load bearing External Walls		
☐ less than 1.5m to a fire source feature	90/90/90	120/120/120
☐ 1.5 – 3m from fire source feature;	90/60/60	120/90/90
☐ more than 3m from a fire source feature.	90/60/30	120/60/30
Non-Load bearing External Walls		
☐ less than 1.5m to a fire source feature	-/90/90	-/120/120
☐ 1.5 – 3m from fire source feature;	-/60/60	-/90/90
☐ more than 3m from a fire source feature.	-/-/-	-/-/-
External Columns <3.0m External Columns >3.0m	90/-/- -/-/-	120/-/- -/-/-
Fire Walls	90/90/90	120/120/120

Stair and Lift Shafts • Load bearing • Non load bearing	90/90/90 -/90/90	120/120/120 -/120/120
Internal walls bounding sole occupancy units • Load bearing • Non load bearing	90/90/90 -/60/60	120/-/- -/-/-
Internal walls bounding public corridors, hallways and the like: • Load bearing • Non load bearing	90/90/90 -/60/60	120/-/- -/-/-
Ventilating, pipe garbage and the like shafts: • Load bearing • Non load bearing	90/90/90 -/90/90	120/90/90 -/90/90
Other load bearing internal walls, beams trusses and columns	90/-/-	120/-/-
Floors	90/90/90	120/120/120
Roofs	90/60/30	120/60/30

N.B. There are FRL concessions applicable for fully sprinkler protected car park portions under Clause 3.9 of BCA Specification C1.1, reducing the car park FRL's down from 120/120/120 to 60/60/60.

The overall fire compartment size for the basement level carpark portions of Buildings 4 & 7 and 5 & 6 being one single fire compartment each is not restricted by the floor area and volume limitations specified by Clause C2.2 of BCA2012 for type A construction due to the fact that these carpark portions will be fully sprinkler protected.

Separation of openings in adjoining storeys will need to be achieved by 900mm vertical spandrel wall elements with a 60/60/60 FRL or 1100mm balcony projections out from the external face of the wall in accordance with C2.6 of BCA2012. Further details to be reviewed at Construction Certificate Stage.

The external walls of all buildings are all greater than 6m from adjoining buildings on the same site or 3.0m from any current or future property boundaries. As such no further protection of openings in the external walls of the subject buildings will be required to satisfy Part C3.2 and C3.4 of BCA2012.

Section D - Access and Egress

The buildings 5, 6 and 7 are proposed to be provided with two separate exits to serve each floor level, which have been designed as Fire Isolated Stairs. As a result the egress travel distances and distances between alternate exits are in accordance with the DTS provisions of D1.4 and D1.5 of BCA2012 other than the northern and southern end units to each floor level which slightly exceed the 6.0m to an exit or point of choice to alternate exits. This issue will need to be assessed against the relevant performance criteria as referred to above. Further assessment of egress to the basement carpark portions will be required with ongoing design development to ensure compliant travel distances are provided.

Care will need to be taken with the points of discharge from the proposed fire isolated stairs to ensure they discharge direct to open space where access to a roadway can be achieved. If the path of travel involves passing within 6.0m of openings of the same building, additional protection of openings will be required in accordance with C3.4 of BCA2012.

The class of buildings being class 2 and 7a are required to be accessible to persons with a disability to and within all common areas and the common corridors at all levels served by the lifts. The buildings will need to be fully accessible through the principle pedestrian entrances at ground floor level form the allotment boundary as well as from the carpark portion and contain design and features in accordance with AS 1428.1-2009. Further detailed assessment and comment will be provided under separate cover by the Access Consultant.

Section E - Services and Equipment

The buildings are all greater than 500m^2 and thus need to be serviced by a fire hydrant system in accordance with Clause E1.3 of BCA2012 and a fire hose reel system in accordance with Clause E1.4 of BCA2012. The Fire hydrant System will need to be located within the fire isolated stairs at all levels and contain a Fire Hydrant booster located greater than 10.0m from the building and greater than 10.0m from any main switch room or on site substation.

The basement carpark level portions beneath buildings 4 & 7 and 5 & 6 contain greater than 40 vehicles, thus are required to be fully sprinkler protected in accordance with E1.5 of BCA2012 and AS2118.1-1999.

