FORMIGA1

Design Development Report

Project: S221104 - New 148 Bed Residential Aged Care Facility at Opal St Ives

Location: 285-289 Mona Vale Road and 1 Flinders Avenue, St Ives, NSW, 2075

Completed For: Midson Group

On Behalf of: Opal Healthcare

Date: 16th October 2024

Revision Number: H

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Revision Schedule			
Revision	**Date**	**Report Information**	
A	15/02/2023	**Reason for Revision**	Initial Design Development Report
		Author's Name	Scott Naylor
		Author's Signature	
B	09/03/2023	**Reason for Revision**	Revised non-compliance comments regarding smoke compartment sizes. <500m^2 have now been demonstrated
		Author's Name	Scott Naylor
		Author's Signature	
C	23/03/2023	**Reason for Revision**	Revised due to updated plans affecting smoke compartments, clinical hand wash basins, travel distances, stair configurations, hydrant coverage and smoke door swing
		Author's Name	Scott Naylor
		Author's Signature	
D	31/03/2023	**Reason for Revision**	Revised due to updated plans affecting travel distances, stair configurations and hydrant coverage
		Author's Name	Scott Naylor
		Author's Signature	
E	08/12/2023	**Reason for Revision**	Redesigned for amended DA submission
		Author's Name	Scott Naylor
		Author's Signature	
F	18/03/2024	**Reason for Revision**	Amendments to the design for 90% SSDA level
		Author's Name	Scott Naylor
		Author's Signature	
G	12/04/2024	**Reason for Revision**	Amendments to the design for 90% SSDA level
		Author's Name	Scott Naylor
		Author's Signature	
H	16/10/2024	**Reason for Revision**	Amendments to the design for the SSDA resubmission
		Author's Name	Scott Naylor
		Author's 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 Opal Healthcare to provide a Design Development (DD) review of the proposed 148 bed Residential Aged Care Facility at Opal St. Ives. The building will provide 6 star quality, Residential Aged Care with an overall height of 4 storeys including an underground carpark area consisting of 53 car parks.

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 for 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 2021, Section 19. 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 2021 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 2022 that is currently enforced. However, as a requirement of the EP&A Regulation, Section 19, 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, Section 25-29 will form part of the Application for a Construction Certificate process. The FRNSW referral process is as follows:

- Once the Construction Certificate Application, plans and the FER are sent through, we can submit the documentation to FRNSW within **3 working days**.
- Formiga1 then carries out our CC BCA assessment of the proposed works and sends out a Request for Further Information Letter outlining any non-compliances or further information required in order to complete the assessment. *If the design is required to be considerably altered to achieve compliance then a new FRNSW referral is required to be submitted.*
- FRNSW will then send out a notification stating that they have received our submission within **2 working days** of Formiga1 making the submission.
- Within **10 working 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 has **25 working days** from receiving the submission to provide comments from their assessment.
- If the 25 day period lapses and no comments are received, we can issue the CC (provided all other CC items have been closed out).
- If FRNSW provides comments, they must be incorporated into the design OR be justified by a peer review from a third party fire engineer.

NOTE: The 25 working days begin from the day after the submission has been accepted by FRNSW.

5. Building Compliance

The assessment has been based on the following plans:

- Architectural Plans by GSA Group, Dated 09/10/2024.

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

- **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 5/7a/9c Back of House/Carpark/Residential Care Facility Level 1 - Class 9c Residential Care Facility ***NOTE:*** *Staff areas or Cafe/Wellness Centre do not make up more than 10% of the storey's floor area, therefore, they are not a separate classification.* Level 2 - Class 9c Residential Care Facility Level 3 - Class 9c Residential Care Facility Likely Class 10a/10b structures
Rise in Storeys	4 Storeys
Effective Height	11.02m (based on previous sections/elevations)
Construction Type	Type A
Compartment Limit	Fire Compartments - 8,000m^2 or 48,000m^3 Smoke Compartments - 500m^2
Maximum Compartment Sizes	Fire Compartments - 7,675m^2 Smoke Compartments - 488m^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	B1D3 - The building is to be designed to an importance level of 3 as the health care building is capable of containing 50 residents.	Consider
	B1D3 - 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 B1D3 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
	B1D6 - The building has **not** been identified as being located in a flood hazard area.	Note
	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. Particularly the requirements for regulated designs for piling and post tensioned slabs.	Consider
	BCA Section C - Fire Resistance	
Part C2 & C3	C2D2 - Building is Type A construction with a general FRL of 120 minutes throughout. Construction is required to be in accordance with clauses S5C11 - S5C20 of Specification 5 including non-combustibility for a number of aspects.	Consider

