

Our Ref: J090142

13 August 2009

Hassall Ltd  
Level 2, 88 Cumberland Street  
SYDNEY NSW 2000



**Att: Brian Cunningham**

**Re: Penrith Health Campus Redevelopment  
Brief for fire engineering works**

Reference is made to the works proposed at the above premises and discussions regarding the various aspects of the design that may be the subject of fire engineering analysis.

In that regard, the following represents the identified aspects of the current design that do not comply with the relevant deemed-to-satisfy provisions of the Building Code of Australia that must be evaluated by a fire engineer against the relevant Performance Requirements of the Building Code of Australia.

The alternative solutions identified include

**1. East Block central stairway**

Non-require, non-fire-isolated stairway connecting 3 levels in the Class 5 & 7a portions of the building that is not fitted with a sprinkler system. A sprinkler system has been proposed for the Level 1 carpark however this system will not extend to Levels 2 or 3.

The stairway in question is the central stairway that is contained wholly within the Class 5 areas of Levels 2 & 3, connecting these levels to the Level 1 carpark. These areas are separated from the patient care areas of the building by fire walls having an FRL not less than 120/120/120.

The stairway is separated from the Level 1 carpark by way of a 120/120/120 fire wall surrounding the lift & stair lobby area.

It is not necessary for the stairway to form a part of the egress system serving the building as sufficient egress provisions are available to these areas to the extent required by the deemed-to-satisfy requirements of the Building Code of Australia without reliance on the stairway in question.

Supplementary to the various horizontal exits and fire isolated stairways proposed for Levels 2 & 3, direct egress is available to open space from each of the three levels of the building as follows

- Level 1 – direct to the ground on the eastern and northern sides of the carpark
- Level 2 – direct to the ground via the building entry lobby
- Level 3 – to the roof area above the operating theatres, being assessed as a roof as open space under BCA Clause D2.12

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It is proposed that the current design be assessed as an alternative solution against the provisions of Performance Requirement CP2 by demonstration of equivalence against the deemed-to-satisfy requirements of the BCA, which permit the connection of two levels with a combined compartment size well in excess of that proposed.

In that regard, the building

- a) The combined floor area of the fire compartments connected by the stairway is well within that permissible under BCA Table C2.2
- b) Whilst the stairway connects the ground floor level, that connection is limited to the stair & lift lobby area, which is separated from the remainder of Level 1 by a 120/120/120 fire wall

Relevant DTS requirement of the BCA	Clause & Specification D1.12
Relevant Performance Requirement	CP2

## 2. Vertical separation of window openings in the eastern façade of East Block

The building contains a number of window openings in the eastern façade that have not been provided with vertical separation from the opening below by way of 900mm spandrel or 1.1m horizontal projection.

The window openings in question are

- (i) The window to the EDO on Level 2
- (ii) The windows surrounding the void area and adjacent walkway on Level 2
- (iii) The windows surround the void area on Level 3
- (iv) The east facing windows to the bedrooms on Level 3

It is proposed that the current design be assessed as an alternative solution against the provisions of Performance Requirement CP2 by demonstration of equivalence against the deemed-to-satisfy requirements of the BCA in relation to the proposed compartmentation of the building compared to that which could be permissible in an equivalent DTS compliant building.

In that regard

- a) A sprinkler system will be fitted to the majority of the Level 1 carpark, with the exception of the lift and stair lobby area which will be separated by a 120/120/120 fire wall.
- b) The combined floor area of the fire compartments connected by the window openings is well within that permissible under BCA Table C2.2
- c) Drencher protection will be provided to the Level 3 windows surrounding the void area as a means of providing protection to openings in different fire compartments

Relevant DTS requirement of the BCA	Clause C2.6
Relevant Performance Requirement	CP2

### 3. Egress travel distances to the East Block Level 1 carpark and plant area

The current design of the Level 1 carpark and plant area contains egress travel distances that exceed 40m.

It is proposed that the current design be assessed as an alternative solution against the provisions of Performance Requirements DP4 & EP2.2 by ASET/RSET analysis.

