REF: 065149-02BCA

BUILDING CODE OF AUSTRALIA REPORT

New Wing
Norwest Private Hospital
11 Norbrik Drive, Bella Vista

Table of Contents

Date	Rev No	No. of pages	Issue or Description of Amendment	Checked By	Approved By	Date Approved
25.09.13	A	20	Draft for EIS	Brigitte Thearle		14.10.13
14.10.13	B	21	Final for EIS	Brigitte Thearle		31.10.13

Executive Summary

As Accredited Certifiers, we have reviewed architectural design documents prepared by Health Projects International (refer appendix A) for compliance with the Building Code of Australia 2013.

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

DTS Clause	Description of Non-Compliance	Performance Requirement
C1.1, C2.8, E1.5	The construction separating the ground floor suites and the carpark is existing glazed construction that does not achieve an FRL of 120/120/120.	CP2
C2.5	Increases in floor area above what is permitted by the deemed to satisfy provisions: ▪ 60/60/60 FRL fire separated areas to ward and treatment areas with a floor area of up to 1,100m2 in lieu of 1,000m2 ▪ Smoke separated areas to ward areas with a floor area of up to 550m2 in lieu of 500m2.	CP2, CP3
C3.3	The openings exposed to an adjoining compartment are not proposed to be protected where the extent of exposure in the adjoining compartment is provided with a fire rated wall.	CP2, CP8
C3.5, C3.7	The fire doors located in fire walls (excluding doors to fire stairs) that are not located within the compartment which is in fire alarm/evacuation mode are not proposed to close on activation of fire alarm. The fire door closing operation will be consistent with the cascading of the fire alarm.	CP2, CP3
D1.2	Lifts may be used as part of the fire egress strategy and do not fall within the definition of an 'exit'.	DP7
D1.4, D1.5	The following travel distances exceed those permitted by the deemed to satisfy provisions: <u>Distance to an Exit Where Two or More are Available</u> ▪ Level 1: 44m to an exit where two or more are available in lieu of 30m. ▪ Level 2: 43m to an exit where two or more are available in lieu of 40m. ▪ Level 3: 40m to an exit where two or more are available in lieu of 30m. <u>Distance Between Alternate Exits</u> ▪ Level 1: 60m between alternate exits in lieu of 45m ▪ Level 2: 62m between alternate exits in lieu of 60m	DP4
D1.7	The path for stair 5 to reach open space is currently 22m in lieu of the permitted 20. This is to ensure the path does not travel within 6m of the unprotected openings to the existing suites.	DP5
E2.2	Deletion of speakers to the operating theatres and provision of an	EP2.2, DP4.

alert tone only (in lieu of evacuate tone) to the Intensive Care Unit

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

The documentation will need further detailing such as door hardware, specifications, service design, as outlined in Appendix D of this report.

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

Assessed By

Brigitte Thearle

1.0 Introduction

The proposed development comprises of a new wing to the Norwest Private Hospital. The wing is to be constructed above the existing basement carpark.

The site is located on Norbrik Drive, Bella Vista.

1.1 Current Legislation

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

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

1.2 Consent Authority May Require The Building To Be Upgraded

The consent authority, in this case, the Department of Planning & Infrastructure, when assessing the development application may require that the existing building be brought into partial on full compliance with the current provisions at the BCA. The trigger for upgrade includes:

- Where the building works, together with any other works completed or authorised within the previous 3 years, represents more than half the total volume of the building; or

- The consent authority are not satisfied the measures contained in the building are not adequate for the safety of present using the building or prevention of special to adjacent buildings.

1.3 Definitions

Health-care building *means a building whose occupants or patients undergoing medical treatment generally need physical assistance to evacuate the building during an emergency and includes—*

(a) a public or private hospital; or
(b) a nursing home or similar facility for sick or disabled persons needing full-time care; or
(c) a clinic, day surgery or procedure unit where the effects of the predominant treatment administered involve patients becoming non-ambulatory and requiring supervised medical care on the premises for some time after the treatment.

