



Sydney Olympic Park Private Hospital Homebush

Pre DA BCA assessment / statement

July 2007

Compiled for

OWEN FERGUSON HEALTH
C/o- PTW Architects Pty Ltd
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1. Introduction, brief and findings

This report contains a design philosophy review concerning the capability of the design to meet Building Code of Australia 2007 requirements. The review has found that the fundamental design is capable of meeting the requirements of the building code and that Development Consent should not be withheld for concern that the building cannot comply.

This commission involves the assessment of the proposed design of a new building located on the SOPA site at Sarah Durack Avenue Homebush.

We have reviewed the submitted documentation for compliance with the deemed-to-satisfy provisions of the Building Code of Australia and the relevant major Australian Standards referenced by this code. Where compliance with the deemed to satisfy provisions is not possible a schedule of alternate solutions has been provided as discussed and requested by the architect.

We have made every attempt to cover the main issues under Parts C, D, E and F of the Building Code of Australia. Areas of the design are still being refined so that resolution will be possible prior to the issue of the Construction Certificate for the works.

Methodology is principally inspection of the available documentation for the building at this point in time prepared by PTW Architects Pty Ltd.

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Documentation available and assessed

Design architectural documentation prepared by PTW Architects Pty Ltd.

Drawing Numbers (dated June 2007)	Basement floor level - SK - 02.1 B, Ground floor level - SK – 03 B, Level 1 - SK – 04 B, Level 2 - SK – 05 B, Level 3 - SK – 06 B, Level 4 - SK – 07 B, Level 5 - SK – 08 B, Level 6 - SK – 09 B, Section A - A - SK – 11 B, Section B - B - SK – 10 B.
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2. Approvals

According to the Environmental Planning and Assessment (Amendment) Act 1979 and the Environmental Planning and Assessment Regulation 2000 the building will need to be approved through the Development Approvals process and through the issue of a Construction Certificate and subsequent Occupation Certificate.

3. Use and class of the building

The development comprises of a new hospital building over a basement floor level carpark.

The building will be constructed of reinforced concrete construction with an external facade of lightweight framing and cladding including metal finish panel systems and glazing. The overall building has been considered as less than 25 metres in effective height.

Level	BCA Designation	BCA Class	Actual Use
Basement floor level	Carpark	7a	Carparking
Ground Floor	Public building - Health Care	9a	Medical Imaging

Level	Retail Public building - Health Care	6 9a	Café / shop Medical use - Gym / Hydro
Level 1 floor level	Commercial	5	Consulting suites
Level 2	Commercial	5	Consulting suites and administration
Level 3	Health Care – patient care area/wards	9a	Hospital wards
Level 4	Health Care – patient care area/wards Health Care – patient care area/treatment	9a	Hospital wards Hospital treatment
Level 5	Health Care – patient care area/treatment	9a	Operating theatres including sterilisation and recovery
Level 6	Ancillary plant room	9a	Plant room

The above matrix identifies the classification of each floor of the building and the appropriate use. Within the building there will be provided fire and smoke compartmentation. In some cases there will be fire engineering to justify the departure from the deemed to satisfy provisions for compartmentation.

4. Fire rating and Compartmentation parameters

Fire ratings

The fundament concept of fire rating for the building will be as per the following table:

Building Component	Class 7a, 5 & 9a	Class 6
External walls (load-bearing)	120/60/30	180/120/90
Fire walls	120/120/120	180/180/180
Shaft walls (lift and stairs)	120/120/120	180/180/180
Service shafts	120/90/90	180/120/120
Between sole occupancy units (load-bearing)	120/-/-	180/-/-
Between sole occupancy units (non-load bearing)	-/-/-	-/-/-
Load-bearing columns, internal walls, internal beams and trusses	120/-/-	180/-/-
Floors	120/120/120	180/180/180
Roofs (in buildings with no concessions – see below)	120/120/120	180/180/180

Different occupancy classes are to be fire separated via a firewall or alternatively both adjoining components may adopt the higher FRL requirements. This we assume has occurred to the lower levels of the building. There will be a fire rating via a fire wall between the two uses ie. between the retail and the hospital use areas to the ground floor level.

Load-bearing internal walls are to be constructed of concrete or masonry.

The roof covering is to be non-combustible construction where the building is provided with sprinkler protection. Where there is no sprinkler protection to the building, the roof will need to be fire rated in accordance with the table above.

Fire compartmentation

In assessment of the buildings there will be maximum fire and smoke compartmentation allowed for each of the class / uses.

Class	Max fire compartment area allowed
9a patient care area	See below for patient care area
9a non patient care area	5000 m2
5 – commercial	8000 m2
6 – retail	5000 m2
7a - carpark	No limit if sprinkler protection provided

The above criteria will not be exceeded within the building.

