FORMIGA1

Design Development Report

Project: S200909 Opal St Clair Construction of New 154 Bed Aged Care Facility

Location: 94-100 Explorers Way, St Clair, NSW, 2759

Completed For: Opal Healthcare

On Behalf of: Pact PM

Date: 13th May 2021

Revision Number: B

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Revision Schedule			
Revision	**Date**	**Report Information**	
A	23/04/2021	**Reason for Revision**	Initial Design Development Report
			Prepared by
		Name	Scott Naylor
		Signature	
B	13/05/2021	**Reason for Revision**	Design revised to address non-compliances identified in our original report
			Prepared by
		Name	Scott Naylor
		Signature	

This report has been prepared and checked by the experienced team at Formiga1. For any queries regarding this report, please contact our office.

1. Introduction

Formiga1 has been engaged by Pact PM to provide a Design Development (DD) review of the proposed 2 storey, 154 bed, 124 bedroom aged care facility.

The proposal to construct this new building has a number of technical considerations to address as part of any proposed work. These have been developed by establishing a process for the assessment of the work outlined in the Environmental Planning and Assessment Act 1979. The Act gives a number of requirements and considerations existing and new works and how the building assessment provisions are usually applied.

2. Purpose

The purpose of this report is to provide a high level design guide on an approach to building compliance assessment and establish scope for some of the aspects. The advice contained within this report provides guidance as to whether BCA compliance can be achieved in accordance with the Environmental Planning and Assessment Regulation 2000, Clause 145. We understand that the proposed development will be subject to a Development Application and this Design Development Report will form part of the DA submission to Council for their determination.

This report seeks to outline the basis from which performance solutions can be developed for a number of aspects. An exhaustive list of variations to individual prescriptive measures will need to be completed as the design is further developed and performance solutions compiled. This scenario will likely require a fire engineered strategy for the building to achieve compliance with the current building assessment provisions.

3. Scope, Limitations and Exclusions

The scope of this assessment is limited to the current design documentation and will require further development of the building's design. The aspects noted for compliance are based on generic examples gleaned from similar buildings that comply using a combination of prescriptive and performance measures. It should be expected that individual aspects will vary in any detailed design though wider concepts and characteristics will make a similar contribution, particularly to overall fire safety.

This report is limited to the design documentation supplied and is only intended to outline the services that will be required.

This Design Development Report does not address safety provisions enforced under the Local Government Act, such as, Occupational Health and Safety Act, Water, drainage, gas, telecommunications and electricity supply authority requirements, etc. The application of the Disability (Access to Premises) Standard 2010 has been assessed as part of this report, however, no other provisions of the Disability Discrimination Act 1992 have been reviewed.

4. Approval Methodology

The Environmental Planning and Assessment Regulation 2000 outlines the approval processes for different types of buildings and the method by which they are assessed. These works have been assessed against the Building Code of Australia 2019(+A1) that is currently enforced. However, as a requirement of the EP&A Regulation, Clause 145, the final design for approval is to be assessed against the BCA enforced at the date of the application for the Construction Certificate. Therefore, the advice provided in this report may become outdated if a revised BCA is released before the Application for a Construction Certificate is received.

The application of the Disability (Access to Premises) Standard and provision for access for people with disabilities will need to be addressed against the current BCA. As this is based in Commonwealth Legislation, State regulatory transitional provisions do not apply and compliance with the current code is required. Please note that the Deemed to Satisfy Provisions of the BCA are not the only method of compliance and a Performance Solution is expected as part of any work in any building. Generally, compliance with BCA Part D3 will be required throughout.

Development Consent from Council or other Consent Authority will be required prior to the start of any work on site. Other referrals such as Fire and Rescue NSW referral under EP&A Regulation, Clause 144 will form part of the Application for a Construction Certificate process.

The FRNSW referral process is as follows:

- Once plans and the FER are sent through, Formiga1 carries out our CC BCA assessment of the proposed works and sends out a Request for Further Information Letter outlining and non-compliances or further information required in order to complete the assessment.
- Once there are no outstanding non-compliances, we can submit the documentation to FRNSW within 3 business days.
- FRNSW will then send out a notification stating that they have received our submission within 2 days of Formiga1 making the submission.
- Within 10 calendar days of receiving the submission, FRNSW must respond advising whether or not they will be assessing the works.
- If they do not choose to assess the works, we can issue the CC (provided all other CC items have been closed out).
- If they choose to assess the works, FRNSW have 28 calendar days from receiving the submission to provide comments from their assessment.
- If the 28 day period lapses and no comments are received, we can issue the CC.
- If FRNSW provide comments, they must be incorporated into the design OR be justified by a peer review from a third party fire engineer.