Patient care area *means a part of a health-care building normally used for the treatment, care, accommodation,recreation, dining and holding of patients including a ward area and treatment area.*

Treatment area *means an area within a patient care area such as an operating theatre and rooms used for recovery, minor procedures, resuscitation, intensive care and coronary care from which a patient may not be readily moved.*

Ward area *means that part of a patient care area for resident patients and may contain areas for accommodation, sleeping, associated living and nursing facilities.*

2.0 Building Assessment Data

Summary of Construction Determination: -

	Norwest Private Hospital
Classification	5, 7a, 9a
Number of Storeys Contained	5
Rise In Storeys	5
Type of Construction	A
Effective Height (m)	<25m

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

Part of Project	BCA Class	Approx. Floor Area (m^2) - NEW	Additional Population Above Existing
Ground Level Open Deck Carpark	7a	2,430m2	Hospital Staff– 88 Hospital Patients – 50 Medical Suite Doctors & Staff – 21 Medical Suite Patients –10 Visiting Medical Officers – 35 (15 max. at any one time)
Level 1 Cath Lab Sterile Store	9a		
Level 1 Operating Theatres, Preoperative & Recovery (New Floor Area)	9a	2,430m2	
Level 2 Medical Suites & Plant (New Floor Area)	5	2,590m2	
Level 3 Inpatient Unit (New Floor Area)	9a	2,405m2	
	Total	**9,855m²**	**525**

Notes:
1. The above populations have been base on the floor areas and calculations in accordance with Table D1.13 of the BCA.
2. Patient populations to levels 1 and 3 are based on the number of beds.
3. Staff numbers are an assumption only. Further information to be provided as to staff numbers to ensure accurate assessment

3.0 Structural Provisions

Any new structural works are to comply with the applicable requirements of AS/NZS 1170.1.

Glazing is to comply with AS1288, and AS2047.

Prior to the issue of the Construction Certificate structural certification is required to be provided.

4.0 Fire Resistance

The buildings should be constructed generally in accordance with Table 3 & 3.9 of Specification C1.1 of the Building Code of Australia 2013. The building is required to be Type A Construction.

The building has been assessed on the basis of the following fire separation/ compartmentation within the development;

- Separation between the carpark portions and the health care/commercial portions of 120 minutes,
- Fire compartmentation of the building at each floor level,
- Fire compartmentation of the development as outlined in Part 4.1 of this report.

It is noted that the construction separating the ground floor suites and the carpark is existing glazed construction that does not achieve an FRL of 120/120/120. The construction of this wall is to be assessed as part of the fire engineering to BCA Performance Requirement CP2.

Fire resistance levels for building structural members are as follows:

- Health Care Portions 120 minutes
- Commercial portion 120 minutes
- Car park levels 120 minutes

The carpark has been considered as roof as open space for the purposes of egress. The slab is therefore to achieve an FRL of 120/120/120. Please confirm this is achieved by the existing slab.

In specifying the Fire Resistance Levels of building elements, the following provisions will apply to ensure compliance with Specification C1.1:-

1. Where part of building that is required to have an FRL, relies on another part for vertical of lateral support, the supporting element is required to have an FRL not less than that required by other provisions of Specification C1.1.
2. Shafts required to have an FRL are to be enclosed that the top and bottom by construction achieving the required FRL
3. Each building elements outline in Table 3 and any column or beam incorporated in the element must achieve the required FRL.
4. External walls, flooring and floor framing is to be non-combustible.
5. Fire walls are to extend to the underside of the floor above, or the underside of the roof
6. Loadbearing internal walls and fire walls are to be concrete or masonry.
7. Non-loadbearing internal walls required to be fire resisting are to be of non-combustible construction.
8. FRLs of an external column also apply to an internal column that face and are within 1.5m of a window and exposed through the window to a fire source feature.

Lids to service risers are not proposed to achieve the required FRL of 120 minutes. This is to be assessed as part of the alternate solution to BCA Performance Requirement CP2.

A concrete roof is proposed that will achieve an FRL of 120 minutes.

<u>Concessions</u>

The following concessions to compliance with Table 3 apply to the development:-

1. Floors need not comply with Table 3 if laid directly into the ground, or; is an open access floor above a floor with the required FRL.

4.1 Compartmentation

The following compartmentation provisions of the BCA apply to the building:-

- The building is of Type A Construction and to comply with Table 3 of Specification C1.1 of the BCA; Fire walls are to achieve an FRL of 120/120/120.
- Class 9a Buildings are to have maximum fire compartment size of 5000m2.
- Patient Care Areas (including wards and treatment areas) are to have fire compartments no greater than 2000m2 that are separated from the remainder of the building by construction achieving an FRL of 120/120/120.
    - Ward areas are to be further divided into areas of 1000m2 separated by construction achieving an FRL of 60/60/60, and smoke compartments no greater than 500m2 are to be provided, smoke walls are to achieve compliance with Specification C2.5 of the BCA
    - Treatment areas are to be further divided into areas of 1000m2 separated by construction achieving an FRL of 60/60/60

Note that where patient care and non-patient care areas are located within the same compartment, the patient care provisions apply to the whole compartment.