The design is at the stage where the building has been compartmented and subject to final design review should be capable of compliance.

Class 9a (Patient care areas)

The Patient Care Areas of the hospital are required to comply with the following deemed to satisfy provisions

Ward areas compartmented according to the BCA;

- Fire compartments are to be maintained with areas of a maximum of 2000m², by walls having an FRL of 120/120/120 to the type A construction buildings.
- Such compartments are to be further divided into 1000m² areas by smoke walls having an FRL of 60/60/60.
- Furthermore, non combustible smoke walls will be provided to reduce the maximum area of a smoke compartment to 500m².
- Where the fire compartment is less than 1000 m² (ie the 120/120/120 fire resistance level compartment area) the first division needs to be a smoke wall with a fire resistance level of at least 60/60/60.

Treatment areas compartmented according to the BCA;

- Fire compartments are to be maintained with areas of a maximum of 2000m², by walls having an FRL of 120/120/120 to the type A construction buildings.
- Such compartments are to be further divided into 1000m² areas by non combustible smoke walls.

Other uses within patient care areas

- kitchens, medical store areas, main central sterilization areas and laundries will also be separated with fire rated walls of an FRL of at least 60/60/60 where located within the patient care areas

Subdivision of the building within the patient care areas is determined by the above fire compartmentation parameters and also by the necessity to provide horizontal exits in all the ward and treatment areas providing exits within 30 metres of any point on the floor.

General fire ratings of non patient care areas – class 9a buildings

Plant rooms containing essential services have also been kept separated from the remainder of the building by construction with a minimum fire resistance level of 120/120/120 to the type A construction buildings.

Performance assessment of compartmentation in the main building

In the main building the fire and smoke compartmentation has been assessed in accordance with the deemed to satisfy provisions however the design team can adopt fire engineering to view any minor variations that may arise. The current scheme however is in accordance with the deemed to satisfy provisions. Issues of fire engineering will be investigated and justified only if required.

5. Access and Egress

The buildings' egress system has been assessed and hence designed using the following principles.

- Every fire compartment has at least two exits.
- The maximum distance of travel to an exit in patient care areas is 30m, and in non-patient care areas is 40m.
- The distance between alternate exits will not exceed 45m for patient care areas, or otherwise 60m, nor be closer than 9m.
- Widths of exits and corridors will be sufficient to hold the number of persons occupying the building.
- For patient care areas - where only horizontal exits are used in any one compartment, the adjacent compartment must be provided with an exit not being a horizontal exit, (ie a fire stair, a stair leading directly to the outside, or directly via a door to the outside).

- For non patient care areas – at least 50% of exits are to be non horizontal exits.
- The construction and discharge of stairs, landings, thresholds, balustrades and handrails will need to meet the requirements of the Building Code of Australia (further review will be undertaken).
- Access for disabled persons will need to meet the requirements of AS1428.1 (further review will be undertaken).
- All stairs in patient care buildings will be fire isolated or fire separated to comply.
- In patient care areas open stairs will not be permitted.
- Open stairs may be used to connect non patient care area compartments.

6. Fire services

The following services will be provided to the building

- Fire Hydrants & Hose Reels
- Sprinklers as part of the smoke hazard management system
- Stairwell pressurisation system
- Smoke detection system
- Lift installations fire key override and stretcher capabilities
- Exit and emergency lighting
- EWIS

7. Smoke hazard management concepts for class 9a

The smoke hazard management requirements are defined in the Building Code of Australia for the building and based on the component, the building use and effective height.

The following apply to the buildings: -

- Fire isolated stairs in a class 9a building needs to be provided with a stairwell pressurisation system.
- The building needs an AS1670 smoke detection and alarm system
- Auto shut down of all mechanical systems
- Either sprinkler protection or a compartmentation zone pressurisation system in accordance with AS1668.1 and 2

All air handling systems in the building will shut down in the case of fire. Activation of the shut down of mechanical air handling systems will be upon the activation of a smoke detector or other alarm or sensory device.

The installation will need to comply with E2.2 (a) to (d) for the protection of ductwork through the fire and smoke walls to the building ie. fire and smoke dampers are required where the ducts pass through fire and smoke walls.

8. Energy

The introduction of the requirements for energy efficiency to buildings in 2006 has seen great impact on the operational and design inputs required by experts in the field into the design of buildings. In this case the buildings' design will be reviewed by a separate consultant to ensure compliance of the building with the Part J requirements of the Building Code of Australia.

9. Approvals from the NSW Fire Brigade

The following issues will need approval from the New South Wales Fire Brigade with respect to section 188 if there are departures from the deemed to satisfy provisions:-

- Location of hydrant boosters and pump rooms.
- Fire hydrant flows and pressures if not in accordance with the Australian Standards.
- Fire engineering issues.