In addition to the above, please be aware that as of 01/07/2021 BCA A2.2(4) will come into effect (excerpt below). These new provisions are essentially what has always formed part of the Formiga1 Performance Solution process, however, the documentation will need to include additional information about the process followed to create the Performance Solution.

(4) Where a *Performance Requirement* is proposed to be satisfied by a *Performance Solution*, the following steps must be undertaken:

(a) Prepare a *performance-based design brief* in consultation with relevant stakeholders.

(b) Carry out analysis, using one or more of the *Assessment Methods* listed in (2), as proposed by the *performance-based design brief*.

(c) Evaluate results from (b) against the acceptance criteria in the *performance-based design brief*.

(d) Prepare a final report that includes—

(i) all *Performance Requirements* and/or *Deemed-to-Satisfy Provisions* identified through A2.2(3) or A2.4(3) as applicable; and

(ii) identification of all *Assessment Methods* used; and

(iii) details of steps (a) to (c); and

(iv) confirmation that the *Performance Requirement* has been met; and

(v) details of conditions or limitations, if any exist, regarding the *Performance Solution*.

5. Building Compliance

The assessment has been based on the following plans:

- Architectural Plans by Custance, Project Number 3362, Dated 04/05/2021 and screenshots of design changes.

This assessment has been tabulated and items identified in relation to Action, Consider and Note, meaning:

- **Action** - Requires action on your behalf to either address a non-compliance and/or provide further information on how compliance is proposed to be met for the item;
- **Consider** - Full details are not yet documented and the item should be considered as the design is developed to ensure compliance is met;
- **Note** - A general note stating that compliance has been achieved for the item.

5.1. Principal Building Characteristics

Aspect	Building
Proposed Classification	Ground Floor - Class 5/9c - Back of House/Aged Care Level 1 - Class 9c - Aged Care ***NOTE:*** *Allied Health does not form part of a separate Class 6 classification as it does not contain a floor area >10% of the Ground Floor area.*
Rise in Storeys	2 Storeys
Effective Height	3.5m
Construction Type	Type C
Compartment Limit	Fire Compartments - 3,000m^2 or 18,000m^3 Smoke Compartments - 500m^2
Maximum Compartment Sizes	Fire Compartments - 2,987m^2 Smoke Compartments - 550m^2
Occupants	Occupant numbers will be determined based on the design intent of this building as this is more suitable than table outlined in D1.13.

5.2. Building Code of Australia Assessment

BCA Part	Comments	Consider/ Action/ Note
	BCA Section B - Structure	
Part B	The building is to be designed to an importance level of 3 as the health care building is capable of containing 50 residents.	Consider
	Further information will be required at the Approval Stage on how the treatment of non-structural elements have been designed to the earthquake provisions of AS1170.4 as required under BCA B1.2 is being achieved (ie. walls that are not part of the seismic force resisting system, appendages including parapets, gables, verandahs, chimneys and the like, partitions, ceilings, mechanical and electrical components including smoke control systems, fire suppression systems, boilers, escalators, transformers and the like).	Consider
	The Structural Engineer is to provide a Design Certificate prior to the approval stage certifying that the building has been designed to the above requirements.	Consider

BCA Section C - Fire Resistance		
Part C1	Building is Type C construction with a general FRL of 90 minutes throughout. Construction is required to be in accordance with Table 5 of Specification C1.1 including non-combustibility for a number of aspects. The required minimum FRLs are as follow: **a.** External Walls <1.5m from a fire source feature - **90/90/90** **b.** External Walls >1.5m but <3m from a fire source feature - **60/60/60** **c.** External Walls >3m from a fire source feature - **No requirement** **d.** External Columns <1.5m from a fire source feature - **90/--/--** **e.** External Columns >1.5m but <3m from a fire source feature - **60/--/--** **f.** External Columns >3m from a fire source feature - **No requirement** **g.** Fire Walls - **90/90/90** **h.** Internal Fire-resisting Shaft Walls - **60/60/60** **i.** Internal Walls bounding public corridors, public lobbies, sole-occupancy units, etc - **No requirement** **j.** Floors - **60/60/60 as the floor is required for fire compartmentation** **k.** Roofs - **No requirement** ***NOTE:*** *Refer to BCA Spec C1.1 (2.1) for guidance relating to the exposure of the building to fire source features.*	Consider
	Shaft walls to lifts in the resident use areas of the Class 9c building must achieve a minimum FRL of 60/60/60. Lift doors shall achieve a minimum FRL of --/60/-- in accordance with BCA C3.10.	Consider
	Enclosure of shafts at the top and bottom will require compliance with BCA Spec C1.1(2.7) by achieving the same FRL as the shaft walls. A fire-rated top is not required if it extends beyond the roof covering and a fire-rated bottom is not required if it is laid directly on the ground.	Consider
	The building is considered Type C construction under the provisions of C1.5 as the building is sprinkler protected throughout and complies with the Type C maximum fire compartment size of 3,000m^2.	Note
	The provisions of BCA C1.9 and C1.14 for non-combustible building elements and attachments are not applicable as the building is Type C construction.	Note
	Fire hazard properties are required to comply with BCA C1.10 and BCA Spec C1.10. As the building is sprinkler protected throughout, concessions will apply as outlined in BCA Spec C1.10 Table 2 and Table 3.	Consider
Part C2	Compartment limits for this building are outlined in BCA Table C2.2. The Class 5 and 9c portions have a floor area limit of 3,000m^2 and 18,000m^3. The maximum proposed fire compartment size is 2,987m^2.	Consider
	Further to the above requirements, Class 9c parts of the building are required to comply with BCA C2.5 (b) for smoke compartmentation and construction in accordance with BCA Specification C2.5. The Deemed to Satisfy provisions require smoke compartments to have a maximum floor area of 500m^2. The maximum proposed smoke compartment size is 550m^2. The design team has indicated that this will be addressed by a fire engineered solution.	Action