An alternate solution is proposed to verify the following increases in floor area above what is permitted by the deemed to satisfy provisions:

- 60/60/60 FRL fire separated areas to ward and treatment areas with a floor area of up to 1,100m2 in lieu of 1,000m2
- Smoke separated areas to ward areas with a floor area of up to 550m2 in lieu of 500m2.

The patient lounges on level 3 have been included in the fire compartment floor area calculations as are internal (with skylight roof over).

In reviewing the compartmentation on the drawings, there are several areas where the compartmentation is incomplete and does not form adequate compartmentation. These are as follows. Note that the increased area permitted by the fire engineering has been taken into account in the below:

- Level 3 smoke compartment E1 has a floor area of 559m2 in lieu of the 550m2 permitted by the fire engineering.
- Level 3 smoke compartment F1 has a floor area of 556m2 in lieu of the 550m2 permitted by the fire engineering.

Final resolution of the compartments will be undertaken as part of the Construction Certificate/design development phase of the project.

Smokeproof wall construction is to achieve compliance with Specification C2.2 of the BCA which prescribed the walls to be:-

- Non-combustible, and extend to the underside of the roof, or the floor above.
- Not incorporate glazed elements unless glazing is safety glass in accordance with AS1288
- Have doorways be fitted with smoke doors
- Incorporate smoke dampers where airconditioning system penetrates walls (unless the duct forms part of the smoke hazard management system).

Compartment Name	Fire Compartment BCA Classification	Patient Care (Yes/ No)	Ward/ treatment	Floor area (m^2) (Required to be less than 2,000m2)	Sub-compartment (FRL 60/60/60) Floor Area (m^2) (Required to be less than 1,000m2)	Smoke Compartment (Required to be less than 500m2 for wards, less than 1,000m2 for treatment)	Complies
Ground Floor Open Deck Carpark	7a	Floor area limitations do not apply to open deck carparks					Yes
Level 1 Compartment F	9a	Yes	Treatment	1,603m^2	F1 – 909m^2 F2 – 695m^2	N/A	Yes
Level 1 Compartment A	9a	Yes	Treatment	1,307m^2	A1 – 590m^2 A2 - 717m^2	N/A	Yes
Level 1 Compartment C	9a	Yes	Treatment	1,560m^2	C1 – 963m^2 C2 - 607m^2	N/A	Yes
Level 2 Compartment E	5	N/A	N/A	1,903m^2	N/A	N/A	Yes
Level 2 Compartment E	5/9a	N/A	N/A	637m^2	N/A	N/A	Yes
Level 3 Compartment E	9a	Yes	Ward	1,025m^2	1,025m^2	E1 – 559m^2 E2 – 455m^2	No
Level 3 Compartment F	9a	Yes	Ward	1,290m^2	F1 - 556m^2 F2 - 730m^2	F1 - 556m^2 F2a - 280m^2 F2b - 450m^2	No

Note that the 'complies' column is based on the completion of the compartmentation lines as outlined in Section 4.1 of this report above.

The new Cath Lab Sterile Store is to be 2 hour separated from the remainder of the building so as to ensure existing compartments retain compliant sizes.

4.2 Protection of Openings

The prescriptive provisions of the BCA stipulate that openings within building elements required to have an FRL shall be protected as follows:

1. Any external opening within 3m of the fire source feature protected by -/60/- fire rated construction, or externally located wall wetting sprinklers, or an alternate solution be provided to verify CP2 of the BCA.
2. Penetrations through fire rated floors to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a fire rated shaft achieving an FRL of 120/120/120;

3. Any penetration through a wall or room required to have an FRL (e.g. substation, boiler room, apartment separating wall etc) is to be protected either by a tested prototype (e.g. fire collar, fire damper, etc) or be installed within a shaft achieving an FRL of 120/120/120 (or 120/120/120 where it is a room such as a substation);
4. Self-closing -/60/30 fire doors to the doors opening to the fire isolated stairs (note that this also includes the access doors to the condenser units on the plant platforms).

The fire doors located in fire walls (excluding doors to fire stairs) that are not located within the compartment which is in fire alarm/evacuation mode are not proposed to close on activation of fire alarm. The fire door closing operation will be consistent with the cascading of the fire alarm. This is to be assessed as part of the alternate solution to BCA Performance Requirement CP2 and CP3.