	Generally the required minimum FRLs are as follow: **a.** External Loadbearing Wall <1.5m from a fire source feature - **120/120/120 - Not applicable** **b.** External Loadbearing Wall >1.5m but <3m from a fire source feature - **120/90/90 - Not applicable** **c.** External Loadbearing Wall >3m from a fire source feature - **120/60/30** **d.** External Non-loadbearing Wall <1.5m from a fire source feature - **--/120/120 - Not applicable** **e.** External Non-loadbearing Wall >1.5m but <3m from a fire source feature - **--/90/90 - Not applicable** **f.** External Non-loadbearing Wall >3m from a fire source feature - **No requirement** **g.** External Loadbearing Columns - **120/--/--** **h.** External Non-loadbearing Columns - **No requirement** **i.** Fire Walls - **120/120/120** **j.** Internal Loadbearing Fire-resisting Shaft Walls - **120/120/120** **k.** Internal Non-loadbearing Fire-resisting Shaft Walls - **--/120/120** **l.** Internal Loadbearing Walls bounding public corridors, public lobbies, sole-occupancy units, etc - **No requirement (concessioned below)** **m.** Internal Non-loadbearing Walls bounding public corridors, public lobbies, sole-occupancy units, etc - **No requirement** **n.** Other Internal Loadbearing Walls, Beams, Trusses & Columns - **120/--/--** **o.** Floors - **120/120/120** **p.** Roofs - **No requirement (concessioned below)** ***NOTE:*** *Refer to BCA Spec 5 (S5C2) for guidance relating to the exposure of the building to fire source features.*	Consider
	Confirmation of the construction of the lift shaft external walls on L1, L2 and L3 will be required as it appears that the lift will be glazed.	Action
	S5C15 - The roof has a concession under BCA Spec 5 to not achieve an FRL provided that its covering is of a non-combustible construction, as the building has sprinklers throughout. **To claim this concession, parts of the building that do not require sprinklers would need them to be installed.**	Note
	S5C17 - As the roof does not require an FRL and the building does not have an effective height of >25m, all internal columns and walls (other than fire/shaft walls) in the floor immediately below the roof can have their FRL reduced to 60/60/60. It appears that a concrete column and roof slab structure have been proposed.	Note
	S5C20 - All loadbearing internal walls and fire walls must be constructed from concrete, masonry or fire-protected timber. In addition to this all non-loadbearing internal walls required to be fire-resisting as mentioned above, the wall must be non-combustible.	Consider
	C3D11 - Shaft walls to lifts in the resident use areas of the Class 9c building must achieve a minimum FRL of 120/120/120 in accordance with BCA C3D11. Lift doors shall achieve a minimum FRL of --/60/-- in accordance with BCA C4D11.	Consider
	S5C8 - Enclosure of shafts at the top and bottom will require compliance with BCA Spec 5 (S5C8) 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. However, a fire-rated top is still required to fire-isolated stairs.	Consider