	Smoke walls are to be constructed in accordance with BCA Spec C2.5 as follows: a. Be lined on one side with a non-combustible material. If plasterboard is specified it must be 13mm standard grade plasterboard. b. Extend to the underside of the floor above, a 13mm standard grade plasterboard ceiling, fire-protective covering or a non-combustible roof covering. c. Be smoke sealed with a non-combustible material along all junctions.	Consider
	BCA NSW C2.5(b) requires all internal walls bounding SOUs and public corridors must: a. Be lined on each side with 13mm standard grade plasterboard or equivalent. b. If insulated, be a tested non-combustible insulation. c. Extend to the underside of the floor above. d. Not incorporate any penetrations above the door head height unless smoke sealed. e. Be smoke sealed with intumescent putty along all construction joints.	Consider
	Kitchens(>30m^2), laundries containing gas fire dryers and medical record storage areas (>10m^2) are to be fire separated from SOUs by smoke-proof walls in accordance with BCA Spec C2.5 (including smoke doors). Compliance has been shown.	Note
	The building has been provided with a sprinkler system throughout and does not require vertical separation in accordance with BCA C2.6. However, consideration should be given to sealing cavity/curtain walls around the edges of the slab and the vertical ends of fire and smoke walls, as the slab is required to achieve fire separation between storeys.	Note Consider
	Building and fire compartmentation must be constructed in accordance with BCA C2.7. This includes the provision that building materials must not pass through fire walls except for roof battens (max. 75mm x 50mm) and sarking type material.	Consider
	The provisions for separation of classifications in the same storey and different storeys in BCA C2.8 and C2.9 do not apply to the separate Class 5 and 9c parts as both classifications require the same FRLs.	Note
	Services are required to be separated in accordance with BCA C2.12. This includes the separation of lift control panels from the remainder of the building.	Consider
	Electricity supply systems are also required to be separated from the remainder of the building in accordance with BCA C2.13. Confirmation as to whether or not the main switch board will sustain emergency equipment operating in the emergency mode is needed to determine if the main switchboard requires this separation. Emergency equipment comprises of; hydrant and/or sprinkler system pumps, smoke control systems, emergency lifts, fire detection and alarm systems, sound/intercom systems for emergency purposes.	Consider
Part C3	**Some external walls and associated openings have been shown in close proximity to the adjoining fire compartments. These areas of the external wall to both sides of the fire compartment separation require a minimum FRL of 60/60/60 as per BCA C3.3 with openings protected in accordance with BCA C3.4 or the 90/90/90 fire wall continue along the external wall for the distance described in BCA C3.3. The design team has indicated that this will be addressed by a combination of both DTS design and a fire engineered solution.**	Action