Note that where fire dampers, fire collars, etc are utilised, allowance needs to be made for access hatches to be provided within the walls / ceilings to ensure that maintenance access is provided.

Fire source feature is defined as;
(a) The far boundary of a road, river, lake or the like adjoining an allotment,
(b) The side or rear boundary of the allotment,
(c) The external wall of another building on the allotment which is not a class 10 building.

4.3 Separation of external walls and associated openings in different fire compartments

External walls of adjoining/adjacent fire compartments are required to have an FRL of 60/60/60 and the openings in the external walls are to be protected by a means described above. The distance of protection required are detailed in the table below:-

Angle between walls	Minimum distance
0^o (walls opposite)	6m
More than 0^o to 45^o	5m
More than 45^o to 90^o	4m
More than 90^o to 135^o	3m
More than 135^o to less than 180^o	2m
180^o or more	Nil

The protection of openings may include external wall wetting drenchers or -60/- fire windows/doors or other type of construction.

The openings exposed to an adjoining compartment are not proposed to be protected where the extent of exposure in the adjoining compartment is provided with a fire rated wall. This is to be addressed as part of the alternate solution to BCA Performance Requirement CP2 and CP8.

4.4 Vertical Separation of openings in external walls:

Spandrel separation is not required as sprinkler protection is proposed throughout the new wing, including the ground floor open deck carpark.

4.5 Passive Fire Protection

Other passive fire protection issues that will need to be addressed in detailed documentation phase include:

- Lift motor rooms,
- Emergency power supply (existing),
- Emergency generators (existing),
- Uninterrupted power supply
- Electricity supply,
- Boilers or batteries,
- Hydrant Pump rooms,
- Sprinkler Pump Rooms,

To be separated from the remainder of the building by construction achieving a minimum fire resistance level of 120 minutes.

4.6 Fire Hazard Properties

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

5.0 Egress

The egress provisions from the proposed building are provided by:

- Fire isolated stairways
- External perimeter doorways

The carpark deck has been considered as roof as open space for the purposes of this assessment.

Lifts may be used as part of the fire egress strategy. Where proposed, this is to be assessed to BCA Performance Requirement DP7 as part of the alternate solution prepared by the fire safety engineer.

Other detailing issues that will need to be addressed include:

- Door Hardware
- Exit door operation
- Stair construction
- Handrail and balustrade construction
- Details of Separation of rising & descending stairs
- Discharge from the Fire Isolated Exits
- Details of the egress provisions to the Road.

Where horizontal exits are provided, they are not to comprise of more than 50% of the exits provided from that portion.

5.1 Exit Travel Distances

The locations of the proposed exits would appear to indicate that the deemed to satisfy requirements in terms of travel distances, distances between alternative exits and egress widths will need to be assessed as part of the fire engineering assessment.

The travel distances to exits should not exceed:

Class 5
- 20m to a single exit or point of choice and where two exits are provided, a maximum of 40m to one of those exits; and
- exits shall be located to not be more than 60m apart and not closer than 9m

Class 9a Patient Care
- No point on the floor to be more than 12m from a point of choice
- Maximum distance of travel of 30m
- Alternative exits not more than 45m apart

The following travel distances are to be verified as part of the fire engineering alternate solution:

Distance to an Exit Where Two or More are Available
- Level 1: 44m to an exit where two or more are available in lieu of 30m.
- Level 2: 43m to an exit where two or more are available in lieu of 40m.
- Level 3: 40m to an exit where two or more are available in lieu of 30m.

Distance Between Alternate Exits
- Level 1: 60m between alternate exits in lieu of 45m
- Level 2: 62m between alternate exits in lieu of 60m

5.2 Dimensions of Exits

Minimum dimensions of 1000mm and 2000mm height to be provided within exits, with the paths of travel should provide a minimum width of 1000mm (note that all maintenance access, cat walks, etc may comply with AS1657 in which case a 600mm clear width is required). Corridors used for the transportation of patients in beds are required to achieve a minimum clear width of 1,800mm.

The doors have been designed to swing in the direction of egress.

Doorways are permitted to contain a clear opening width of the required width of the exit minus 250mm with a height of 1980mm as part of egress requirements. Access for persons with disabilities however requires a clear doorway opening width of 850mm (i.e minimum 870 mm doors). Where the doors are in a horizontal exit and are used as an exit only, the minimum required clear width of the doorway is 1,250mm and, if normally used to transport patients in beds, the minimum required clear width of the doorway is 1,200mm if the corridor is less than 2.2m in width or 1,070mm where the corridor is 2.2m in clear width or greater.