	C2D10 - Non-combustibility of elements is outlined in BCA C2D10, being: a. External walls and common walls (including facade, framing, insulation, etc.). b. Flooring and floor framing of lift pits. c. Fire-rated non-loadbearing internal walls. d. Non-loadbearing shafts. ***NOTE:*** *BCA C2D10(4) outlines materials that are exempt from the requirements of non-combustibility as well as materials that are considered non-combustible. This does permit the installation of timber noggings/blocking for the bracing of fixtures.*	Consider
	C2D14 - Attachments to the external walls must also be non-combustible unless they form part of the concessions within BCA C2D14. If signage is proposed, this would need to be approved under the SSDA or have a separate DA for approval under a Construction Certificate.	Consider
	C2D11 - Fire hazard properties are required to comply with BCA C2D11 and BCA Spec 7. As the building is sprinkler protected throughout, concessions will apply as outlined in BCA Spec 7 Table S7C3 and Table S7C4.	Consider
Part C3	C3D3 - Compartment limits for this building are outlined in BCA Table C2.2. The Class 5 and 9c portions have a floor area limit of 8,000m^2 and 48,000m^3. The maximum proposed fire compartment size is 6,464m^2, being LGF and GF combined due to the void connecting the carpark. There is no compartment limitation requirement for sprinkler protected carparks.	Note
	C3D4 and C3D5 - This building is not considered a large isolated building and as such there are no additional provisions applying to the building.	Note
	C3D6 - Further to the above requirements, Class 9c parts of the building are required to comply with BCA C3D6 (3) for smoke compartmentation and construction in accordance with BCA Specification 11. The Deemed to Satisfy provisions require smoke compartments to have a maximum floor area of 500m^2. Compliance is shown on the plans as a maximum 496m^2 is proposed. It is assumed that the Level 2 Office area void contains smoke rated glazing. ***Note:*** *It is noted that the back of house and carpark areas on Ground Floor are not smoke separated as they are not Class 9c areas.*	Note
	A section of smoke wall on LGF between the Scullery and Kitchen near Stair 9A does not continue across the plenum, thus linking both smoke compartments. It is assumed that this is a drafting error.	Action
	C3D6 - Smoke walls are to be constructed in accordance with BCA Spec 11 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
	C3D6 - BCA NSW C3D6 (3) requires all internal walls bounding SOUs and public corridors must: a. Be lined on each side with 13mm standard grade plasterboard or equivalent. Loadbearing walls that are concrete, masonry or fire-protected timber do not require this plasterboard. b. If insulated, be a tested non-combustible insulation. c. Extend to the underside of the floor above.	Consider

	d. Not incorporate any penetrations above the door head height unless smoke sealed. e. Be smoke sealed with intumescent putty along all construction joints.	
	C3D6 - 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 11 (including smoke doors). Laundry and Commercial Kitchen are smoke separated, no such medical record storage is proposed and resident kitchens are all <30m^2.	Note
	C3D7 - The building has been provided with a sprinkler system throughout and does not require vertical separation in accordance with BCA C3D7. 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
	C3D8 - Building and fire compartmentation must be constructed in accordance with BCA C3D8. 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. No such fire walls creating fire compartments have been proposed, however, consideration will need to be given to fire walls if risers are constructed in lieu of shafts (see Part C4 below).	Consider
	C3D9 and C3D10 - The provisions for fire separation of classifications in the same storey and different storeys do not apply to the separate Class 5, 7a and 9c parts as these classifications require the same FRLs under Specification 5.	Note
	C3D12 - Compliance is achieved as the lifts and stairs are not proposed to be within the same shafts.	Note
	C3D13 - Services are required to be separated in accordance with BCA C3D13. Noting that stair pressurisation systems are excluded from this requirement as well as lift control panels as they are not proposed within a machine room.	Note
	C3D13 - The fire pump does not require an FRL as AS2419.1-2021 does not require an FRL for pumps protected by a sprinkler system.	Consider
	C3D14 - Electricity supply systems are also required to be separated from the remainder of the building in accordance with BCA C3D14. It has been assumed that the Main Switch Room will sustain the stair pressurisation system and any electric sprinkler pump (which are deemed emergency equipment). Therefore, an FRL of 120/120/120 has been assumed for this room.	Consider
	C3D14 - Additionally, emergency and non-emergency equipment is required to be separated from one another by metal partitions.	Consider
Part C4	C4D3 - Protection of openings is required where openings are in non-loadbearing external walls <3m from property boundaries or loadbearing external walls <6m from property boundaries. Structural plans have not yet been provided to confirm what walls are loadbearing or not, however, the Architectural plans appear to show a concrete column structure with no loadbearing external walls. **If so, non-loadbearing external walls are proposed to be >3m from the property boundary then this will trigger fire-rating requirements under Spec 5, thus triggering protection of openings.**	Consider

