

ENVIRONMENTAL IMPACT STATEMENT FOR STATE SIGNIFICANT DEVELOPMENT 10154

QANTAS FLIGHT TRAINING CENTRE

Prepared for

QANTAS AIRWAYS LIMITED

May 2019



URBIS

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director	David Hoy
Consultant	Emma Fitzgerald
Consultant	Isabelle Kikirekov
Project Code	P%3994
Report Number	Environmental Impact Statement

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GLOSSARY AND ABBREVIATIONS

Abbreviation	Meaning
%	percent
ABS	Australian Bureau of Statistics
ACHAR	Aboriginal Cultural Heritage Assessment Report
AHD	Australian Height Datum
Airports Act	<i>Airports Act 1996</i> as amended
APARs	<i>Airports (Protection of Airspace) Regulations 1996</i> as amended
AQIA	Air Quality Impact Assessment
ARTC	Australian Rail Track Corporation
AS	Australian Standard
AsA	Airservices Australia
ASS	Acid Sulfate Soils
ASSMAC	Acid Sulfate Soil Management Advisory Committee
ASSMP	Acid Sulfate Soil Management Plan
BBDCP 2013	Botany Bay Development Control Plan 2013
BBLEP 2013	<i>Botany Bay Local Environmental Plan 2013</i>
BC Act	<i>Biodiversity Conservation Act 2016</i>
BC Regulation	<i>The NSW Biodiversity Conservation Regulation 2017</i>
BCA	<i>National Code of Construction, Volume One, Building Code of Australia 2019</i>
BDAR	Biodiversity Development Assessment Report
CAO	Civil Aviation Order
CAR	Civil Aviation Regulation
CASA	Civil Aviation Safety Authority
CBD	Central Business District
CEET	Cabin Emergency Evacuation Trainer
CEMP	Construction Environmental Management Plan
CLM Act	<i>Contaminated Land Management Act (1997)</i>
CMP	Construction Management Plan

Abbreviation	Meaning
CNVG	<i>Construction Noise and Vibration Guideline 2016</i>
Council	Bayside Council.
CPTED	Crime Prevention through Environmental Design
CPTMP	Construction Pedestrian and Traffic Management Plan
DG	Dangerous Goods
DP	Deposited Plan
DSI	Detailed Site Investigation
DtS	Deemed to Satisfy
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EP	Emergency Procedure
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPA	Environment Protection Authority
EPA (NSW)	Environmental Protection Agency (NSW)
EPH	Emergency Procedures Hall
ESA	Environmental Site Assessment
ESD	Ecologically Sustainable Development
EWIS	Emergency Evacuation Intercom System
F&R NSW	Fire and Rescue NSW
FSW	Flight Simulator Wing
FTC	Flight Training Centre
FTE	Full Time Equivalent
Gateway	Sydney Gateway Project
GSC	Greater Sydney Commission
ha	Hectares
HAA	Historical Archaeological Assessment
HIS	Heritage Impact Assessment

Abbreviation	Meaning
HMA	Hazardous Materials Audit
ICNG	<i>Interim Construction Noise Guideline 2009</i>
IPC	Independent Planning Commission
IPT	Integrated Procedures Trainer
ISEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i>
Jetbase	Qantas leased land within the boundaries of Sydney Kingsford Smith Airport.
LEP	Local Environmental Plan
LGA	Local Government Area
m	metre
Mascot Campus	<p>Over 19ha of Qantas Airways Limited controlled land in Mascot to the north of Sydney Kingsford Smith Airport consisting of freehold and leased land. The following lots are owned by Qantas: Lot 133 DP 659434; Lots 4 & 5 DP 38594 Lot 23 DP 883548; Lots 1 & 2 DP 738342; Lot 3 DP 230355; Lot 4 DP 537339; Lots 2 & 4 DP 234489; Lot 4 234489; Lot 1 DP 81210; Lot 1 DP 202093; Lot 1 DP 721562; Lot 2 DP 510447; Lot 1 DP 445957; Lot B DP 164829 and Lot 1 DP 202747 and equates to 16.5ha of land.</p> <p>The following lots are leased by Qantas: Lot 14 DP 1199594 and Lot 2 DP 792885 and equates to 2.7ha of land.</p>
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NPW Regulation	<i>National Parks and Wildlife Regulation 2009</i>
NSW	New South Wales
NSW EPA	New South Wales Environment Protection Authority
NSW NPfl	<i>NSW Noise Policy for Industry 2017</i>
OEH	Office of Environment and Heritage
OLS	Obstacle Limitation Surface
OMP	Operational Management Plan
PANS OPS	Procedures for Air Navigation Services – Aircraft Operations, ICAO Doc 8168
POEO Act	<i>Protection of the Environment (Operations) Act 1997</i>
POMP	Preliminary Operational Management Plan
PPM	Parts Per Million
PSI	Preliminary Site Investigation