Stairway landings are required to have clear dimensions of 1.6m in width and 2.7m in length, or demonstrate that the landing is sufficient to manoeuvre a 600mm by 2,000mm stretcher around the landing with the stretcher never at a gradient steeper than the stairs. The current landings achieve a width of 1.2m. Either the landings are to be increased to achieve 1.6m clear or it is to be demonstrated that a stretcher can be manoeuvred around the landing and comply with the above requirements.

5.3 Fire Isolated Exits

Each fire-isolated stairway or fire-isolated ramp must provide independent egress from each storey served and discharge directly, or by way of its own fire-isolated passageway to:

- A road or open space; or
- To a point within the confines of the building, that is used only for pedestrian movement, car parking or the like and is open for at least 2/3 of its perimeter; and from which an unimpeded path of travel, not further than 20 m, is available to a road or open space; or
- Into a covered area that adjoins a road or open space, is open for at least 1/3 of its perimeter, has an unobstructed clear height throughout, including the perimeter openings, of not less than 3 m and provides an unimpeded path of travel from the point of discharge to the road or open space of not more than 6 m.

Where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, that part of the wall must have an FRL of not less than 60/60/60 and any openings protected internally in accordance with C3.4, for a distance of 3 m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser.

Stair 5 (existing) and stair 21 are currently shown to discharge into the open deck carpark. The path for stair 5 to reach open space is currently 22m in lieu of the permitted 20. This is to ensure the path does not travel within 6m of the unprotected openings to the existing suites. This distance is to be assessed as part of the alternate solution to BCA Performance Requirement DP5.

Additionally, the path to open space has been marked on the carpark. The path provided is not to be obstructed by parked vehicles or boom gates. While the BCA does not prescribe that a path must be dedicated to egress only, it does require the path to be unobstructed.

5.4 Balustrading and Handrail

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

Where it is possible to fall more than 4m to the finished floor, the balustrade shall not contain any horizontal or near horizontal members that facilitate climbing.

Handrails should generally be provided at a minimum height of 865mm along side of all ramps and stairs.

Handrails are to be provided to each side of the stair, where the stair exceeds a width of 2m. Where an egress stair exceeds 2m in width, an additional handrail is required to ensure that the egress width of 2m is accounted.

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

Handrails are required along one side of each corridor normally used by patients and where possible, shall be continuous. The width of the corridor required by Section 5.2 of this report is to be measured clear of the handrail.

5.5 Access for Persons with a Disability

Access for people with disabilities shall be provided to and within the building in accordance with the requirements of Clause D3.2, D3.3 and D3.4 of the BCA 2013. Parts of the building required to be accessible shall comply with the requirements of AS1428.1-2009.

The design would generally comply with the prescriptive provisions of the BCA with additional ongoing review being undertaken as to door widths, circulation, etc. Further details are to be provided or access to these areas is to be assessed by an access consultant.

Where the main public entrance is via a ramp, tactile indicators shall be provided in accordance with AS 1428.4 at the top and bottom. Parking shall be provided for people with disabilities in accordance with in accordance with Clause D3.5 of the BCA. Facilities services and features of the building accessible to people with disabilities shall be identified by signage complying with Clause D3.6 of the BCA.

General

Access to be provided to and within the building pursuant to AS1428.1-2009 as follows:
- Via the principle public entry and at least 50% of all other entrances
- From designated car parking spaces for the use of occupants with a disability.
- From another accessible building connected by a pedestrian link.
- All areas used by the public.

Note that entrances that are not accessible are to be located within 50m of an entrance that is accessible.

6.0 Fire Services & Equipment

The following fire services will need to be provided throughout the building:

- An automatic sprinkler system in accordance with the relevant provision of clause E1.5 and E2.2 of the BCA and AS 2118.1-1999, throughout the building including the ground floor open deck carpark
- Fire hydrants in accordance with clause E1.3 of the BCA and AS 2419.1-2005,
- Fire hose reels in accordance with clause E1.4 of the BCA and AS 2441-2005,
- Portable Fire Extinguishers in accordance with Clause E1.6 of the BCA and AS 2444-2001,
- Sound System & Intercom System for Emergency Purposes in accordance with AS 1670.4-2004.
- Emergency lighting, exit signage and directional exit signage is required throughout the building in accordance with Part E of the BCA and AS/NZS 2293.1-2005

A Fire Control Centre shall be provided in accordance with Clause E1.8 of the BCA. It is proposed to expand and adjust the existing fire control centre located at the main entry to incorporate the new wing and amended layout to the existing portions.

