Qantas Group Carpark
297 King Street Mascot

Fire Safety Strategy for SSD Submission

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FOR QANTAS AIRWAYS LIMITED

(02) 8096 5235
info@xelconsulting.com.au

Prepared for: Qantas Airways Limited
Prepared by: XEL Consulting Pty Ltd
ABN: 30141218966

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1	March 1, 2019	For stakeholder review	Xijuan Liu	
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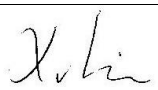
3a	April 15, 2019	For SSD submission	Xijuan Liu	

1 INTRODUCTION

XEL Consulting has been commissioned by Qantas Airways Ltd (Qantas) to prepare this report in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the SSD 10154 for the development of a new flight training centre at 297 King Street, Mascot. The Project seeks consent for the construction and operation of a new flight training centre, and associated ancillary uses including a multi-deck car park. This report provides a high-level solution for the carpark building only and will be further developed in the detailed design stage. The fire safety strategy for the flight training centre building is presented in a separate report.

Glossary and abbreviations used in this report are explained in Appendix A.

Information considered in preparing the strategy includes:

a) Architectural drawings prepared by Noxon Giffen Architecture listed in Appendix B; and
b) BCA Assessment Report by Steve Waston & Partners, Report 2019/0208 R1.2 Carpark, 15 April 2019.

2 SITE DESCRIPTION

The site is located at 297 King Street, Mascot and comprises land known as Lots 2 & 4 DP 234489, Lot 1 DP 202747, Lot B DP 164829 and Lot 133 DP 659434. The site is identified in Figure 1.

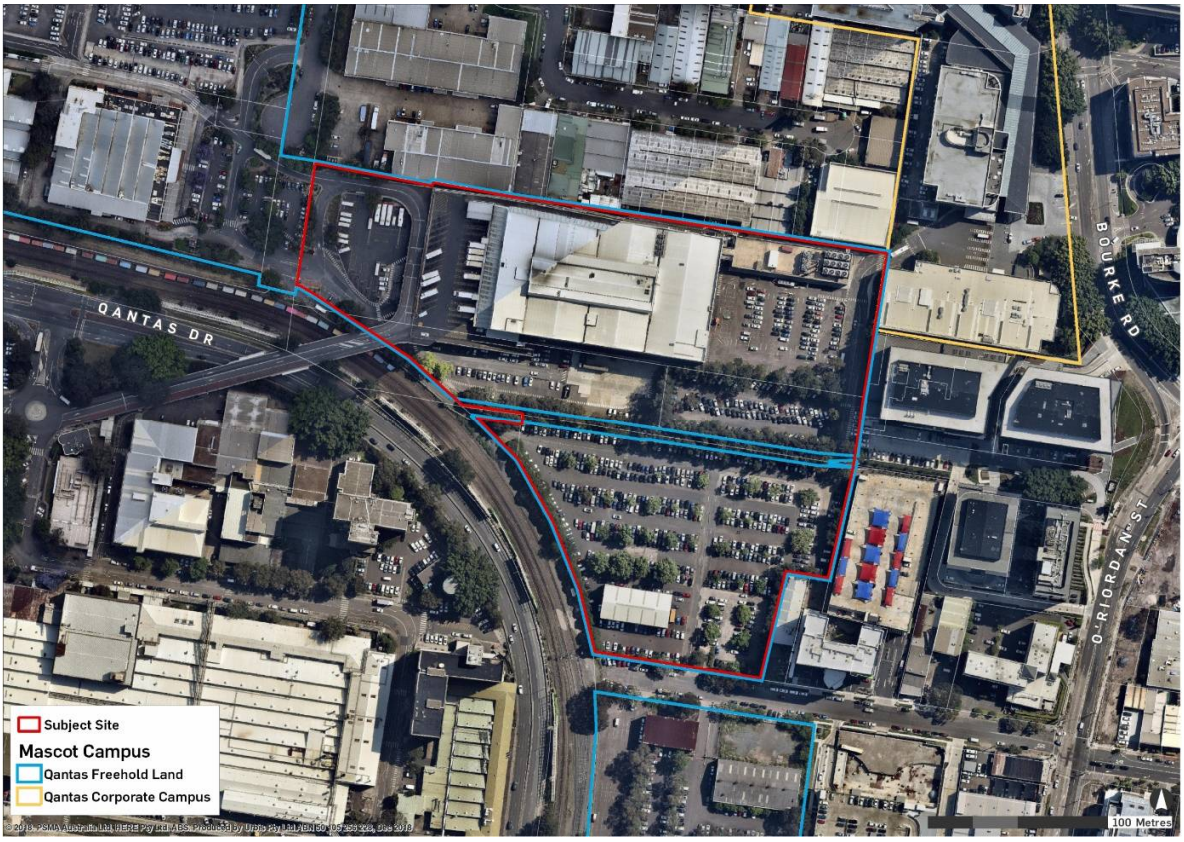


Figure 1 - The Site

Key features of the site are as follows:

- The site is approximately 5.417ha and is an irregular shape. It is approximately 240m in length and maintains a variable width of between approximately 321m in the northern portion of the site and approximately 93m along the King Street frontage (refer to Figure 1).
- The site possesses a relatively level slope across the site. An open Sydney Water drainage channel bisects the northern portion of the site in an east-west direction. There are some isolated changes in level immediately adjacent to this channel. A Site Survey Plan accompanies the application which details the topographic characteristics of the site.
- Multiple mature Plane Trees are scattered throughout the site. A variety of native and exotic tress and vegetation also exist around the perimeter of the site which help screen the site from surrounding uses.
- Site improvements include at-grade car parking for Qantas staff, an industrial shed to store spare aviation parts, a substation, a disused gatehouse, a Sydney Water Asset with two driveways over it, the Qantas catering facility and Qantas tri-generation plant.
- The site forms part of a larger land holding under the ownership of Qantas that generally extends between Qantas Drive to the west, Ewan Street to the south, Coward Street to the north, with the Qantas "Corporate Campus" fronting Bourke Road.
- Vehicular access to the site from the local road network is available from King Street. The site has intra-campus connections along the northern boundary in the form of two connecting driveways in the north-eastern and north-western corner of the site along the northern boundary which link it to the broader Mascot Campus.
- The site is located within the Bayside LGA.

Key features of the locality are:

- **North:** The site is bounded to the north low scale industrial development, beyond which is Coward Street. Further north of the site is the Mascot Town Centre which is characterised by transport-oriented development including high density mixed-use development focussed around the Mascot Train Station.
- **East:** The site is bordered to the east by commercial development including a newly completed Travelodge hotel which includes a commercial car park. Additional commercial development to the east includes the Ibis Hotel and Pullman Sydney Airport fronting O'Riordan Street.
- **South:** The site is bounded to the south by King Street, beyond which is Qantas owned at-grade car parking and other industrial uses. Further south is the Botany Freight Rail Line and Qantas Drive beyond which is the Domestic Terminal at Sydney Airport.
- **West:** The site is bordered to the west by the Botany Freight Rail Line and Qantas Drive, beyond which lies Sydney Kingsford Smith Airport and the Qantas Jetbase (location of the current Flight Training Centre).

3 BUILDING DESCRIPTION

3.1 Building usage

The proposed multi-deck car park will be located to the north-east of the flight training centre and adjacent the existing Qantas catering facility and tri-generation plant. The car park is 13 levels and will provide 2059 spaces for Qantas staff. Vehicle access to the car park will be provided via King Street, Kent Road and from Qantas Drive via the existing catering bridge.

3.2 BCA parameters

In the context of the BCA (Building Code of Australia) the carpark building is Class 7a, has a rise in storey of 13 and is required to be of Type A Construction. The effective height is 35.33m, higher than the 25m threshold to activate numerous *deemed-to-satisfy* provisions; however, the carpark will comply with the definition of an open-deck carpark which provides concessions in fire resistance levels and fire safety systems, as discussed in the following sections. Figure 2 shows the Ground Floor plan of the building.

