



BUILDING REGULATION & FIRE SAFETY ENGINEERING CONSULTANTS

Project: **CHILD CARE CENTRE
EPPING PARK, 61 MOBBS LANE, EPPING**

Report: **BCA ASSESSMENT REPORT**

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PART 1 BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report will be located within the larger Epping Park development proposed at 61 Mobbs Lane, Epping. It involves a Child Care Centre located in the south-west corner of the larger development with direct access off Mobbs Lane to the south-east. It is one of two buildings included in the proposed Early Works building package.

The Centre will occupy a separate titled property within the larger development, and is therefore surrounded on all sides by the remainder of this development, together with Mobbs Lane and a property set-back/nature strip portion of the development to the south-east, a resident tennis court to the north-east, a detention basin to the north-west and a landscaped overland flow path to the south-west.

The building will be positioned within the north-west corner of the property, and will be built on part of the south-west and north-west property boundaries. It will have an 'L' shape, one arm of which fronts onto a carpark to the south-east, to be provided for staff and parents and running across basically the full width of the property parallel to Mobbs Lane. To the north-west the building opens out to an outdoor area which backs onto the lake/detention basin.

The carpark will operate in a one-way direction with 'In' and 'Out' driveways from/to Mobbs Lane. Stairways and rampways will connect Mobbs Lane and the carpark area as a means of access to and egress from the main entry, as well as extending to a second exit out to a pathway through the overland flow path to the south-west. Mobbs Lane and the carpark will also be connected to the rear outdoor area by both pedestrian and vehicular access to/from the outdoor area.

The building will incorporate three (3) 'nursery' spaces for up to ten (10) children under two (2) years, together with their own store rooms, change and toilet facilities and a separate sleeping space nominated as accommodating all thirty (30) children. It will also have two (2) 'classrooms' for up to fifteen (15) 'toddlers' and fourteen (14) 'pre-school' children, together again with their own store rooms, change and toilet facilities. Finally, there will also be a reception area plus office, a staff amenities/sick room, a laundry, a kitchen and a separate 'nappy change' room.

1.2 Purpose

The purpose of this report is to assess the design proposal against the Deemed-to-Satisfy Provisions of the BCA, and to clearly outline those areas where compliance is not achieved or where further consideration may need to be provided during design development.

1.3 Building Code of Australia

While the 2008 Version of the BCA is still current, the 2009 Version will be adopted as of 1st May, 2009, and as any application for a Construction Certificate for this Early Works package will be after this date, the 2009 Version of the BCA has been adopted for this assessment.

1.4 Limitations

This report does not include nor imply any detailed assessment for design, compliance or upgrading for: -

- (a) the structural adequacy or design of the building;
- (b) the inherent derived fire-resistance ratings of any existing structural elements of the building (unless specifically referred to); and
- (c) the design basis and/or operating capabilities of any existing or proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

- (a) The Disability Discrimination Act, 1992;
- (b) Demolition Standards not referred to by the BCA;
- (c) The State's Occupational Health and Safety Act and associated Regulations;
- (d) The requirements of other Regulatory Authorities including, but not limited to, Telstra, Sydney Water, Electricity Supply Authority, WorkCover, RTA, Council and the like; and
- (e) Conditions of Development Consent.

1.5 Design Documentation

This report has been based on the final PA drawings No.'s A18000/A - A18002/A + A18010/A - A18013/A, prepared by PTW Architects, dated 22nd April, 2009.

PART 2 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia 2009 (BCA) the development may be described as follows.

2.1 Rise in Storeys (BCA Clause C1.2)

The Child Care Centre building has a rise in storeys of one (1).

2.2 Classification (BCA Clause A3.2)

The building has been classified as a Class 9b (School) Assembly occupancy. It is also noted that while the office/reception area would normally constitute a Class 5 occupancy, as such constitutes less than 10% of the total floor area, in accordance with BCA Clause A3.3(a) such is assessed as part of the Class 9b occupancy.

2.3 Effective Height (BCA Clause A1.1)

The building has an effective height of zero i.e. less than 25.0 metres.

2.4 Type of Construction Required (BCA Clause C1.1, Table C1.1)

Child Care Centre building - Type C Construction.

2.5 Floor Area and Volume Limitations (BCA Clause C2.2, Table C2.2)

The building is subject to maximum floor area and volume limits of:-

- Class 9b - Maximum Floor Area 3,000m²
Maximum Volume 18,000m³

2.6 Climate Zone (Clause A1.1)

The building is located within Climate Zone 6.

PART 3 ESSENTIAL FIRE SAFETY MEASURES

The following fire safety measures are required to be installed in the building.