6.1 Fire Hydrants

A system of Fire Hydrants is required to be provided to BCA Clause E1.3 and AS 2419.1-2005. We will reply upon design certificate from a Hydraulic Consultant.

Detail is to be provided as to whether a new fire hydrant system is proposed or if the existing system will be extended. Note the hydrants covering the new wing are to comply with the current BCA and Australian Standard requirements.

Fire hydrants are to be provided within fire isolated stairs/within 4.0m of required exits.

6.2 Fire Hose Reels

A Fire Hose Reel System is required to BCA Clause E1.4 and AS2441.

To be located within 4m of exits and provide coverage within the building based on a 36m hose length.

Please note that fire hose reel coverage cannot pass through fire or smoke doors.

6.3 Automatic Sprinkler Protection

An Automatic Fire Suppression System is required to Specification E1.5 and E2.2, and AS2118 part 1-1999 throughout the new wing including the ground floor open deck carpark. Residential sprinkler heads will be required to all patient care areas.

Detail is to be provided as to whether a new sprinkler system is proposed or if the existing system will be extended. Note the sprinklers covering the new wing are to comply with the current BCA and Australian Standard requirements.

An occupant warning system that is triggered upon activation of the sprinkler system should be provided in accordance with BCA Specification E1.5.

7.0 Ventilation and Smoke Hazard Management

Smoke hazard management shall be provided throughout the building by means of the following systems:

- Automatic Shutdown of Mechanical Systems automatic shutdown of any air-handling system which does not form part of a zone smoke control system (other than individual room units with a capacity not more than 1000 L/s, systems serving critical treatment areas and miscellaneous exhaust air systems installed in accordance with Sections 5 and 11 of AS/NZS 1668.1) on the activation of—
  i. smoke detectors; and
  ii. any other installed fire detection and alarm system including a sprinkler system complying with Specification E1.5; and in accordance with the requirements of AS/NZS 1668.1-1998;
- Automatic Smoke Detection and Alarm System in accordance with the requirements of BCA Spec E2.2a and AS 1670.1-2004. The deletion of speakers to the operating theatres and the provision of an alert tone only (in lieu of evacuate tone) to the Intensive Care Unit is to be assessed as part of the alternate solution to BCA Performance Requirement EP2.2 and DP4.
- Automatic Pressurisation to Fire Isolated Exits in accordance with the requirements of AS/NZS 1668.1-1998

A fire indicator panel is required as part of the detection system. This panel is to be located within 4m of the main entry and should be incorporated within the fire control centre. Any variation to the prescriptive provisions will require the consent of the fire brigade and should form part of the fire safety engineering report to verify the performance requirements of the BCA. The new wing is

proposed to be connected into the existing FIP which is located at the main entry. The FIP is to be updated to reflect the new arrangement.

Alarm activation in the basement carpark is to be confirmed.

Throughout the development the provision of natural or mechanical ventilation is required to all habitable rooms in accordance with F4.5 Building Code of Australia and AS 1668 and AS/NZS 3666.1.

8.0 Lift Services

The passenger lifts to be installed are to be: -

- fitted with warning signs, fire service controls in accordance with Clauses E3.3, E3.7, E3.9 and E3.10 of the BCA. Where the lifts are utilised as part of the evacuation strategy, assessment of the signage provided will be undertaken and included as part of the alternative solution assessment.
- Stretcher facilities are to be provided within the lifts with minimum dimensions of 600m wide, 2000mm long and 1400mm high.
- Two emergency lifts located in separate shafts (staff/bed lifts) with stretcher facilities in accordance with part E3.4 of the BCA. Minimum dimensions required are as follows:
  - Minimum depth of car: 2,280mm
  - Minimum width of car: 1,600mm
  - Minimum floor to ceiling height: 2,300mm
  - Minimum door width: 2,100mm
  - Minimum door height: 1,300mm
- Be provided with the following: -
  - A handrail in accordance with AS 1735.12
  - Minimum internal floor dimensions as specified in Table E3.6b of the BCA i.e. 1,400mm x 1,600mm,
  - Minimum clear door opening complying with AS 1735.12
  - Passenger protection system complying with AS 1735.12
  - Have a set of buttons for operating the lift located at heights above level complying with AS 1735.12.
  - Lighting in accordance with AS 1735.12
  - Automatic audible information within the lift car to identify the level each time the car stops
  - Audible and visual indication at each lift landing to indicate the arrival of the lift car

9.0 Sanitary Facilities

The sanitary & other facilities within the development should generally consist of: -

1. a Kitchen Facility,
2. one shower for every 8 patients,
3. one island type plunge bath for each ward area.
4. Wc's and washbasin for patients and staff,
5. public toilets to allow for visitors
6. a Laundry facilty

Where an island style plunge bath is not proposed to be provided to the ward areas, this is to be assessed by a suitably qualified person to BCA Performance Requirement FP2.1.

