Assessment report

Building Code of Australia

Prepared for

BAPS

Regarding

BAPS Mandir, Kemps Creek

Reference: P17193

8 November 2017

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Table of Contents

Introduction

Revision history

Revision No.	Author	Description	Date
1	Mark Brentnall	Preliminary compliance review	8 November 2017

Basis of Assessment

General

The subject building works incorporate the construction of a Temple complex comprising a Traditional Hindu Temple, Monks and Care Taker's Accommodation, and Halls and classroom for congregational activities.

Location

The building works being the subject of this report are to be undertaken at 230 Aldington Road, Kemps Creek. The site is within the Penrith Council area for the purposes of development approvals.

Report purpose

This report has been prepared in response to a request from BAPS to review the proposed design in relation to its level of compliance with the Building Code of Australia.

This assessment is preliminary in nature and should be considered as a high-level review of the requirements that relate to the building. A further assessment must be undertaken on a more detailed design to confirm compliance of the design.

Basis of report

This report is based on:

(a) A review of the documentation identified in Annexure 1;
(b) Building Code of Australia (BCA) 2016, and the NSW Variations;
(c) Environmental Planning and Assessment Act, 1979, and Regulations;

Exclusions

This report does not imply, nor make reference to the extent of compliance achieved by the building with any other legislation relating to the construction or use of the proposed building.

Author:

Mark Brentnall
For **Brentnall Certification Pty Ltd**

Central Facilities Building

Building Code of Australia description

For the purposes of this assessment the building may be described as follows

Classification

5 – Administration offices/ancillary storage
6 – Dining rooms & restaurants
7a – Carpark
7b – Storage
9b – Saba halls and classrooms
Unclassified – Future use area to Second floor & Lift and stair lobby areas to the roof-top level

Rise in storeys

The building has a rise in storeys of four (4)

The roof terrace level has not been counted in the rise in storeys as the enclosed area of the storey is limited to the stair and lift lobby area, notwithstanding their generous size. Where those spaces support a use beyond that of circulation space they must be classified and will be counted in the rise in storeys.

The basement has been included in the rise in storeys as it is exposed for a depth of more than 1m for a distance of at least 12m in the vicinity of the carpark on the northern elevation.

Type of Construction

The building must be of Type A construction

Compartment area and volume

The building must achieve the following compartment areas and volumes:

Class 5 & 9b areas – 8,000m² & 48,000m³
Class 6 & 7b areas – 5,000m² & 30,000m³

The proposed compartment areas are compliant without additional compartmentation.

Effective height

The building has an effective height of 12.093m

70.699m – 58.606m = 12.093m

Building fire safety measures

The proposed building will likely need to be served by the following fire safety measures

Measure	Standard of performance
Access panels, doors and hoppers to fire resisting shafts	BCA2016 Clause C3.13 and tested prototypes (AS 1530.4 – 2014 and AS 4072.1-2005)
Automatic fail-safe devices	BCA2016 Clause C3.4, D2.21, AS 1670.1-2004 Scheduled devices release upon trip of smoke detection and/or sprinkler activation
Automatic fire detection and alarm system Non-residential building	BCA2016 Spec E2.2a, AS 1670.1-2004
Emergency lighting	BCA2016 Clauses E4.2 & E4.4 AS 2293.1:2005
Exit signs	BCA2016 Clause E4.5 & E4.8 AS 2293.1-2005
Fire dampers	BCA2016 Clause C3.15 AS/NZS 1668.1 – 2015 (AS 1682.1-1990 and AS 1682.2-1990)
Fire doors	BCA2016 Specification C3.4 AS 1905.1-2005
Fire hose reel system	BCA2016 Clause E1.4 AS 2441-2005
Fire hydrant systems	BCA2016 Clause E1.3 AS 2419.1-2005
Fire seals (protecting openings in fire resisting components of the building)	BCA2016 Clause C3.15, Specification C3.15 AS 1530.4 –2014 and AS 4072.1 – 2005 and installed in accordance with the tested prototype.
Lightweight fire resistant construction	BCA2016 Clause A2.3, Specification C1.8, manufacturer's specifications and AS 1530.4-2005
Mechanical air-handling system	BCA2016 Clause E2.2 AS/NZ 1668.1-2015
Mechanical air handling system (carpark mechanical ventilation system)	BCA2016 Table E2.2a and Clause 5.5 of AS/NZ 1668.1-2015 and fans with metal blades suitable for operation at normal temperature may be used and the electrical power and control cabling need not be fire rated
Portable fire extinguishers	BCA2016 Clause E1.6 AS 2444-2001
Sound systems and intercom systems for emergency purposes (SSISEP or formally EWIS)	BCA2016 Clause E4.9 AS 1670.4:2004
Warning and operational signs (eg stairway & fire door notices)	BCA2016 Clause D2.23 & E3.3 EP&A Act Form 15B