Item No.	Proposed Essential Fire Safety Measure	Minimum Standard of Performance
1.	Emergency lighting	BCA Clauses E4.2, E4.4 & AS 2293.1-2005
2.	Exit signs	BCA Clauses E4.5, E4.6, E4.8 & AS 2293.1-2005
3.	Paths of travel, stairways, rampways and exits	BCA Parts D1 & D2
4.	Mechanical air-handling system (if any) - automatic shutdown	BCA NSW Table E2.2b
5.	Portable fire extinguishers	BCA Clause E1.6 & AS 2444-2001
6.	Smoke detectors (if required to activate auto shutdown of mechanical air-handling system)	Clause 5 of BCA Specification E2.2a

PART 4 BCA ASSESSMENT

4.1 Structural Adequacy & Fire Resistance (BCA Sections B & C)

As per normal construction practice, all structural (loadbearing) elements will need to comply with the loading provisions - AS 1170.1 (Dead & Live Loads), 2 (Wind Loads) & 4 (Earthquake Loads) - and the various applicable construction standards - AS 1720.1 (Timber, if applicable), AS 3600 (Concrete), AS 3700 (Masonry), AS 4100 (Steel), AS 2047 & AS 1288 (Glazed Assemblies, External Walls) and AS 3660.1 (Termites, if applicable) - all as required in BCA Clauses B1.1 to B1.4.

The property contains only a single building structure and is set back well away from the north-east property boundary and the opposite side of Mobbs Lane to the south-east. While a literal interpretation of the definition of 'fire source feature' (BCA Clause A1.1) would include in this instance the south-west and north-west property boundaries, and such would normally impact on those external walls built on or within 3m of these boundaries, it is considered that a basis exists for interpreting the detention basin and overland flow path portions of the larger (surrounding) residential development as 'public' spaces that will in future be devoid of other buildings or significant Class 10 structures, and therefore that such are similar or equal to 'a road, river, lake or the like', as indicated in the definition.

Accordingly, taking into account the building's relative to potential fire source features, there are no FRL requirements for the base building structure (BCA Clause C1.1, Clause 5.1, Table 5 of BCA Specification C1.1).

Taking into account the total floor area of the building is only (approx.) 490m², and of a single Class 9b occupancy, there are no fire compartmentation provisions applicable (BCA Clauses C2.2, C2.8 & C2.9), nor will any plant, equipment or electrical installations require fire separation/isolation (BCA Clause C2.12 & C2.13).

In view of the above, there are no protection of openings provisions applicable, whether openings in the external walls, doorways to/from fire isolated enclosures or due to service penetrations through building elements required to exhibit an FRL.

Finally, in accordance with BCA Clause C1.10, the base building construction materials will need to comply with the detailed provisions of BCA Specification C1.10, and all internal finishes, linings and flooring materials with the detailed provisions of BCA Specification C1.10a.

4.2 Access & Egress (BCA Section D)

Based on child numbers nominated on the drawings and allowing for up to ten (10) staff, the Centre will accommodate a maximum population of 59 children and 10 staff, with such nominated as the maximum population under BCA Clause D1.13(c).

The Centre being a Class 9b occupancy functioning as an *early childhood centre*, is required to and will be provided with at least two (2) exits, all in accordance with BCA Clause D1.2.

The exit system will also comply with the DTS Provisions for distribution (BCA Clauses D1.4 & D1.5), size/dimensions (BCA Clause D1.6) and discharge out to a road or open space via compliant external stairways and ramps (BCA Clause D1.10). Such exits also do not incorporate any internal stairs or passageways that are required to be fire isolated under BCA Clause D1.3.

There would appear to be no exit construction issues, keeping in mind the following:

- (i) Each of the classroom/nursery spaces have a floor area less than 200m² and the doors from these spaces constitute a door in a path of travel back through the main entry lobby and an exit to the outdoor area, and therefore have no restriction on the direction of swing of such doors (BCA Clauses D2.20).
- (ii) Hardware on the doors in a path of travel to an exit and the exit door itself, which serve the restricted part of an *early childhood centre*, can be fitted with 'child-proof' hardware usual to such situations, all in accordance with BCA Clause D2.21(a)(iii)(B).
- (iii) The external gates are not specifically bound by the above referenced Clauses, but where they form part of the 'child-proof' or restricted enclosure, should be similar or equal to what would normally be required for a pool enclosure with respect to direction of swing of the gates and the associated 'childproof' hardware.
- (iv) All external stairs and ramps must at the very least comply with the relevant DTS Provisions - BCA Clause D2.9, and Clauses D2.13 - D2.17 - with ramps exhibiting a maximum gradient of 1:8, and where intended to provide disabled access, a maximum gradient of 1:14 and overall compliance with AS 1428.1.