	C4D4 - This building does not have external walls and associated openings in different fire compartments and will not require any protection. Consideration should be given to where roof spaces of L2 sit above the L3 slab, thus creating adjoining fire compartments. Similar occurs between GF and L1.	Consider
	C4D5 - Smoke doors are required to comply with C4D5 and Spec 12 (eg. swing in the direction of egress or both directions, fitted with a self closing device, etc.). Compliance has been shown for the proposed smoke doors, however, the smoke door between Stair 5B and 9A on GF swings against the direction of egress.	Action
	S21C4 - Smoke reservoirs (minimum of 400mm in depth) are required above all smoke doors. If the 400mm depth cannot be achieved to the ceiling, perforations in the ceiling are permitted to utilise the ceiling void as the required 400mm. Adequate perforations are considered to be a grill that is 70% open, the width of the doorway, 300mm long and set back 300mm from the door or ceiling perforations with an equivalent openness to that of the grill. No insulation can be placed over these grills/perforations.	Consider
	C4D7 - Sliding fire doors are not shown to be proposed.	Note
	C4D10 - Services/penetrations in fire-isolated exits are limited to those in C4D10.	Consider
	C4D10 - Penetrations are required to comply with C4D13, C4D15, 3.12, C3.15 and Spec 13 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 13, 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
	C4D16 - 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 tested prototype under AS1530.4 to achieve the required FRL as per C4D16.	Consider
BCA Section D - Access and Egress		
Part D2	D2D3 - This building has the required minimum of 2 exits from each storey. Compliance has been shown.	Note
	D2D4 - Exits are generally required to be fire-isolated in this building. External stairways in lieu of fire-isolated stairways are permitted under BCA D2D13 and appear to have been proposed for Stairs 1B, 2, 4, 5B, 6, 7, 8 and 9B. Stairs 1A and 9A appear to be fire-isolated. Stairs 3 and 5A are non-fire-isolated stairs as they are only rising one storey from the Class 5/7a parts and do not serve egress from the Class 9c parts. Stair 1A is fire-isolated for the purposes of AS2419.1 for fire pump access.	Consider

	D2D4 - Fire-isolated stair layouts appear to make provision for compliance with regard to separation and construction. The location of windows/openings in the fire isolated stairs are to be suitably shielded from exposure to adjacent compartments as well as the discharge path to the street. However, the protection of discharge from fire-isolated stairs appears to vary from the provisions of BCA D2D12. The discharge path from Stairs 1A and 9A to the street is exposed (<6m) to openings in the external wall. The design will need to be amended to meet the DTS provisions of the BCA. This has been proposed by the design team to be covered through fire engineering.	Action/FER
	D2D13 - External stairs in lieu of fire-isolated exits are to be constructed using non-combustible materials throughout in accordance with BCA D2D13.	Consider
	D2D4 - 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 D3D6 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 D3D6 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. Further information relating to this provision will be needed to determine compliance, particularly for Stairs 1B, 2, 4 and 5B given the large landing spaces for these stairs.	Action
	D2D4 - 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 for a 3m height 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 C4D5.C4D5. Compliance has been shown.	Note
	D2D14 - The conditions of BCA D2D14 for travelling via non-fire-isolated stairways also appear to be fulfilled including total distance travel of 80m to the building discharge point.	Note
	D2D5 - Exit travel is generally 20m to single exit or 20m to a point of choice and 43m to the first exit. Distance between alternative exits is limited to 60m. The following areas do not meet this requirement: **a. Lower Ground Floor - Meds Room of Home B >40m from the nearest exit (43m measured).** **b. Lower Ground Floor - Travel between alternative exits of Stair 9A and Stair 7 is >60m (65m measured).** **c. Ground Floor - Home C North Eastern Bedroom is >20m to a point of choice (25m measured).** **d. Level 1 - Southern Ass WC is >20m to a point of choice (22m measured).** **This has been proposed by the design team to be covered through fire engineering.**	Action/FER
	D2D7 to D2D9 - 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. Sufficient allowances appear to have been made in the design, though consideration to stair widths should be given as the design progresses.	Consider