Major design issues and potential Performance Solutions

Section C – Fire resistance & separation

BCA Reference	Issue	Comment	Performance requirement
Section C	Fire resistance	The basement storage areas attract an FRL of 240/240/240 for the floor above, the wall separating the storage and carpark areas and the structural elements (240/-/-). The exit stairways and passageways in the storage areas must have an FRL not less than 240/120/120. The ground floor dining areas attract an FRL of 180/180/180 for the floor above and the structural elements (180/-/-). The exit stairways on the ground floor level must have an FRL not less than 180/120/120. The first floor administration areas, Saba Halls and Classroom areas attract an FRL of 120/120/120 for the floor above and the structural elements (120/-/-). The wall separating the void over the dining rooms from the office level of Building A must have an FRL not less than 180/180/180. The exit stairways on the first floor level must have an FRL not less than 120/120/120. The fire resistance levels for the second floor cannot yet be determined. The FRL for this storey must reflect the likely use of that space at a later date.	NA

BCA Reference	Issue	Comment
Part D1	Egress	Inadequate exits have been provided to the basement level. As such, exit travel distances are excessive. Consideration should be given to providing additional points of egress to the existing exit system. A single additional exit can be provided to each fire isolated passageway without triggering the need for a pressurisation system. Allowance should be made for additional direct exits to the northern elevation of the basement storage and carparking areas. Under the BCA calculations, the dining areas on the ground floor of Building A have a capacity in the vicinity of 1,350 people, requiring an aggregate egress width of approximately 12m. 5m aggregate width is provided via the exit stairways with the remaining width available via the covered walkways. The Saba Halls have a population of approximately 1,200 people, requiring an aggregate exit width of approximately 11m. 6m aggregate width is provided via the exit stairways with the remaining width available via the covered walkways. Adequate exits have been provided from the second floor of Building B. The exits from the second floor of Building B are adequate to serve a population of approximately 920 people. Any use of the second floor space of Building A should be limited to that population. Where occupants egress from the first floor level via the covered walkway, depending on the location of the point of discharge to a space that is open to the sky, it is possible that travel distances will exceed the maximum of 40m that is permissible. The points where direct egress is available should be identified on the plans to enable assessment. The path of egress from the exits to the street must have an adequate width, not less than the required aggregate width of the exits at the point of discharge and be a formed path with compliant stairways and ramps where necessary.

BCA Reference	Issue	Comment
Part D3	Accessibility	Access is required to the principal pedestrian entrances to the building. That access is required from the street boundary, from any accessible parking spaces on the property and from all other buildings on the site. Details have not been provided for the paths of egress from the street boundary or between buildings. An entrance may be non-accessible where an accessible entrance is provided within 50m. Generally compliance is achieved with this requirement with the exception of the eastern elevation to the ground floor of Building B where the entrances adjacent to Cultural Room 2 and the Stage Store are inaccessible due to stairways and are more than 50m to an accessible building entry. The building is served by a series of lifts and adequate provision has been made in the design to allow for compliant access at the building entry points, with the exception of the area identified above, and within the confines of the building.
Part E1	Fire fighting equipment	The following fire fighting equipment is required: Fire hydrants Fire hose reels Fire extinguishers Sprinklers are not required unless they form part of a Performance Solution. A hydrant booster assembly must be provided for the building. This assembly should be located more than 10m from the building to eliminate the need for protection. Provision has been made for a hydrant pump room at the basement level of the building. That pump room must be accessible either directly from open space or via a fire isolated stairway.
Part E2	Smoke hazard management	The building must be provided with a smoke detection and alarm system. Where there are more than 2 exit doors opening to a fire isolated passageway (not including the door from the fire isolated stairway), that passageway must be provided with a pressurisation system.

<table>
<tr><th>BCA Reference</th><th>Issue</th><th>Comment</th></tr>
<tr><td>Part E3</td><td>Lifts</td><td>A stretcher facility must be provided for each lift.

Fire service controls must be provided to each lift.

These requirements are on the basis that the building has an effective height of more than 12m (12.093m). Where the effective height is less than 12m it will not be necessary to provide a stretcher facility.</td></tr>
<tr><td>Part E4</td><td>Signs, lighting and warning systems</td><td>The building must be provided with exit signage and emergency lighting.