	Due the external wall of the building requiring an FRL, the following openings require protection in accordance with BCA C3.4 as they are in close proximity adjoining fire compartments as per BCA C3.3: **a. GF - External Door and External Roller Door to loading Dock and External Window to Laundry Clean separating fire compartment G.01 and G.02.** **b. L1 - Windows to 2x Bedrooms and Windows to Dining around the Communal External Deck separating fire compartments 1.01 and 1.02.** **c. L1 - Windows to 3x Bedrooms separating fire compartment 1.01 and 1.02.** **d. L1 - Windows to 2x Bedrooms separating fire compartments 1.02 and 1.04.** **The design team has indicated that this will be addressed by a fire engineered solution.** ***NOTE:*** *Where wall wetting sprinklers are used as protection to the above openings, they must be located internally with compatible windows (eg. no transoms, fixed glazing, etc.). Note the impact that this may have on natural ventilation.*	Action
	Smoke doors are required to comply with C3.4 and Spec C3.4 (eg. swing in the direction of egress or both directions, fitted with a self closing device, etc.). A number of smoke doors have been shown to be swinging against the direction of egress. The design team has indicated that this will be addressed by a fire engineered solution.	Action
	Smoke reservoirs (minimum of 400mm in depth) are required above all smoke doors to both sides in accordance with BCA Spec C2.5. The 400mm reservoir is acceptable as the distance between the top of the door to the ceiling or to the underside of the floor slab above if a perforate ceiling is utilised. Perforations in the ceiling would need to be a minimum of 600mm deep and the full width of the door to be deemed acceptable. Further information is needed regarding smoke reservoirs.	Consider
	Services and penetrations in fire-isolated exits are limited to those outlined in BCA C3.9.	Consider
	Penetrations are required to comply with C3.12, C3.15 and Spec C3.15 as applicable. Particular attention should be given to **plumbing supply** with combined copper and poly pipe and consideration of any **gas penetrations**. Gas penetrations cannot use Spec C3.15, even where all metal systems, compliance can only be achieved using a tested system in accordance with AS1530.4 and AS4072.1.	Consider
	Proprietary systems for laundry and garbage chutes often comply with the DTS but require a fire-rated room to the base of the laundry and garbage chute. Another acceptable construction method is by constructing a fire-rated riser through the levels in lieu of a “shaft” as defined in the BCA. This removes the requirement to provide a fire-rated room at the bottom of the shaft but does require the riser to be fire-rated from both inside and outside as opposed to shafts only requiring an FRL from the outside. To summarise the options, see the following: **a.** Shaft - Fire-rated from the outside only but requires a fire-rated room to the bottom of the enclosure and a fire-rated enclosure to the top of the shaft. **b.** Riser - Fire-rated from both inside and outside of the riser but does not require a fire-rated room to the bottom of the enclosure or a fire-rated enclosure to the top of the shaft.	Consider
	Construction joints in walls required to achieve an FRL (ie. external cladding cavities between walls and floors) must be protected in a manner identical with the wall prototype tested in accordance with AS1530.4 to achieve the required FRL as required by C3.16.	Consider

BCA Section D - Access and Egress		
Part D1	This building has the required minimum of 2 exits from each storey as required by BCA D1.2.	Note
	Exit stairs are required to be fire isolated or external stairs in lieu of fire-isolated stairs as per BCA D1.3. Currently all stairs are proposed as external stairs in lieu of fire-isolated stairs.	Note
	External stairs in lieu of fire-isolated exits are to be constructed using non-combustible materials throughout in accordance with BCA D1.8.	Consider
	External stairs in lieu of fire-isolated stairs need to remain open on the external face to ensure that they cannot become smoke logged. In light of several recent tribunal decisions, it is our belief that the provisions of BCA D2.5 should be applied to an external stair to provide the level of safety for external stairs in lieu of fire-isolated stairs intended by the BCA. BCA D2.5 requires an area of unobstructed openings equalling the floor area of all landings and be a minimum of 75% open above a height of 1m on each storey. Appropriate allowances have been shown on the plans, however, further details will be required to ensure compliance can be achieved.	Consider
	The stair layouts for the external stairs in lieu of fire-isolated stairs appear to make provision for compliance with regard to separation and construction. The walls separating this stair from the building must achieve a minimum FRL of 60/60/60 with doors achieving an FRL of --/60/30. These stairs must not incorporate any openings <3m from the stairway and any openings >3m but <6m from the stairway must be protected by wall-wetting sprinklers in accordance with BCA C3.4. Compliance has been shown.	Consider
	The conditions of BCA D1.9 for travelling via non-fire-isolated stairways also appear to be fulfilled including total distance travel of 80m to the building discharge point.	Note
	Exit travel is generally 20m to single exit or 20m to a point of choice and 40m to the first exit, as well as 30m to a single exit serving a storey at the level of access to a road or open space. Distance between alternative exits is limited to 60m. Compliance has been shown.	Note
	Minimum exit widths are generally 1m throughout for a height of 2m and 1980mm at doorways. These dimensions are to be and free of obstructions (eg. handrails, fire extinguishers). In addition to the minimum 1m clear width, corridors are to be a minimum width of 1.5m and 1.8m at SOU doors as well as communal bathrooms. Minimum clear widths for doors are required to be as follow: **a.** 870mm in all resident use areas. **b.** 1070mm entry doors to SOUs. **c.** 800mm in non-resident use areas, though all accessible areas require a minimum clear width of 870mm throughout regardless.	Consider
	Horizontal exits have been proposed to Level 1. The provisions of BCA D1.11 have been complied with, including the clear area provisions on either side of the horizontal exit.	Note
	Access to the lift pits must be through the lowest landing doors in accordance with BCA D1.17.	Consider