Finally, based on the drawings disabled access will be able to be readily achieved from both Mobbs Lane and the carpark, all in accordance with BCA Clauses D3.2 & D3.3. The proposed unisex disabled staff toilet facility will need to comply with the minimal dimensions and fitout requirements of at least AS 1428.1, and appropriate Braille/tactile signage and tactile indicators will need to be provided in accordance with BCA Clauses D3.6 & D3.8.

In addition, circulation spaces will need to be provided in association with all doorways to/from rooms required to be accessible i.e. all rooms normally used by staff, children and visitors. Based on (approximate) scaled measurements off the current plans, the circulation space provided on the opposite hinge side of the door to the laundry/dirty store and from each of the small store rooms opening off the nursery spaces may need to be marginally increased to achieve the required 470mm nominated in Figure 12 of AS 1428.1.

4.3 Fire Fighting & Fire Safety Services (BCA Section E)

The building having a floor area easily less than 500m² is not required to be served by either a fire hydrant system or a fire hose reel system (BCA Clauses E1.3 & E1.4).

The whole of the Centre building will be required to be protected by a fairly basic system of portable fire extinguishers, including at least three (3) water based appliances (in lieu of the requirement for fire hose reels), all in accordance with BCA Clause E1.6, Table E1.6 and the State's OH & S legislation.

There are no smoke hazard management provisions applicable under BCA Clauses E2.2(a) and Tables E2.2a & b. However, where the Centre will be served by a mechanical air-handling system (other than non-ducted individual room units with a capacity less than 1,000 l/s or miscellaneous exhaust systems), it will need to be provided with a basic (20m x 20m grid) smoke detection system throughout and arranged to activate automatic shutdown of such air-handling systems, all in accordance with BCA NSW Table E2.2b and Clause 5 of BCA Specification E2.2a.

Finally, with a total floor area more than 300m² and incorporating public accessible areas, a basic system of emergency lighting and exit signs will need to be provided all in accordance with BCA Clauses E4.2 - E4.8 and AS 2293.1-2005.

4.4 Health & Amenity (BCA Section F)

Those proposed toilet facilities will be in accordance with the minimal provisions of BCA Clauses F2.3, Table F2.3 & F2.4, Table F2.4, for the nominated child and staff populations.

Compliant ceiling heights would appear to have been provided or can readily be achieved (BCA Clause F3.1), as will the provision of natural light to each classroom and nursery space, all in accordance with BCA Clauses F4.1 & F4.2. All habitable spaces would appear to have ample capacity for compliant natural ventilation, and any mechanical ventilation will need to comply with AS 1668.2-1991.

4.5 Energy Efficiency (BCA NSW Subsection J(A), J(B) and NSW Section J)

BCA 2006 (now BCA2009) introduced requirements for Energy Efficiency for all buildings that contain *conditioned spaces* i.e. some form of air-conditioning or active/permanent form of heating or cooling. This has an impact on the insulation of walls and ceilings in particular, and many existing standard types of construction no longer comply without insulation. There are also controls on heating and cooling loads, and electrical loads.

In NSW the relevant Clauses associated with energy efficiency are identified in BCA NSW Subsection J(B) + BCA Section J for such Class 9b buildings. The building will be in Climate Zone 6.

Accordingly, if *conditioned*, such facilities will need to comply with all relevant provisions in BCA Parts J(1) - J(3), and J(5) - J(8), plus BCA NSW Clauses J3.1 and J8.2, all as applicable. Such will include the following considerations:

- J1 - Thermal capacity of walls (R-Value of at least R1.8) and ceiling/roof structures (R-Value of at least R3.2)
- J2 - Window openings - their area, orientation to the sun, type and any associated need for sun shading devices. In this instance there will be minimal areas of glazing facing south-west or south-east where heat loss during the colder seasons would be an issue, and all glazing facing north-west or north-east will be protected by an extensive roof overhang to protect against solar radiation during the summer months and to minimise, if not totally eliminate the need for energy efficient glazing.
- J3 - Sealing around window and door openings, vent openings, wall panels etc.
- J5 - Design and setup of mechanical ventilation/a.c. and heating systems;
- J6 - Design and setup of artificial lighting and power supply systems.
- J7 - Design and setup of any hot water system.
- J8 - Access for maintenance of nominated parts of the above systems.

PART 5 STATEMENT OF COMPLIANCE

The architectural design documentation as referred to in this report has been assessed against the applicable provisions of the Building Code of Australia, 2009 (BCA) and it is considered that such documentation complies or is readily capable of complying with that Code.