	Minimum clear widths for doors are required to be as follow: **a.** 870mm in all resident use areas. Appropriate allowances have been shown on the plans. **b.** 1070mm entry doors to SOUs. Appropriate allowances have been shown on the plans. **c.** 800mm in non-resident use areas, though all accessible areas require a minimum clear width of 870mm throughout regardless. Appropriate allowances have been shown on the plans.	Note
	D2D15 - Exit discharge is required to not have the potential to be blocked by vehicles. Appropriate allowances have been shown. All other aspects of exit discharge have been considered to maintain minimum egress widths and appropriate ramps/other inclines or compliant stairway to the street if there is a change in level.	Consider
	D2D16 - Horizontal exits are not proposed for this building.	Note
	D2D18 - The number of persons accommodated is best established by the design team and client dependent upon bed licenses, staffing and visitor numbers. Please confirm and promulgate to all design team members to ensure the minimum aggregate exit widths have been achieved. The current minimum egress widths provided caters for 200 persons per storey.	Consider
	D2D21 - No plant rooms >100m^2 are proposed on the roof and as such, ladders are permitted to the space.	Note
Part D3	D3D2 - Fire-isolated stairs and ramps are required to be constructed of non-combustible materials and so that local failure will not impair the function of the shaft.	Consider
	D3D5 - Fire-isolated stairs in this building are required to have the ascending and descending stairs separated. Plans indicate that this has been addressed.	Note
	D3D6 - The external stairs are required to comply as open and should maintain the criteria outlined in BCA D3D6.	Consider
	D3D8 - Installations in the path of travel are required to comply with D3D8, 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
	D3D9 - No cupboards or similar enclosed spaces have been proposed underneath stairs, therefore, compliance with BCA D3D9 is not required.	Note
	D3D15 - Ramps throughout the property must not exceed a gradient of 1:14 and must be slip-resistant in accordance with BCA D3D15.	Consider
	D3D14 - Stairs are required to comply with BCA D3D14 for tread construction and AS1428.1, Clause 11. Please refer to further comments in D4D4. It appears that Stair 1A is shown to contain 19 consecutive risers with no landings which exceed the maximum 18 risers permitted.	Action
	D3D15 - Stairs and landings shall comply with BCA D3D15 including slip resistance.	Consider
	D3D16 - 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

	D3D16 - 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
	This building is required to comply with BCA D3D16 - D3D21 and D3D29 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.** BCA 2022 has introduced a new requirement for where barriers are fixed to the vertical face forming an edge of a landing, balcony, deck, stairway, etc. (ie. cantilever balustrades), the opening formed between the barrier and the face must not exceed 40mm. **c.** Please note the new requirements of BCA 2022 to comply with the updated AS1288-2021 for glass balustrades, particularly in relation to changes around interlinking handrails. **d.** Fire-isolated stairs may use the concession in BCA D3D17 for their construction. **This concession does not apply to the proposed external stairs in lieu of fire-isolated stairs.** **e.** 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.).	Consider
	D3D22 - Handrails are required to both sides of every corridor used by residents and be continuous where practicable. Corridor handrails have not been proposed to both sides of all corridors (this also includes areas of the Wellness Centre). The design team has indicated that this will form part of a Performance Solution.	Action
	D3D22 - 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 D3D22 (1)(f) (eg. height 865-1000mm, handrail dimensions, etc.). Full compliance with AS1428.1 is required if the stairs serve as general movement for occupants.	Consider
	D3D23 - Ladder access to the roof plant shall be constructed in accordance with AS1657-2013.	Consider
	D3D24 & D3D25 - Please note the limitations of D3D24 on buildings for sliding doors. Door swing is required to comply with BCA D3D25. Where building entrances are also exits, consideration should be given to compliance with D3D24 – D3D26, 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
	D3D26 - Operation of latches are to comply with BCA D3D26 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