The carpark level will be fully sprinklered, have mechanical exhaust as well as significant openings for natural ventilation to 3 sides.

Relevant DTS requirement of the BCA	Clause D1.4
Relevant Performance Requirement	DP4 & EP2.2

### 4. Design of the fire hose reel system to East Block Level 2

Level 2 of East Block is separated from the existing North Block by a 120/120/120 fire wall in order to be assessed as a separate building under BCA Clause C2.7.

The current design contains a number of small rooms within the proposed East Block that are only accessible from the existing North Block through fire doors.

Given the small size of these rooms it is not intended to install fire hose reels within the rooms but instead to provide coverage to the rooms via existing fire hose reels located in North Block. This requires the fire hose to pass through the fire doors giving access to each of the rooms in question.

It is proposed that the current design be assessed against the provisions of BCA Performance Requirement EP1.1 having regard to the potential impact of a fire within those rooms and the effects of an obstruction to the fire door by a fire hose.

Relevant DTS requirement of the BCA	Clause E1.4
Relevant Performance Requirement	EP1.1

### 5. Omission of zone smoke control and sprinklers from North Block

Resulting from the proposal to construct consulting rooms & training rooms and a plant room to Level 3 above the existing ICU in North Block, the building as proposed will contain three storeys.

The additional area to Level 3 will not be occupied by patients that will require assistance and as such need not be classified as a Class 9a health care building. The area in question will be classified as being Class 5 & 9b and will have a floor area of approximately 600-700m<sup>2</sup>.

The Building Code of Australia requires a Class 9a building containing more than 2 storeys to be provided with either of the following:

- a) A sprinkler system; or
- b) A zone smoke control system

In this case, whilst the building contains more than 3 storeys and is predominately Class 9a, the additional area, making up the entirety of the third storey will not be classified as Class 9a. Were the remainder of the building to have a similar

classification to the area in question the BCA would not require the provision of the services in question.

It is proposed that the current design (having sprinklers and zone smoke control omitted) be evaluated against the provisions of BCA Performance Requirement EP2.2 on the basis that the proposed use (being Class 5 & 9b) and configuration of that additional area does not result in such a danger to fire safety that it warrants the provision of sprinklers or zone smoke control to the entirety of the North Block building.

Relevant DTS requirement of the BCA	Clause/Table E2.2a
Relevant Performance Requirement	EP2.2

## 6. Distance of travel via a non-fire-isolated exit from Level 3 – North Block

The proposed Level 3 training area to be constructed over the new ICU extension is provided with egress via a horizontal exit to the adjacent West Block and also via a non-fire-isolated stairway discharging to the Level 2 ICU area.

Level 2 provides direct egress to open space however that discharge to open space is situated more than 40m from the discharge point of the proposed stairway and necessitates a total distance of travel, via the non-fire-isolated stairway, exceeding 80m and as such does not comply with BCA Clause D1.9 (c) & (e).

It is recommended that where the egress system cannot be redesigned to achieve a compliant exit system, the proposed design be evaluated against the provisions of BCA Performance Requirements DP4 & EP2.2 on the basis that the provision of a system of horizontal exits within the building provides occupants with an adequate level of protection in the event of a fire within the building.

Relevant DTS requirement of the BCA	Clause D1.4
Relevant Performance Requirement	DP4 & EP2.2

It will be necessary for these aspects of the building design to be evaluated by a suitably qualified fire safety engineer in accordance with the International Fire Engineering Guidelines 2005.

It will also be necessary for the alternative solution relating to the omission of sprinklers and zone smoke control to North Block to be referred to the NSW Fire Brigades for approval under Clause 144 of the Environmental Planning and Assessment Act 1979.

The evaluation and verification of these matters by a fire safety engineer must be concluded prior to the issue of certification for the design under Section 116G of the Environmental Planning and Assessment Act.

Should you require clarification of the above matters, please contact the undersigned.

Regards,



Mark Brentnall  
for **Vic Lilli & Partners**