The building must be provided with a Sound System and Intercom System for Emergency Purposes (SSISEP or formally EWIS).</td></tr>
<tr><td>Part F2</td><td>Sanitary facilities</td><td>The following aggregate facilities have been provided:

Basement & Ground floor – Dining rooms and Saba Hall
<table>
<tr><th></th><th>WC</th><th>Urinal</th><th>Basin</th></tr>
<tr><td>Male</td><td>38</td><td>10</td><td>20</td></tr>
<tr><td>Female</td><td>39</td><td>-</td><td>22</td></tr>
<tr><td>Accessible</td><td>6</td><td>-</td><td>6</td></tr>
</table>
These facilities are adequate to serve a population of 8,200.

First floor administration
<table>
<tr><th></th><th>WC</th><th>Urinal</th><th>Basin</th></tr>
<tr><td>Male</td><td>6</td><td>4</td><td>6</td></tr>
<tr><td>Female</td><td>8</td><td>-</td><td>6</td></tr>
<tr><td>Accessible</td><td>2</td><td>-</td><td>2</td></tr>
<tr><td>Unisex</td><td>7</td><td>-</td><td>7</td></tr>
</table>
These facilities are adequate to serve an office population of 600.

Second floor classrooms
<table>
<tr><th></th><th>WC</th><th>Urinal</th><th>Basin</th></tr>
<tr><td>Male</td><td>6</td><td>4</td><td>6</td></tr>
<tr><td>Female</td><td>8</td><td>-</td><td>6</td></tr>
<tr><td>Accessible</td><td>2</td><td>-</td><td>2</td></tr>
<tr><td>Unisex</td><td>7</td><td>-</td><td>7</td></tr>
</table>
These facilities are adequate to serve an office population of 1,500 students and 210 210 teachers.</td></tr>
<tr><td>Section J</td><td>Energy efficiency</td><td>The whole of the building is considered to be a conditioned space, with the exception of the basement areas</td></tr>
</table>

Mandir & Monks' residence

Building Code of Australia description

These buildings have been assessed as being united buildings due to the connection at each level and the requirements for each of the buildings to provide egress from the other at the basement level.

For the purposes of this assessment the building may be described as follows:

Classification

3 – Monks' residences including ancillary offices and storage
5 - Offices
7b – Storage
9b – Mandir
Unclassified – Future use area to Second floor & Lift and stair lobby areas to the roof-top level

Please confirm the nature of the Mandir storage, it is not for the storage of goods then it will not attract a classification of 7b.

Rise in storeys

The combined building has a rise in storeys of two (2), with the Monks' residences having a rise in storeys of one (1)

Type of Construction

Under the provisions of BCA Clause C1.4, the building is assessed as having different types of construction between the Mandir and the Monks' residences. For the difference types of construction to be applicable, the above ground links between the buildings must remain open and the connection at the basement level must be provided with a fire wall to separate the two portions of the united building.

The Mandir must be of Type B construction
The Monks' Residences must be Type C construction

Compartment area and volume

The building has fire compartments that are smaller than the maximum permissible:

Class 9b areas – 5,500m² & 33,000m³
Class 7b areas – 3,500m² & 21,000m³

The proposed compartment areas are compliant without additional compartmentation.

Effective height

The building has an effective height of less than 12m

Building fire safety measures

The proposed building will likely need to be served by the following fire safety measures

Measure	Standard of performance
Automatic fail-safe devices	BCA2016 Clause C3.4, D2.21, AS 1670.1-2004 Scheduled devices release upon trip of smoke detection and/or sprinkler activation
Automatic fire detection and alarm system	BCA2016 Spec E2.2a, AS 1670.1-2004
Emergency lighting	BCA2016 Clauses E4.2 & E4.4 AS 2293.1:2005
Exit signs	BCA2016 Clause E4.5 & E4.8 AS 2293.1-2005
Fire dampers	BCA2016 Clause C3.15 AS/NZS 1668.1 – 2015 (AS 1682.1-1990 and AS 1682.2-1990)
Fire doors	BCA2016 Specification C3.4 AS 1905.1-2005
Fire hose reel system	BCA2016 Clause E1.4 AS 2441-2005
Fire hydrant systems	BCA2016 Clause E1.3 AS 2419.1-2005
Fire seals (protecting openings in fire resisting components of the building)	BCA2016 Clause C3.15, Specification C3.15 AS 1530.4 –2014 and AS 4072.1 – 2005 and installed in accordance with the tested prototype.
Lightweight fire resistant construction	BCA2016 Clause A2.3, Specification C1.8, manufacturer's specifications and AS 1530.4-2005
Mechanical air-handling system	BCA2016 Clause E2.2 AS/NZ 1668.1-2015
Portable fire extinguishers	BCA2016 Clause E1.6 AS 2444-2001
Warning and operational signs (eg stairway & fire door notices)	BCA2016 Clause D2.23 & E3.3 EP&A Act Form 15B