	D3D26 - Consideration should be given to the operation of latch provisions of BCA D3D26 for sliding doors to provide a single hand downward action on a single device.	Consider
	D3D26 - These provisions 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
	D3D28 - Signage for fire safety doors shall comply with D3D28.	Consider
Part D4	D4D2 - This building is required to be accessible to and within resident use areas of Class 9c areas and throughout all Class 5 and 7a areas. Paths connecting this building with disabled car spaces and main pedestrian entry points along the boundary shall also comply with AS1428.1. Compliance has been achieved.	Note
	D4D2 - BCA Table D3.1 requires a minimum of 9 accessible SOUs to be provided which has not been shown. The design team has confirmed that this will be addressed by a Performance Solution.	Action
	D4D4 - Accessways are required to be in accordance with D4D4 and AS1428.1 including circulation, provisions, turning and passing spaces. Reasonable provision is apparent on the current plans.	Consider
	D4D4 - 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
	D4D6 - Provision of carparks for people with disabilities is required in accordance with D4D6. Plans make provision for compliance, though heights are unclear at this stage.	Consider
	D4D7 - Braille signage is required in accordance with BCA D4D7 and BCA Spec D4D7 including directional and exit signage. Please refer to the BCA for further details.	Consider
	D4D8 - Hearing augmentation is only required where inbuilt amplification exists and is most likely in meeting rooms or the like for Class 9c. Please have the electrical engineer refer to BCA D4D8 for further details.	Consider
	D4D9 - TGSIs are required in accordance with D4D9. Concessions for Class 9c areas of the building, where raised-domed buttons are provided to the handrails. Where pedestrian paths and vehicular paths meet without delineation of kerb or kerb ramp, TGSIs are still required. No such construction has been proposed. The design team has indicated that this will form part of a Performance Solution.	Action
	TGSI concessions do not apply to the BoH and Carpark areas of the Ground Floor.	Consider
BCA Section E - Services and Equipment		
Part E1	***E1D2 - FIRE HYDRANTS*** **Fire hydrant coverage is required to all areas in accordance with BCA E1D2 and AS2419.1. Generally coverage appears to be achieved, though further details on the hydrant system will be required for comment.**	Action
	The flow and pressure requirements for the hydrant system at the most disadvantaged hydrant are 10l/s @ 700kPa unassisted as a pump is being proposed. Additionally, simultaneous flows will be required for the hydrants, sprinklers and wall-wetting drenchers (if installed) if they are fed off the same connection to the town main.	Consider

	Fire hydrant booster location is required to comply with one of the following: a. On the facade of the building containing the main entrance <20m from the main entrance. b. On the facade of the building containing the main entrance >20m from the main entrance if a strobe light is provided. c. Within sight of the main entrance, at the site boundary and adjacent to the principal vehicular entrance of the site. d. Within sight of the main entrance of the building and <20m from the facade of the building containing the main entrance. Compliance has been shown with (c).	Note
	Separation of the hydrant booster to electricity, gas and other hazardous elements as per AS2419.1 will need to be considered.	Consider
	Consideration should be given to AS2419.-2021 cl 3.2.2.2 for hydrant clearances in Stair 7 and other single flight stairs that have the potential to contain a fire hydrant (ie. >500mm from the door swing, etc.).	Consider
	The provisions of additional hydrants permitted under AS2419.1-2005 are no longer permitted under AS2419.1-2021. If additional hydrants are proposed, then this would need to be discussed with the fire engineer.	Consider
	AS2419.1-2021 requires the hydrant booster to be contained within a signal red enclosure. The design team has indicated that this may be addressed through fire engineering.	Action/FER
	E1D3 - FIRE HOSE REELS The Class 9c and Class 5 areas of the building do not require Fire Hose Reels as outlined under BCA E1D3, however, Fire Hose Reel coverage will be required to the following areas due to their classification: **a.** Class 7a carpark area.	Consider
	Installation of Fire Hose Reels shall be in accordance with AS2441 (eg. mounting heights, signage, pressures, etc.) and locations to be within 4m of an exit.	Consider
	E1D4 - SPRINKLERS This building is required to be sprinkler protected throughout and be installed in accordance with AS2118.1 **and** 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. The carpark is required to be covered by a Part 1 system as it caters for more than 40 cars (42 counted). This will require water supply, pipework and valve set standards from AS2118.1.	Consider
	As the total floor area of the building is >5,000m^2, the sprinkler system is to be separated into different systems.	Consider
	The sprinkler control valves must be located in a secure room or enclosure which has direct egress to a road or open space. Confirmation if the sprinkler control valves are located in the pump room as this does not achieve compliance with BCA Spec 17.	Consider