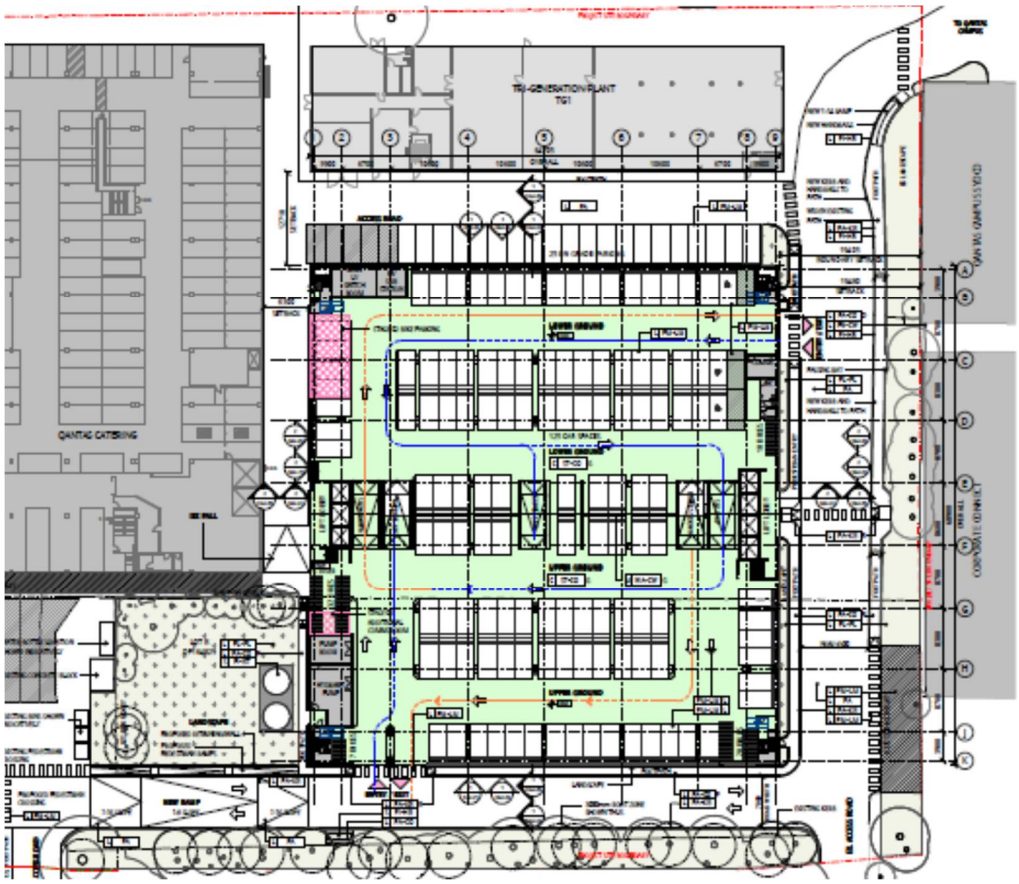


Figure 2 – Site & Ground Floor Plan of the carpark building

Key building characteristics in the context of the BCA that are based on to determine BCA *deemed-to-satisfy* provisions are summarized in Table 1 in accordance with the BCA report.

Table 1 Key determinants for BCA *deemed-to-satisfy* provisions

Classification	Class 7a - carparking
Rise in storey	13
Type of Construction	Type A
Effective height	35.33 m

4 FIRE RESISTANCE AND SEPARATION

Open deck carparks may comply with Table 3.9 of Specification C1.1 of the BCA, which requires 60-minute fire rating in general. As all boundaries are more than 3m from any fire source features, FRLs are not required for the external walls. The building is not required to be divided into fire compartments of limited floor area and volume as Clause C2.2 does not apply to an open deck carpark; the whole building is in one fire compartment.

5 EGRESS PROVISIONS

The carpark building will be provided with four fire isolated stairs, one at each corner. Travel distances from some central areas to the nearest exit exceed the 40m limit under Clause D1.4, up to 42m. Travel distances between alternative exit via the point of choice exceed the 60m under Clause D1.5, up to 81m. These travel distances will be subject to Performance Solution.

6 FIRE SERVICES

6.1 Fire Fighting Equipment

The fire hydrant system will generally comply with AS2419.1-2005 except:

- It is proposed that fire hydrant coverage to the central areas of each level will be provided via two lengths of hose (2×30m) from hydrants within the fire stairs in lieu of single hose from additional internal hydrants on the floor; and
- The number of fire hydrants required to flow simultaneously will be based on AS2419.1-2017 which has more specific stipulation for open deck carparks.

Fire hose reels are to generally comply with AS2442-2005, except in the central area where coverage cannot be provided by fire hose reels located within 4m from the fire stairs, portable fire extinguishers are to be provided in lieu of fire hose reels.
Portable fire extinguishers are to be installed in accordance with BCA Table E1.6 and AS2444.

6.2 Smoke Hazard Management

Smoke hazard management provisions under Part E2 do not apply to open deck carparks.

6.3 Emergency Lifts

As the effective height is over 25m, the building is to be installed with emergency lifts in accordance with BCA Clause E3.4.

6.4 Visibility in an Emergency, Exit Signs and Warning Systems

Visibility in an emergency (emergency lighting) and exit signs are to comply with BCA Part E4 and AS2293.1- 2005.