Portable fire extinguishers are required within the buildings in accordance with Clause E1.6 of BCA2012. Emergency lighting and illuminated exit signs are also required throughout all buildings in accordance with Clause E4.2, E4.5 & E4.6 of BCA2012.

Section F - Health and Amenity

All habitable portions of the buildings will need to be provided with a system of ventilation that either complies with requirements for natural ventilation (openings equating to 5% of the floor area) or a mechanical system complying with AS 1668.2-1991. To the basement carpark portions, such areas will need to be mechanically ventilated in accordance with F4.11 of BCA2012 and AS1668.2-1991.

Natural lighting is also required to all habitable rooms to all units on the basis of windows or other light transmitting openings that possess an area of 10% of the total floor area being served as required by F4.1 of BCA2012.

All SOU's to the Buildings 5, 6 & 7 are to be provided with Acoustic Separation in accordance with part F5 of BCA2012.

Section J - Energy Efficiency

The energy efficiency requirements of the BCA2012 are applicable to the new buildings. Being in NSW Specific NSW provisions are applicable to the proposed buildings to meet NSW variations to Part J of BCA2012. Under separate cover a BASIX Certificate will be provided for the Energy Efficiency provisions to all Class 2 SOU's.

Schedule of Required Fire Safety Measures

The following fire safety measures will be required to be installed in or to serve the subject proposed buildings. Note that this is a preliminary schedule for guidance at this stage only.

Item No.	Proposed Essential Fire Safety Measures to Buildings 5, 6 & 7	Minimum Standard of Performance
1.	Access panels, doors and hoppers to fire resisting shafts	BCA2012 Clause C3.13
2.	Automatic fail safe devices	Manufacturer's Specification
3.	Automatic fire detection and alarm system to common corridor areas and Thermal detectors inside SOU's	BCA2012 Clause 3(c)(ii), 6 of Specification E2.2a and AS1670.1-2004 and Alternate Solution Assessment Report to be prepared
4.	Emergency lighting	BCA2012 Clauses E4.2 & E4.4, AS/NZS2293.1-2005
5.	Stretcher and Accessible lifts	BCA2012 Clause E3.2, E3.6 and AS1735.12
6.	Exit signs	BCA2012 Clauses E4.5, E4.6 & E4.8, AS/NZS2293.1-2005
7.	Fire dampers	BCA2012 Specification C3.15 and AS/NZS1668.1-1998, AS1682.1 and 2
8.	Fire doors	BCA2012 Spec C3.4, AS/NZS1905.1-2005
9.	Fire hydrant system	BCA2012 Clause E1.3, AS2419.1-2005
10.	Fire seals protecting openings in fire resisting components of the building	BCA2012 Clause C3.15, Manufacturer's Specification
11.	Fire hose reel system	BCA2012 Clause E1.4, AS2441-2005
12.	Lightweight fire rated construction	Manufacturer's Specification and Specification C1.8 of BCA2012
13.	Mechanical air handling systems to Basement Carpark	BCA2012 Clause F4.11 and AS1668.2-1991
14.	Paths of travel, stairways, passageways or ramps	BCA2012 Section D
15.	Portable fire extinguishers	BCA2012 Clause E1.6, AS2444-2001
16.	Smoke alarms within SOU's	BCA2012 Clause 3, 3(c) (ii) and 6 of Specification E2.2a and AS3786-1993
17.	Warning and operational signs	BCA2012 Clause D2.23, E3.3, EP&A Reg. 2000 Clause 183
18.	Smoke Seals to Doors opening into common lobby areas at levels ground and 1 to 4 of Buildings 5, 6 & 7	As per Alternate Solution Assessment Report to be prepared

BCA Compliance Statement

It is considered that architectural design documentation as referred to in this review taking into consideration the current design of Buildings 5, 6 & 7 has been assessed against the applicable provisions of the Building Code of Australia 2012, (BCA2012) and it is considered that such documentation complies or is capable of complying (subject to ongoing design development to the Development Application and Construction Certificate Stage) with that Code.

If you require any further information regarding the above, please don't hesitate to contact me.

Yours faithfully,

Stuart Boyce
DIRECTOR
BCA LOGIC PTY LTD