Part D2	The external stairs are required to comply as open and should maintain the criteria outlined in BCA D2.5.	Consider
	Installations in the path of travel are required to comply with D2.7, including the smoke sealing and non-combustible enclosure of distribution boards and central telecommunications boards. This can be achieved via applying the required construction to the individual DB enclosures **or** to the entire cupboard.	Consider
	No cupboards or similar enclosed spaces have been proposed underneath stairs, therefore, compliance with BCA D2.8 is not required.	Note
	Ramps throughout the property must not exceed a gradient of 1:14 and must be slip-resistant in accordance with BCA D2.14.	Consider
	Stairs are required to comply with BCA D2.13 for tread construction and BCA D3.4, which references AS1428.1, Clause 11. Please refer to further comments in D3.4.	Consider
	Stairs and landings shall comply with BCA D2.14 including slip resistance.	Consider
	This building is required to comply with BCA D2.16 and D2.24 for fall protection. Details are still being developed but reasonable provision appears to be made for: **a.** Balustrades are to be a minimum height of 1m as well as having no climbable elements between the heights of 150mm and 760mm where the floor level is >4m from the falling surface below. **b.** The concession for fire-isolated stairs in BCA D2.16 does not apply to external stairs in lieu of fire-isolated stairs. **c.** Windows with openable components below 865mm that have a falling distance of >4m to the surface beneath, must be fitted with a restricting device to ensure the openable portion of the windows does not exceed 125mm or be fitted with a protection that does not have any openings exceeding 125mm (eg. Security screen). Window elements must not climbable between the heights of 150mm and 760mm (eg. sills, transoms, etc.). **Currently window sills are proposed to be at 300mm in height and will act as a climbable element.**	Consider Note Consider Action
	Door thresholds throughout the Class 9c areas must not incorporate a step, except where a ramp with a maximum gradient of 1:8 is provided for a maximum height of 25mm.	Consider
	Door thresholds throughout the accessible paths of travel not within Class 9c areas must not incorporate a step, except where an external door has a threshold ramp with a maximum gradient of 1:8 is provided for a maximum height of 35mm for a maximum length of 280mm and located within 20mm of the door that it serves.	Consider
	D2.17 requires handrails to both sides of every corridor used by residents, no corridor handrails have been proposed (this also includes areas of the Wellness Centre).	Action
	Handrails to the external stairs are required to one side of the stairway and must comply with Clause 12 of AS1428.1 as required by BCA D2.17(a)(vi) (eg. height 865-1000mm, handrail dimensions, etc.).	Consider
	Ladder access to roof plant shall be constructed in accordance with AS1657-2013 as required by BCA D2.18.	Consider

	Door swing is required to comply with BCA D2.20. Where building entrances are also exits, consideration should be given to compliance with D2.19 – D2.21, including door swing, sliding doors and the like. (ie. The automatic sliding doors in the main entrance shall be manually openable with a force not more than 100N and open automatically upon activation of the detection system).	Consider
	The horizontal exits to Level 1 are required to serve egress in both directions so they are required to swing in both directions in accordance with BCA D2.20. The doors are currently shown to only swing in one direction. The design team has indicated that this will be addressed by a fire engineered solution.	Action
	Operation of latches are to comply with BCA D2.21 for both doors in path of travel and exit doors (excluding doors to spaces that are inaccessible to persons when the door is locked (eg. cleaners room)). Alternatively, doors may be fitted with an automatic fail-safe device which unlocks the door on activation of any sprinkler or smoke detection system.	Consider
	Consideration should be given to the operation of latch provisions of BCA D2.21 for sliding doors to provide a single hand downward action on a single device.	Consider
	The provisions of BCA D2.21 will apply to the common area balconies and courtyard areas meaning that the doors cannot be locked from the inside unless they are fitted with a fail-safe device.	Consider
	Signage for fire safety doors shall comply with D2.23.	Consider
Part D3	This building is required to be accessible to and within resident use areas of Class 9c areas and throughout all Class 5 areas. Paths connecting this building with disabled car spaces and main pedestrian entry points along the boundary shall also comply with AS1428.1.	Consider
	BCA Table D3.1 requires a minimum of 6 accessible SOUs to be provided. The design will need to be amended to meet the DTS provisions of the BCA. The design team has indicated that this will be addressed by a Performance Solution.	Action
	Accessways are required to be in accordance with D3.3 and AS1428.1 including circulation, provisions, turning and passing spaces. Reasonable allowances have been made.	Consider
	Doors in accessible paths of travel must be provided with 30% luminance contrast and hardware in accordance with AS1428.1.	Consider
	While all areas are required to be accessible throughout, BCA D3.4 exempts access to areas that pose health or safety risks for people with disabilities (ie. comms rooms, kitchens, laundries, dirty utilities, etc.). While storerooms can be deemed inappropriate for wheelchair users, these rooms can be used by people with other physical/visual disabilities, therefore, storerooms do not require wheelchair door circulation spaces but require all other accessible provisions.	Consider
	Please note that stairs (including fire isolated stairs if used for circulation) will be required to comply with Clause 11 and Clause 10 respectively of AS1428.1. This means minimum widths are generally 1200mm between walls.	Consider
	Provision of carparks for people with disabilities is required in accordance with D3.5. Plans make provision for compliance.	Note