Staff facilities are to be provided at the rate of one WC per 20 male staff, one WC per 15 female staff, one urinal per 50 male staff (with the exception of the first 50 which requires 2 urinals) and one wash basin per 30 males and 30 females.

The following facilities are required to cater for the proposed additional population:

Class	Occupant Number	Pop	Required			Proposed		
			WC	Urinals	Basins	WC	Urinals	Basins
9a Hospital Staff & Visiting Medical Officers	Male	52	3	3	2	4	0	4
	Female	52	4	NA	2	4	NA	4
	Unisex Facility		1	NA	1	0	NA	0
9a Hospital Patients	Male	25	4	NA	4	53	NA	53
	Female	25	4	NA	4	53	NA	53
	Unisex Facility		NA	NA	NA	NA	NA	NA
5 Medical Suite Doctors & Staff	Male	11	1	1	1	2	2	2
	Female	11	1	NA	1	3	NA	2
	Unisex Facility		1	NA	1	1	NA	1
5 Medical Suite Patients	Male	5	Sanitary facilities are not required for the public for the class 5 medical suites. Provision of any facilities to serve the public is over and above the requirements of the BCA.			1	2	3
	Female	5				3	NA	3
	Unisex Facility					1	NA	1

Please note the Unisex facilities provided for people with disabilities may be counted once for each sex. These facilities are to be provided in accordance with AS1428.1-2009. At each bank of facilities where an accessible facility is provided, an ambulant facility for each sex is required. The ambulant facilities are also required to be provided in accordance with the requirements of AS 1428.1-2009.

Sanitary facilities are not required for visitors to the class 9a portions. Provision of any facilities to serve the public is over and above the requirements of the BCA. Where a facility is provided, however, the requirements regarding accessible and ambulant facilities will be applied.

10.0 Energy Efficiency

The proposed development shall comply with Part J of the BCA. To achieve compliance, there are two options available:

1. The building can comply with the deemed-to-satisfy provisions of the BCA, relating to the following areas:
   - Building Fabric
   - Glazing
   - Building Sealing
   - Air Conditioning & Ventilation Systems

- Artificial Lighting & Power
- Hot Water Supply

2. The building can be verified against a reference building as per Verification Method JV3. This requires that the proposed building and its services be shown to have an annual energy consumption of equal or less than the reference building which has been modelled as per the requirements of Part J of the BCA.

Certification from an appropriately qualified engineer should be provided for either option with a report / computations outlining how compliance is achieved.

Access for maintenance is to be provided to the building in accordance with the requirements of BCA Part J8.

The proposed site will be located in a climate zone 6.

Appendix A - Design Documentation

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

Drawing No.	Title	Date	Drawn By	Rev
NWP12-P-B1	New Wing Project Basement Level BCA Plan (Overall)	27.10.13	Health Projects International	4
NWP12-BCA-G	New Wing Project Ground Level BCA Plan (Overall)	27.10.13	Health Projects International	4
NWP12-BCA-1	New Wing Project Level 1 BCA Plan (Overall)	27.10.13	Health Projects International	4
NWP12-BCA-2	New Wing Project Level 2 BCA Plan (Overall)	27.10.13	Health Projects International	4
NWP12-BCA-3	New Wing Project Level 3 BCA Plan (Overall)	27.10.13	Health Projects International	4

