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Fire Engineering Concept Design Statement

To: Mr Grant Sandler	**Date:** 17/09/2015
Company: Tonkin Zulaikha Greer Architects	**Consultants Advice No:** 001
Email: grant@tzg.com.au	**File/Ref No:** 350429-MarySt-CA001-Fire-RevE
Subject: FECDS	**Project Name:** 75 Mary St, St Peters, NSW, 2044
Issued by: Dr Amer Magrabi	**Project No:** 350429
Distribution:	

To:	Cc:	Company:	Person:	Fax/Email:
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1.0 Introduction

This document relates to the development of a new building complex known as 'Precinct 75' at 75 Mary St, St Peters, NSW, 2044.

Lote Consulting have been appointed by Caliph c/o Tonkin Zulaikha Greer Architects to prepare a Fire Engineering Concept Design Statement (FECDS) to accompany the Planning Proposal for Precinct 75. This revision of the FECDS incorporates design amendments as a result of Council feedback.

The scope of the FECDS is to develop a concept design to support a performance-based fire engineered design strategy for the precinct. This will be based on variations from the Deemed-to-Satisfy (DtS) provisions from the Building Code of Australia (BCA) as identified by the BCA Consultant, Steve Watson & Partners (SWP).It represents the first stage of the design process for the development of a fire safety strategy for this facility. The Fire Engineering Brief (FEB) and Fire Engineering Report (FER) will be developed in the next phase of this project (i.e. Detailed Design). The FEB represents the formal consultation and approval process with the relevant Approval Authorities.

2.0 Project Stakeholders

The relevant project stakeholders that have been nominated by the Client for purposes of participating in the fire engineering process are outlined below

Table1.1 – Project Stakeholders

Name	Company	Role
Grant Sandler Tamara Frangelli	Caliph c/o Tonkin Zulaikha Greer Architects	Client / Architect
Paul Curjak	Steve Watson & Partners (SWP)	BCA Consultant
Mays Chalak	Integrated Services Group (IGS)	Building Services Consultant
Dr Amer Magrabi	Lote Consulting	Fire Safety Engineer

3.0 Principal Building Characteristics

Key BCA DtS Criteria as identified by the Certifying Authority, SWP in their BCA Assessment report dated 17th September 2015 is shown in Table 2.1.

Table 2.1 -BCA Deemed-to-Satisfy (DtS) reference criteria

	BCA Clause	Description or requirement
A1.1	Classification	Class 2 (Residential Apartments) Class 5 (Office Space) Class 6 (Retail) Class 7a (Carpark) Class 8 (Industrial)
A3.2	Rise in Storeys	Building 1 – Seven (7) Building 2 – Three (3) Building 6 – Three (3) Building 7 – Five (5) Building 8 – Five (5) Building A – Six (6) Building B – Four (4) Building C – Eight (8) Common two (2) storey contained carpark under Building A, B, C
C1.1	Effective Height of Tallest Building	22.4 m (Building C)
C1.2	Construction Type	Type A applicable (Building 1, 7, 8, A, B, C) Type B applicable (Building 2 and 6)
C2.2	Floor Area	General fire compartment size is less 8,000 m^2 under BCA Table C2.2
C2.3	Large-Isolated Building	N/A
D1.13	Floor population	Class 2 residential – 2 person per bedroom Class 5 office/ light industrial - 10 m^2/person Class 6 retail – 3 m^2/person Class 7a carpark – 30 m^2/person

4.0 Fire Engineering Strategy

The development has several building on the same allotment comprising a mix of existing and new buildings.

From a fire safety perspective, a 'building by building' approach is proposed to address the BCA DtS variations in relation to BCA Sections C, D and E. However, a site wide strategy is proposed in relation to fire brigade access, fire hydrant coverage and fire safety provisions in the carpark.

5.0 Trial Concept Design

The trial fire safety strategy for this building is based on a combination of fire safety measures arising from compliance with BCA DtS Provisions and other additional requirements resulting from assessing the BCA DtS variations as Alternative Solutions. Accordingly, the schedule of works nominated by this report is in addition to the works identified by the Certifying Authority for compliance with BCA DtS Provisions.

5.1 General

a) With the exception of the proposed Alternative Solutions, all other fire safety aspects of the building are to comply with BCA DtS Provisions.

b) The use and storage of Dangerous Goods in the facility must be in accordance with the relevant dangerous goods legislation including AS 1940:2005.

5.2 Fire Resistance

a) Building 1, 7, 8, A, B and C will comply with Type A Construction under Section C of the BCA with the exception of protection of openings.

b) Building 2 and 6 will comply with Type B Construction under Section C of the BCA with the exception of protection of openings.

5.3 Egress

a) The building will comply with egress provisions under Section D of the BCA with the exception of travel distances, distance between alternative exits and fire stair discharge.