	Braille signage is required in accordance with BCA D3.6 and BCA Spec D3.6 including directional and exit signage. Please refer to the BCA for further details.	Consider
	A hearing augmentation system will be required if an inbuilt amplification system is installed in order to carry out the **intended** functions of the space. Typically these types of inbuilt amplification systems are not installed in aged care, however, if proposed, hearing augmentation is capable of compliance.	Consider
	TGSIs are required in accordance with D3.8. Concessions for Class 9c areas of the building, where raised-domed buttons are provided to the handrails.	Consider
	Where the main entrance meets the vehicular way, a kerb and kerb ramp, TGSIs or suitable barriers are required to achieve DTS compliance. No such construction has been proposed. The design team has indicated that this will be addressed by a Performance Solution.	Action
	All new glazing to accessways that is capable of being mistaken for a doorway/opening where there is no chair rail, handrail or transom, the glazing must be clearly marked with a solid line with a 30% luminance contrast in accordance with AS1428.1.	Consider
BCA Section E - Services and Equipment		
Part E1	***FIRE HYDRANTS***	
	Fire hydrant coverage is required to all areas in accordance with BCA E1.3 and AS2419.1. Compliance has been shown on the plans, however, a minor non-compliance still remains as the central hydrant on L1 near the lift is not within 4m of the horizontal exit. Compliance is considered readily achievable.	Action
	Please note fire compartment size and the impacts this may have on the hydrant supply of water and that the hydraulic design has compartmentation consistent to other plans. Other aspects of compliance (flows and pressures) are assumed at this time.	Consider
	The location of the hydrant booster is located too far away from the principal vehicular entrance and therefore. Does not meet the requirements of AS2419.1. An acceptable distance from the principal vehicular entrance would be a maximum of 8m. The design team has indicated that this will be addressed by a fire engineered solution.	Action
	If the hydrant, sprinkler and any wall-wetting drenchers are proposed to be fed by the same connection to the town main, please ensure that the system is capable of achieving the required combined flow and pressure of all systems.	Consider
	FIRE HOSE REELS The Class 9c and Class 5 areas of the building do not require Fire Hose Reels as outlined under BCA E1.4.	Note
	SPRINKLERS This building is required to be sprinkler protected throughout and be installed in accordance with AS2118.4. Activation of the Building Occupant Warning System and the monitored main stop valve is required for the system. This shall be detailed in the design for approval.	Consider
	As the total floor area of the building is >5000m2, the sprinkler system is to be separated into separate systems. This has been achieved with two separate control valves.	Consider

	The sprinkler control valves must be located in a secure room or enclosure which has direct egress to a road or open space.	Consider
	Please note that BCA 2019 has removed the requirement to provide dry-pipe systems in lift shafts in BCA Spec E1.5 but have added additional construction requirements.	Consider
	FIRE EXTINGUISHERS Fire extinguishers are required in accordance with Table E1.6 and AS2444 as applicable. Further details of fire extinguishers will be needed at the approval stage. BCA E1.6 requires the following: **a.** Cover Class AE or E fire risks for any switchboards that sustain emergency equipment operating in emergency mode. **b.** Cover Class F fire risks in the Kitchens. **c.** Cover Class A fire risks in accordance with AS2444. **d.** Cover Class E fire risks in every nurse's station or the like.	Consider
	FIRE CONTROL CENTRES A Fire Control Centre is **not** required in the building as it is <25m in height and is <18,000m2 in floor area.	Note
Part E2	Where mechanical ducts recycle air from one fire compartment to another, the ducts must either incorporate combination fire/smoke dampers or operate as a smoke control system. In addition to this, the requirements for smoke compartments outlined in C2.5 requires smoke dampers to all smoke barriers, including walls and floors.	Consider
	Stair pressurisation is not required as only external stairs have been provided.	Note
	Air-handling systems exceeding 1000L/s must automatically shutdown upon activation of the smoke detection system or sprinkler system as these air-handling systems do not form part of the zone smoke control system.	Consider
	A smoke detection and alarm system is required for this building in accordance with BCA Spec E2.2, Clause 4 and AS1670.1. Requirements of completed design for approval include: **a.** Smoke detection throughout in spite of Clause 3.28 of AS1670.1. **b.** Thermal detection can be used in lieu of smoke detection in areas where spurious alarms could occur. However, where sprinklers are installed in these areas, thermal detection is not required. **c.** FDCIE (FIP) including emergency lighting, etc. **d.** Monitoring by the Fire and Rescue NSW. **e.** Building Occupant Warning System is to achieve 75dBa at every bedhead and 65dBa throughout other areas. It is noted that an EWIS is proposed over and above the requirements of the BCA due to Opal's operational specifications. **f.** Provision of Manual Call Points so that no point on the floor is more than 30m from a Manual Call Point in all Class 9c areas of the building. **g.** Provision of mimic panel to each smoke compartment **or** connection to the nursecall annunciators to serve this function in all Class 9c areas of the building.	Consider
	This building has not been considered a theatre or public hall, nor an "other assembly building" in accordance with E2.2b. As such, there are no additional requirements for smoke hazard management.	Note