Appendix B - Draft Fire Safety Schedule

	Essential Fire Safety Measures	Standard of Performance
1.	Access Panels, Doors and Hoppers	BCA Clause C3.13
2.	Automatic Fail Safe Devices	BCA Clause D2.19 & D2.21
3.	Automatic Fire Detection and Alarm System	BCA Spec. E2.2a & AS 1670 – 2004
4.	Automatic Fire Suppression System	BCA Spec. E1.5 & AS 2118.1 – 1999,
5.	Building Occupant Warning System activated by the Sprinkler System	BCA Spec. E1.5 & AS 1670 – 2004
6.	Emergency Lifts	BCA Clause E3.4 & AS 1735.2 – 2001
7.	Emergency Lighting	BCA Clause E4.2, E4.4 & AS/NZS 2293.1 – 2005
8.	EWIS	BCA Clause E4.9 & AS 1670.4 - 2004
9.	Exit Signs	BCA Clauses E4.5, E4.6 & E4.8 and AS/NZS 2293.1 – 2005
10.	Fire Control Centres	BCA Spec. E1.8
11.	Fire Dampers	BCA Clause C3.15, AS 1668.1 – 1998 & AS 1682.1 & 2 – 1990
12.	Fire Doors	BCA Clause C3.2, C3.4, C3.5, C3.6, C3.7 & C3.8 and AS 1905.1 – 2005 Alternate solution prepared by accredited fire safety engineer
13.	Fire Hose Reels	BCA Clause E1.4 & AS 2441 – 2005
14.	Fire Hydrant System	Clause E1.3 & AS 2419.1 – 2005
15.	Fire Seals	BCA Clause C3.15 & AS 1530.4 – 1997
16.	Mechanical Air Handling System	BCA Clause E2.2, AS/NZS 1668.1 – 1998 & AS 1668.2 – 1991, AS 1668.2-2012
17.	Paths of Travel	EP&A Reg 2000 Clause 186 Alternate solution prepared by accredited fire safety engineer
18.	Portable Fire Extinguishers	BCA Clause E1.6 & AS 2444 – 2001
19.	Pressurising Systems	BCA Clause E2.2 & AS/NZS 1668.1 – 1998
20.	Self-Closing Fire Hoppers	BCA Clause C3.13 & AS 1530.4 – 1997
21.	Smoke Dampers	AS/NZS 1668.1 – 1998
22.	Smoke Doors	BCA Spec. C3.4
23.	Warning and Operational Signs	Section 183 of the EP & A Regulations 2000, AS 1905.1 – 2005, BCA Clause, D2.23, E3.3

Appendix C - Fire Resistance Levels

The table below represents the Fire resistance levels required in accordance with BCA 2013:

Table 3 TYPE A CONSTRUCTION: FRL OF BUILDING ELEMENTS

Building element	**Class of building — FRL: (in minutes)**			
	Structural adequacy/Integrity/Insulation			
	2, 3 or 4 part	**5, 7a or 9**	**6**	**7b or 8**
EXTERNAL WALL (including any column and other building element incorporated therein) or other external building element, where the distance from any *fire-source feature* to which it is exposed is—				
For *loadbearing* parts—				
less than 1.5 m	90/ 90/ 90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/ 60/ 60	120/ 90/ 90	180/180/120	240/240/180
3 m or more	90/ 60/ 30	120/ 60/ 30	180/120/ 90	240/180/ 90
For non-*loadbearing* parts—				
less than 1.5 m	–/ 90/ 90	–/120/120	–/180/180	–/240/240
1.5 to less than 3 m	–/ 60/ 60	–/ 90/ 90	–/180/120	–/240/180
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
EXTERNAL COLUMN not incorporated in an *external wall*, where the distance from any *fire-source feature* to which it is exposed is—				
less than 3 m	90/–/–	120/–/–	180/–/–	240/–/–
3 m or more	–/–/–	–/–/–	–/–/–	–/–/–
COMMON WALLS and FIRE WALLS—	90/ 90/ 90	120/120/120	180/180/180	240/240/240
INTERNAL WALLS—				
Fire-resisting lift and stair *shafts*—				
Loadbearing	90/ 90/ 90	120/120/120	180/120/120	240/120/120
Non-*loadbearing*	–/ 90/ 90	–/120/120	–/120/120	–/120/120
Bounding *public corridors*, public lobbies and the like—				
Loadbearing	90/ 90/ 90	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Between or bounding *sole-occupancy units*—				
Loadbearing	90/ 90/ 90	120/–/–	180/–/–	240/–/–
Non-*loadbearing*	–/ 60/ 60	–/–/–	–/–/–	–/–/–
Ventilating, pipe, garbage, and like *shafts* not used for the discharge of hot products of combustion—				
Loadbearing	90/ 90/ 90	120/ 90/ 90	180/120/120	240/120/120
Non-*loadbearing*	–/ 90/ 90	–/ 90/ 90	–/120/120	–/120/120
OTHER LOADBEARING INTERNAL WALLS, INTERNAL BEAMS, TRUSSES				
and COLUMNS—	90/–/–	120/–/–	180/–/–	240/–/–
FLOORS	90/ 90/ 90	120/120/120	180/180/180	240/240/240
ROOFS	90/ 60/ 30	120/ 60/ 30	180/ 60/ 30	240/ 90/ 60