	E1D14 - 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 E1D14 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
	As the Class 5 areas have not been proposed with FHRs, they are required to be covered by extinguishers in accordance with AS2444 sections 1, 2, 3 and 4.	Consider
	E1D15 - 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.	Consider
Part E2	E2D3 - 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 BCA C3D6 requires smoke dampers to all smoke barriers, including walls and floors.	Consider
	E2D4 - Stair pressurisation or open access balconies are required to the fire-isolated stairways and passageways (Stair 9C), as the building has a rise of storeys of more than two. This does not apply to external stairs in lieu of fire-isolated stairs. This has been proposed by the design team to be covered through fire engineering.	Action/FER
	This will also need to be considered for Stair 1A. While it only serves Class 5/7a areas, these areas are not fire separated from one another. Therefore, Stair 1A is still considered to be part of the 9c area, thus triggering the requirements of stair pressurisation as per the explanatory information under BCA A6G1. This has been proposed by the design team to be covered through fire engineering.	Action/FER
	E2D11 - Air-handling systems with individual room units exceeding 1000L/s or multi-room units not being a miscellaneous exhaust system as per Section 5 of 1668.1 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
	Spec 20 - A smoke detection and alarm system is required for this building in accordance with BCA Specification 20, Clause S20C4 and AS1670.1. Requirements of completed design for approval include: **a.** Smoke detection throughout; **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, carpark mechanical controls, etc; **d.** Monitoring by the Fire and Rescue NSW; **e.** Building Occupant Warning System is to achieve 75dBa throughout all areas. Though it is noted that Opal generally install EWISs in their buildings which is deemed acceptable as it is above an beyond the BOWS requirements; **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

	Plans showing smoke detection layouts are yet to be provided. Note - This building has not been considered a theatre or public hall, nor an "other assembly building" in accordance with Clause E2D14 - E2D20. As such, there are no additional requirements for smoke hazard management.	 Note
Part E3	E3D1 - 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. E3D7 - Lift features, type and size shall comply with E3D7. E3D3 - 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. E3D9 - Fire service controls are not required for the lifts in this building as the building has an effective height of <12m.	Consider Consider Note Note
Part E4	E4D2 - 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. Plans indicating exit signage and emergency lighting are yet to be provided. D4D7 - Please note the requirements for braille exit signage outlined in the DTS provisions of D4D7. E4D9 - An EWIS is not required for this building, though it is noted that Opal generally install EWISs in their buildings as an over and above measure.	Consider Consider Note
BCA Section F - Health and Amenity		
Part F1	F1D3 - Stormwater drainage must comply with AS3500.3. F1D4 - Exposed joints in the drainage surface must not be located beneath or run through a planter box, water feature or similar object of the building. The joints are to be provided with protection in accordance with Section 2.9 of AS4654.2. F1D5 - Waterproofing membranes for external above ground use must comply with AS4654 Parts 1 & 2. F1D8 - Subfloor ventilation is required to be provided in accordance with BCA Table F1D8.	Consider Consider Consider Consider
Part F2	**F2D2 - Waterproofing to wet areas shall be provided in accordance with BCA F2D2 and AS3740. It is noted that the standard Opal ensuite pod design does not comply with the new AS3740-2021 due to the extremity of the shower area being <200mm from the ensuite door. The team has indicated that this will be addressed through Performance Solutions.** **F2D4 - Where a floor waste is installed, the floor must be provided with a continuous sloping surface to the floor waste between 1:50 & 1:80 in accordance with BCA F2D4. It is not possible for an installation of a BCA Floor Waste within an accessible sanitary compartment to comply with the DtS provisions of AS1428.1 and BCA F2D4. The team has indicated that this will be addressed through Performance Solutions.**	Action Action

Part F3	**BCA Performance Requirement F3P1 for weatherproofing of external walls will need to be addressed by a Performance Solution as there are no DTS provisions relating to F3P1 for the FC cladding, concrete cladding, etc. that are not covered under BCA F3D5. The team has indicated that this will be addressed through Performance Solutions.**	Action
	F3D2 - Roofing materials as listed in BCA F3D2 or another material provided with an external waterproofing membrane as per AS4654 Parts 1 & 2 are deemed acceptable. General concrete slab construction without this membrane is not deemed compliant.	Consider
	F3D3 - Sarking-type materials used for weatherproofing of roofs and walls must comply with AS4200 Parts 1 & 2.	Consider
	F3D4 - All glazing assemblies in external walls shall comply with AS2047 and are limited to those specific assemblies noted in BCA F3D4.	Consider
	F3D5 - Masonry, autoclaved aerated concrete or metal wall cladding used as the external cladding must comply with AS3700, AS5146.3 or 1562.1 in order to be deemed to satisfy with no Performance Solution.	Consider
Part F4	F4D2 - This building requires the following facilities: **a. Bath** – Mobile or fixed. Assumed mobile at this stage. **b. Clinical Basin –** 1 per 16 residents. 12x hand basins have been proposed for 148 beds. **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
	F4D2 - 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.	Consider
	F4D3 - 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
	F4D4 - Appropriate allowances have been shown for accessible sanitary facilities complying with BCA F4D4 and AS1428.1. Accessible sanitary compartments are not required in common areas as these sanitary compartments are not required under BCA F4D3. If they are provided with signs labelling them accessible, then they must conform to all requirements of BCA F4D4 and AS1428.1.	Consider
	F4D8 - Some WC's may require lift off hinges as required by BCA F4D8.	Consider
Part F5	F5D2 - 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 for kitchens and laundries in units, car parking areas, store rooms and sanitary compartments; **c.** 2.4m for corridors, passageways, commercial kitchens and habitable rooms.	Consider
Part F6	F6D2 - 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.	Consider