Major design issues and potential Performance Solutions

Section C – Fire resistance & separation

BCA Reference	Issue	Comment	Performance requirement
Section C	Fire resistance	The monks' residences may be constructed as Type C construction, having an FRL of 90/90/90 for walls bounding sole occupancy units and walls separating rooms not within a sole occupancy unit from the common hallways. Where the fire resistant walls do not continue to the underside of the roof covering a ceiling must be provided with a resistance to the incipient spread of fire of not less than 60 minutes. There are no requirements for the external walls or roof to achieve an FRL in the Monks' residences. A fire wall with an FRL not less than 120/120/120 must be provided between the Mandir Lobby and the Monks' residences lobby on the basement level. The structure of the Mandir storage, including the floor above and the wall providing separation to the worship room, must have an FRL not less than 240/240/240. Please confirm the nature of the Mandir storage, it is not for the storage of goods then it will not attract a classification of 7b and as a result will not require such a significant FRL. Given the scale of the storage area it is likely that a reduced FRL May be found to be acceptable as a Performance Solution to BCA Performance Requirements CP1 & CP2. This aspect of the design must be evaluated by an accredited fire safety engineer.	NA
Part D1	Egress	Adequate provision has been made for egress from the Mandir. The provisions for egress from the Monks' Residences and associated offices are not adequate. Notwithstanding that, it is possible for the egress to be compliant it is possible to introduce fire walls that may act as horizontal exits. In that regard, the central office area may be separated from the residential areas by 90/90/90 fire walls such that the doorway between the residence common areas and the office area becomes a horizontal exit through the fire wall. Egress must be available both ways through these doors so they will need to be arranged on a pivot or have opposite swinging doors.	

BCA Reference	Issue	Comment
Part D3	Accessibility	Access is required to the principal pedestrian entrances to the building. That access is required from the street boundary, from any accessible parking spaces on the property and from all other buildings on the site. Details have not been provided for the paths of egress from the street boundary or between buildings. The building is served by a series of lifts and adequate provision has been made in the design to allow for compliant access at the building entry points, with the exception of the area identified above, and within the confines of the building.
Part E1	Fire fighting equipment	The following fire fighting equipment is required: Fire hydrants Fire hose reels (to Mandir only) Fire extinguishers Sprinklers are not required unless they form part of a Performance Solution. A hydrant booster assembly must be provided for the building. This assembly should be located more than 10m from the building to eliminate the need for protection. Provision may need to be made for a hydrant pump room. That pump room must be accessible either directly from open space or via a fire isolated stairway.
Part E2	Smoke hazard management	The Monks' Residence building must be provided with a smoke detection and alarm system. There are no requirements for smoke hazard management services to the Mandir.

BCA Reference	Issue	Comment
Part E3	Lifts	The lifts must be provided with accessible features complying with AS1735.12:1999
Part E4	Signs, lighting and warning systems	The buildings must be provided with exit signage and emergency lighting.
Part F2	Sanitary facilities	The Mandir is not provided with sanitary facilities. Occupants are served by the sanitary facilities in the Central Facilities Buildings, which are adequate to serve the anticipated population. The facilities proposed for the office areas of the Monks' Residence are adequate to serve the anticipated population. Each sole occupancy unit in the Monks' residences have been provided with adequate sanitary facilities. Adequate communal cooking and laundry facilities have also been provided.
Part F5	Sound insulation	Sound insulation must be provided between sole occupancy units, being each separate "Monks Room".
Section J	Energy efficiency	The internal parts of the Mandir and Monks' Residences are considered to be conditioned spaces, with the exception of the basement areas.

Annexure 1 Assessed documentation

The following documentation has been reviewed in the preparation of this report

Plans & specifications

Architectural documentation as prepared by DDC Architects

Drawing no	Title	Revision
DA-01	Existing site plan	A
DA-03	Proposed site plan	A
DA-05a	Proposed site plan landscaped zone	A
DA-06	Site and external works plan – Central precinct	A
DA-07	Site and external works plan – Mandir and Monks Precinct	A
DA-20	Basement plan – Central buildings A & B	A
DA-21	Ground floor plan – Central buildings	A
DA-22	First floor plan – Central building	A
DA-23	Second floor plan – Central buildings	A
DA-24	Roof terrace plan – Central buildings	A
DA-25	Elevations – Central buildings	A
DA-26	Elevations – Central buildings	A
DA-30	Basement – Mandir	A
DA-30a	Entry forecourt – Mandir	A
DA-31	Ground floor plan – Mandir	A
DA-33	First floor plan – Mandir	A
DA-35	Elevations – Mandir	A
DA-40	Basement plan – Monks' residence	A
DA-41	Ground floor plan – Monks' residence	A
DA-43	Elevations – Monks' residence	A