5.4 Fire Services

This section summarises the fire safety services that are proposed within the building critical to the proposed Alternative Solutions within this report based on the fire safety schedule prepared by the Certifying Authority, SWP.

5.4.1 Fire Hydrants

a) Fire hydrants will be provided in accordance with BCA E1.3 and AS 2419.1:2005 with the exception of site wide hydrant coverage using shared hydrant infrastructure.

5.4.2 Fire Hose Reels

a) Fire hose reels are to be installed in accordance with BCA E1.4 and AS 2441;2005. The Class 2 parts are exempted based on the provision of fire extinguishers in accordance with BCA E1.6.

b) Fire hose reels are to be installed internally within 4 m of an exit or internally adjacent to a fire hydrant so that the fire hose reel would not need to pass through fire and smoke doors.

5.4.3 Automatic Sprinkler System

a) An automatic sprinkler system will be provided throughout the Basement Carparking Levels (Class 7a) in accordance with BCA E1.5 and AS 2118.1:1999, including fast response sprinkler heads with an RTI of 50 $m^{1/2}s^{1/2}$ and activation temperature of 68^{o}C.

5.4.4 Portable Fire Extinguishers

a) Portable fire extinguishers and fire blankets in accordance with and BCA E1.6 and AS 2444:2001 are to be provided throughout the building.

b) In the Class 2 parts of the building, ABE type extinguishers of minimum weight 2.5 kg will be provided so that the travel distance from any occupancy is not more than 10 m and extinguishers will serve only the storey on which they are located.

5.4.5 Smoke Detection & Occupant Warning System

a) Smoke detection and occupant warning system in accordance with BCA E2.2 and AS 1670.1:2004 will be provided throughout Buildings 8, A, B and C.

b) An additional thermal detectors located within 1.5 m of the SOU entry door interlinked with the AS 1670.1:2004 smoke detection system are to be provided in the Class 2 parts which have extended travel distances to an exit.

c) Air handling system installed in accordance with BCA E2.2(b) that does not form a part of the smoke hazard management system and recycles air from one fire compartment to another.

5.4.6 Fire Control Centre

A Fire Control Centre for the site is recommended to allow a central location for responding fire brigades to coordinate fire-fighting operations for the site.

6.0 Reference Information

6.1 Reference Legislation

This assessment is based on the following reference legislation:

a. NSW Environmental Planning and Assessment Act, 1979.

b. NSW Environmental Planning and Assessment Regulation, 2000.

c. Building Code of Australia 2014, Australian Building Codes Board, 2014.

6.2 Reference Codes and Guidelines

This assessment is based on the following reference codes and guidelines:

a. International Fire Engineering Guidelines, Australian Building Code Board, 2005.

b. Guide to the BCA, Australian Building Codes Board, 2014.

c. Engineers Australia, Society of Fire Safety, Code of Practice for Fire Safety Design, Certification and Peer Review, 2003, available on www.sfs.au.com/publications.

7.0 Conclusions

Lote Consulting have been appointed by Caliph c/o Tonkin Zulaikha Greer Architects to prepare a Fire Engineering Concept Design Statement (FECDS) to accompany the Planning Proposal for Precinct 75

Based on our review of the project documentation, it is our considered opinion that performance based fire engineering can be undertaken to address identified variations from BCA DtS Provisions.

8.0 Quality Information

Revision	Revision Date	Details	Document Details		
			Prepared	Reviewed	Authorised
A	6/11/2014	For design team review	SI	SAM	Dr S A Magrabi Principal Fire Engineer BPB: 0240
B	12/12/2014	Revised incorporating TZG comments	SI	SAM	Dr S A Magrabi Principal Fire Engineer BPB: 0240
C	25/02/2015	Revised incorporating updated BCA Report dated 17 Feb 2015	RS	SAM	Dr S A Magrabi Principal Fire Engineer BPB: 0240
D	31/08/2015	Revised incorporating updated BCA Report dated 27 Aug 2015	RS	SAM	Dr S A Magrabi Principal Fire Engineer

Revision	Revision Date	Details	Document Details		
			Prepared	Reviewed	Authorised
					BPB: 0240
E	17/09/2015	Revised incorporating updated BCA Report dated 17 Sept 2015	RS	SAM	Dr S A Magrabi Principal Fire Engineer BPB: 0240

Note: For and on behalf of Lote Consulting Pty Ltd, this Fire Engineering Report is signed by an Accredited C10 Fire Safety Engineer, Dr S A Magrabi in accordance with Clause 144A(1)(b) of the NSW Environmental Planning and Assessment Regulation (2000). It is noted that this Fire Engineering Report does not constitute a Part 4A Compliance Certificate under the NSW Environmental Planning and Assessment Act (1979).