Due to effective height over 25m, an emergency warning and intercom system (EWIS) complying with AS1670.4 is required under Clause E4.9. However, as the building is not required to have an automatic fire detection or sprinkler system, a fully compliant EWIS cannot be provided. A tailored EWIS solution will be developed in collaboration with the fire services engineer and in consultation with FRNSW.

7 SUMMARY OF ITEMS TO COMPLY VIA PERFORMANCE SOLUTION

Table 2 below presents the items to comply with the BCA Performance Requirements via Performance Solution. These are items identified to date; the items and details of deviation are subject to further design development, BCA assessment and fire engineering assessment.

Table 2 Items subject to Performance Solution

Item No.	DtS Clause	Description	Proposed under Performance Solution	Performance Requirements
1.	**D1.4**	Exit travel distances	Travel distances to one of two or more exits exceeding 40m, up to 42m from the central area of every level.	DP4, EP2.2
2.	**D1.5**	Distance between alternative exits	Travel distances between two alternative exits through the point of choice exceed 60m, up to 81m on every level.	DP4, EP2.2
3.	**E1.3**	Fire hydrant system	• Two lengths of hose (2×30m) to provide full coverage from hydrants within the fire stairs in lieu of single hose and additional internal hydrants on the floor; and The number of fire hydrants required to flow simultaneously will be 3, supported by AS2419.1-2017 which has more specific stipulation for open deck carpark.	EP1.3
4.	**E1.4**	Fire hose reels	Fire hose reels are proposed within 4m from the fire stairs only and cannot cover the central area of each level; portable fire extinguishers are to be provided in lieu of fire hose reels for first aid firefighting.	EP1.1
5.	**E4.9**	EWIS	A tailored EWIS solution will be developed in collaboration with the fire services engineer.	EP4.3

APPENDIX A GLOSSARY AND ABBREVIATIONS

FIRE ENGINEERING GLOSSARY

Term	Definition
Deemed-to-Satisfy Solution	*A method of satisfying the Deemed-to- Satisfy Provisions.*
Deemed-to- Satisfy Provisions	*Provisions that are deemed to satisfy the Performance Requirements.*
Effective height	*The vertical distance between the floor of the lowest storey included in the calculation of rise in storeys and the floor of the topmost storey (excluding the topmost storey if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units).*
Fire resistance level	*The grading periods in minutes determined in accordance with Schedule 5 of the BCA, for the following criteria –* *(a) Structural adequacy; and* *(b) Integrity; and* *(c) Insulation,* *And expressed in that order.*
Open-deck carpark	*A carpark in which all parts of the parking storeys are cross-ventilated by permanent unobstructed openings in not fewer than 2 opposite or approximately opposite sides, and –* *(a) Each side that provides ventilation is not less than 1/6 of the area of any other side; and* *(b) The openings are not less than ½ of the wall area of the side concerned.*
Performance Requirement	*A requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.*
Performance Solution	*A method of complying with the Performance Requirements other than by a Deemed-to-Satisfy Solution.*
Rise in storey	*The greatest number of storeys calculated in accordance with C1.2 of the BCA.*
Type of Construction	*Type of fire-resisting construction of a building determined in accordance with C1.1 of the BCA. Type A is the most fire-resisting and Type C is the least fire-resisting.*

ABBREVIATIONS

Acronym	Definition
BCA	*National Code of Construction, Volume One, Building Code of Australia 2019*
DtS	*Deemed – to - satisfy*
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*

Acronym	Definition
FRL	*Fire resistance level*
F&R NSW	*Fire and Rescue NSW*
NSW	New South Wales
PoC	Point of Choice, a point from which travel in different directions to 2 exits is available.
Qantas	Qantas Airways Limited
QGFTC	Qantas Group Flight Training Centre
SIM	Full Motion Flight Simulators
sqm	Square Metres
SSD	State Significant Development

APPENDIX B REFERENCED ARCHITECTURAL DRAWINGS

Drawing No.	Title	Revision	Date
DA4.01	Plan – Site & Ground Floor	A1	2019.04.11
DA4.02	Plan – First Floor	A1	2019.04.11
DA4.03	Plan – Typical Floor	A1	2019.04.11
DA4.10	Roof Stage 01	A1	2019.04.11
DA4.11	Roof Stage 02	A1	2019.04.11
DA4.20	Elevations – Stage 01	A1	2019.04.11
DA4.21	Elevations – Stage 01	A1	2019.04.11
DA4.22	Elevations – Stage 02	A1	2019.04.11
DA4.23	Elevations – Stage 02	A1	2019.04.11
DA4.24	Sections – Stage 01	A1	2019.04.11
DA4.25	Sections – Stage 02	A1	2019.04.11