Part E3	Lift installations shall be in accordance with E3 and AS1735. Emergency lifts are not required for this building as it has an effective height of <25m.	Note
	Lift features, type and size shall comply with E3.6.	Consider
	A stretcher facility will be required for one lift accessing all floors. Dimensions shall be 600mm x 2000mm x 1400mm. Compliance appears to be achieved for this requirement.	Note
	Fire service controls are not required for the lifts in this building as the building has an effective height of <12m.	Note
Part E4	Emergency lighting and illuminated exit signage is required throughout. Layout will be reliant upon the egress paths and viewing distances of the signage (typically 24m). Completed design for approval shall be consistent with the travel paths outlined in D1. Electrical plans will include an engineered design for this aspect.	Consider
	Please note the requirements for braille exit signage outlined in the DTS provisions of D3.6.	Consider
BCA Section F - Health and Amenity		
Part F1	**BCA Performance Requirement FP1.4 for weatherproofing of external walls and roofs will need to be addressed by a Performance Solution as there are no DTS provisions relating to FP1.4.**	Action
	Stormwater drainage must comply with AS3500.3.	Consider
	The concrete slab plant area has been proposed to serve as part of the roof for the building. Under the requirements of BCA F1.5, there is no allowance for the use of concrete as a roofing material. The design team has indicated that this will be addressed by a Performance Solution.	Action
	Waterproofing membranes for external above ground use must comply with AS4654 Parts 1 & 2.	Consider
	Sarking-type materials used for weatherproofing of roofs and walls must comply with AS4200 Parts 1 & 2.	Consider
	Waterproofing to wet areas shall be provided in accordance with BCA F1.7 and AS3740.	Consider
	All glazing assemblies in external walls shall comply with AS2047 and are limited to those specific assemblies noted in BCA Clause F1.13.	Consider
Part F2	This building requires the following facilities: **a. Bath** – Mobile or fixed. Please provide further details **b. Clinical Basin** – 1 per 16 residents. Shown on plans. **c. Laundry** – Shown on plans. **d. Slop Hopper** – one per 60 residents or part thereof on every storey. Appropriate allowances are apparent on plans. **e. Disinfection Appliance** – One per 60 residents or part thereof on every storey. Appropriate allowances are apparent on plans.	Consider Note Note Note Note
	Appropriate allowances have been shown for accessible sanitary facilities complying with BCA F2.4 and AS1428.1. Accessible sanitary compartments are not required in common areas as these sanitary compartments are not required under BCA F2.3. If they are provided with signs labelling them accessible, then they must conform to all requirements of BCA F2.4 and AS1428.1.	Consider