	F6D3 - 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 has been shown on the plans.	Consider
	F6D6 - Ventilation may be achieved by natural or mechanical means. Compliance is assumed at this time. Mechanical ventilation shall be compatible with the requirements of E2D3. **Consideration should be given to the separation between effluent exhaust from toilets, carpark and kitchen and outside air intakes in accordance with AS1668.2.**	Consider
	F6D9 - Sanitary compartments have restrictions on where they can open directly to, particularly in public and shared areas. Please consider this as design is developed.	Consider
	F6D11 - Please note that carpark mechanical controls will need to be located at the FIP.	Consider
	F6D12 - Kitchen exhausts shall comply with BCA F6D12 and will need to be treated separately in accordance with AS1668 (eg. not a BCA *shaft*).	Consider
Part F7	F7D4 - The walls required to have an impact sound insulation rating must be of two or more separate leaves or an identical prototype as outlined in BCA Specification 29.	Consider
	F7D6 - Acoustic separation is required in accordance with F7. 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.	Consider
	F7D6 - 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.**	Consider
	F7D5 - 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
BCA Section G - Ancillary Provisions		
Part G1	Limited minor structures and coldrooms will require compliance with Section G.	Consider
Part G2	Not applicable to this scope.	Note
Part G3	Not applicable to this scope.	Note
Part G4	Not applicable to this scope.	Note
Part G5	This building is not located within bushfire prone land and will not require compliance with BCA Part G5.	Note
Part G6	Common balcony areas >10m2 are deemed to be occupiable outdoor areas as per BCA Part G6.	Consider

	***NOTE:** This will trigger requirements for emergency lighting, exit signage, fire hazard properties of floor/wall coverings and occupant warning.*	
	BCA Section J - Energy Efficiency	
Parts J2- J9	**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 Part J4 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. b. The upper surface of the roof having a solar absorptance not more than 0.45. c. 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. d. Wall-glazing construction must achieve a minimum U-Value of U2.0. e. 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 is less than 80% of the wall-glazing construction. f. Solar admittance of wall-glazing construction must not be greater than values listed in BCA Table J4D6b. g. 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 J5 will need to be complied with as follows: a. 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 J5D5. b. All entrance doorways to the building must be fitted with a self-closing device. c. 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 J5D6. d. 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 J5D7.	Consider
	Air-conditioning and mechanical ventilation is required under BCA Part J7 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 J6D6.	Consider
	Artificial lighting within a fire-isolated stair, ramp or passageway must be controlled by a motion detector in accordance with BCA Specification 40 as required under BCA J7D4.	Consider
	All hot water systems must be installed in accordance with Section 8 of AS3500.4 and BCA J8D2.	Consider

	J9D3 - As the building is >2500m2, it is required to contain facilities for energy monitoring.	Consider
	J9D4 - An electrical distribution board for the provision of charging an electrical vehicle must be provided to the carpark associated with the building.	Consider
	J9D5 - The main electrical switchboard is to contain no less than two empty three-phase circuit breaker slots and four DIN rail spaces to hold a solar photovoltaic system and a battery system.	Consider
	No less than 20% of the roof area is to remain clear for the future installation of solar photovoltaic panels (SPP). Compliance is shown.	Note

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. Additionally, it is considered that the matters raised can be adequately addressed in the preparation of the Building Approval documentation without resulting in any foreseeable inconsistencies with the Development Approval.