	It is acknowledged that requirements for resident's facilities may be more suitable varied from the DTS provisions to meet the occupant characteristics. Facilities for people will be required for staff regardless of any Performance Solution for residents. Occupant numbers (including genders) are required to be established prior to facility calculations. The numbers provided will be assessed further, but are assumed to be compliant at this time.	Consider Consider
Part F3	Room heights have been assumed compliant. Ceiling heights are not confirmed at this time. Minimum heights are generally: **a.** 2.0m for stairways and ramps; **b.** 2.1m in kitchens and laundries in units, car parking areas, store rooms and WCs; **c.** 2.4m for corridors, passageways, kitchens and other habitable rooms.	Consider
Part F4	Natural light is required to all rooms for sleeping purposes at 10% of the floor area. A sufficient allowance for light appears to be shown on the plans at this point in time. Further assessment will occur during the approval stage assessment. Please note that the (required) window sill may not be located more than 1m affl, nor the window face another wall or allotment boundary less than 3m. Compliance is shown. Ventilation may be achieved by natural or mechanical means. Compliance is assumed at this time. Mechanical ventilation shall be compatible with the requirements of E2.2. Sanitary compartments have restrictions on where they can open directly to, particularly in public and shared areas where no mechanical ventilation is provided. Appropriate allowance appears to have been made. Kitchen exhausts shall comply with BCA F4.12 and will need to be treated separately in accordance with AS1668 (eg. not a BCA *shaft*). Further information relating to this item will be required as the design progresses.	Consider Note Consider Note Consider
Part F5	Acoustic separation is required in accordance with F5. Walls separating SOUs from other SOUs or separating SOUs from kitchens, bathrooms, sanitary compartments, laundries, plant room and utility rooms (not within the same SOU) are required to achieve a minimum sound rating level of Rw45. SOU walls required to achieve a sound rating are required to extend to one of the following: 1. The underside of the slab above, or 2. The roof covering above, or 3. The underside of a ceiling rated Rw45. **Any deviation from this will require an amended design to meet the DTS provisions of the BCA. However, the BCA is a performance based code and compliance can be achieved through means of Performance Solutions.** Similarly, floors are required to achieve the same level of performance. Ensure walls continue from slab to slab or to a ceiling/roof that maintains the same level of performance. Acoustic separation of services will be required as part of the work.	Consider Consider Consider
BCA Section G - Ancillary Provisions		
Part G2	Limited minor structures and coldrooms will require compliance with Section G.	Consider
Part G5	**This building is located within bushfire prone land and will require compliance with BCA Part G5.**	Consider

BCA Section J - Energy Efficiency		
Parts J1- J8	**Confirmation is needed as to whether an external consultant will be carrying out the Section J assessment of the proposed works.**	Action
	Generally, new buildings and new parts to existing buildings are required to comply with J1 and J2 for the building fabric and glazing. The extent of the conditioned space and the walls, floors and roof that bound it will need to be established so that these can be specified for compliance.	Consider
	If a DTS approach to building fabric Section J requirements is proposed, the following items will need to be addressed: a. Roof and/or ceiling will require a minimum downward R-Value of R3.7. Additionally, please be mindful of the new requirement under BCA 2019 for the upper surface of the roof having a solar absorptance not more than 0.45. b. Roof lights cannot take up more than 5% of the floor area of the room that it serves. Additionally, transparent or translucent elements on the roof will require a SHGC in accordance with BCA Table J1.4 and a U-Value not more than U3.9. c. Wall-glazing construction must achieve a minimum U-Value of U2.0. d. Wall construction must achieve a minimum R-Value of R1.4 where it is more than 80% of the wall-glazing construction and R1.0 where it less than 80% of the wall-glazing construction. e. Solar admittance of wall-glazing construction must not be greater than values listed in BCA Table J1.5b. f. Floor construction will require a minimum R-Value of R2.0 downwards.	Consider
	Where mechanical ventilation within the building does not provide sufficient pressurisation to prevent infiltration of outside air, the provisions of BCA Part J3 will need to be complied with as follows: a. Chimneys and flues provided with a damper or flap that can be closed to seal the opening. b. Seals to restrict air infiltration must be fitted to each edge of all doors separating conditioned spaces from non-conditioned spaces in accordance with BCA J3.4. c. All entrance doorways to the building must be fitted with a self-closing device. d. Exhaust fans separating conditioned spaces from non-conditioned spaces must be fitted with a sealing device, such as a self-closing damper or the like when serving a conditioned space as per BCA J3.5. e. Openings in ceilings, external walls and roofs (ie. window frame, door frame, roof light, etc.) must be constructed to minimise air leakage in accordance with BCA J3.6.	Consider
	Air-conditioning and mechanical ventilation is required under BCA Part J5 to comply with the following: a. Air-conditioning will need to be capable of being deactivated when the space it's serving is not occupied. b. Time switches for switching electric power on and off at variable pre-programmed times and days where the system is more than 2kWr. c. Ductwork achieving an R-Value in accordance with BCA Table J5.5.	Consider
	As the building is >2500m2, it is required to contain facilities for energy monitoring in accordance with BCA J8.3.	Consider

6. Conclusion

This report provides an assessment of the referenced architectural documentation against the Environmental Planning and Assessment Act, referenced Australian Standards, as well as, the Performance Requirements and the Deemed to Satisfy provisions of the National Construction Code Series, Building Code of Australia (Volume 1) for the proposed development.

Key compliance issues have been identified through this assessment. These issues are to be resolved prior to the approval stage by means of; Performance Solutions, altered design documentation or clarification of information on building plans.

Notwithstanding the above, it is considered that compliance with the provisions of the BCA is readily achievable, provided the above matters are appropriately addressed by the project team.