Abbreviation	Meaning
Qantas	Qantas Airways Limited
Qantas Catering Facility	A facility located on site that operates to supply the in-flight meals and provisions for Qantas customers.
Qantas Tri-Generation Plant	A facility located on site that produces energy from natural gas to supply electricity, heating and cooling.
QCC	Qantas Corporate Campus
QFC	Qantas Food Catering
QFTC	Qantas Flight Training Centre
QGFTC	Qantas Group Flight Training Centre
RAPs	Registered Aboriginal Parties
RINP	<i>NSW Rail Infrastructure Noise Policy 2013</i>
RL	Relative Level
RMS	NSW Roads and Maritime Services
RNP	<i>NSW Road Noise Policy 2011</i>
SACL	Sydney Airport Corporation Limited
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 33	<i>State Environmental Planning Policy No. 33 – Hazardous and Offensive Developments</i>
SEPP 55	<i>State Environmental Planning Policy No. 55 - Remediation of Land</i>
SEPP 64	<i>State Environmental Planning Policy No. 64 – Advertising and Signage</i>
SEPP SRD	<i>State Environment Planning Policy (State and Regional Development) 2011</i>
Simulators	Full Motion Flight Simulators
SiX	Spatial Information Exchange (NSW)
sqm	Square Metres
SSD	State Significant Development
SSDA	State Significant Development Application
SWDC	Sydney Water Drainage Channel
Sydney Gateway Project	A RMS Project including a road and rail component that is intended to increase capacity and improve connections to the ports to assist with growth

Abbreviation	Meaning
	in passenger, freight and commuter movements across the region, by expanding and improving the existing road and freight rail networks.
the Airport	Sydney Kingsford Smith Airport
the Department	Department of Planning and Environment
the District Plan	<i>Eastern City District Plan (2018)</i>
the Minister	the Minister for Planning
The Project	The construction of a new Flight Training Centre and ancillary uses to replace the existing facility on the Qantas Jetbase that will be impacted by RMS' Sydney Gateway Project.
the Region Plan	<i>A Metropolis of Three Cities – the Greater Sydney Region Plan (2018)</i>
The Site	Qantas Airways Limited owned land in Mascot to the north of Sydney Kingsford Smith Airport consisting of Lots 2 & 4 DP 234489, Lot 1 DP 202747, Lot B DP 164829 and Lot 133 DP 659434. Current site improvements include including 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 Strategy	<i>The Future Transport Strategy 2056 (2018)</i>
Urbis	Urbis Pty Ltd

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DECLARATION

SUBMISSION OF ENVIRONMENTAL IMPACT STATEMENT

This EIS has been prepared in accordance with Schedule 2 of the *Environmental Planning and Assessment Regulations 2000*.

Environmental Assessment prepared by:

Name	David Hoy (Regional Director) Bachelor Urban and Regional Planning, University of New England Master of Commerce – Land Economy, University of Western Sydney Emma Fitzgerald (Consultant) Bachelor of Arts, University of Sydney Master of Planning, University of New South Wales Isabelle Kikirekov (Consultant) Bachelor of City Planning (Hon), University of New South Wales
Address	Urbis Pty Ltd Level 8, Angel Place, 123 Pitt Street Sydney NSW 2000
In respect of	Construction and operation of a new flight training centre, carpark and ancillary uses at 297 King Street, Mascot.




Applicant and Land Details:

Applicant	Qantas Airways Limited C/- Urbis
Applicant Address	Urbis Pty Ltd Level 8, Angel Place, 123 Pitt Street Sydney NSW 2000
Land to be developed	297 King Street, Mascot (Lots 2 & 4 of DP 234489; Lot 1 of DP 202747; Lot B of DP 164829; and Lot 133 DP 659434).
Project	Construction and operation of a new flight training centre, multi-deck carpark and ancillary uses.

Declaration:

I certify that the contents of the Environmental Impact Assessment to the best of my knowledge, has been prepared as follows:

- In accordance with the requirements of Schedule 2 of the *Environmental Planning and Assessment Regulations 2000*; and *State Environmental Planning Policy (State and Regional Development) 2011*.
- The information contained in this report is true in all material particulars and is not misleading.

Name	David Hoy, Regional Director	Emma Fitzgerald, Consultant	Isabelle Kikirekov, Consultant
Signature			
Date	31.05.2019	31.05.2019	31.05.2019

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EXECUTIVE SUMMARY

PURPOSE OF THIS REPORT

This Environmental Impact Assessment (**EIS**) was prepared by Urbis Pty Ltd (**Urbis**) on behalf of Qantas Airways Limited (**Qantas**) in support of a State Significant Development Application (**SSD 10154**) for the development of a new flight training centre including car parking and associated supportive and ancillary works at 297 King Street, Mascot (**the Site**).

This EIS should be read in conjunction with the Secretary's Environmental Assessment Requirements (**SEARs**) attached at **Appendix A**, and the supporting technical documents provided at **Appendix B-Appendix CCC**.

This EIS has been prepared in accordance with and meets the minimum requirements of clauses 6 and 7 of Schedule 2 the *Environmental Planning and Assessment Regulation 2000* (**the Regulation**).

THE PROPOSAL

The Project seeks to construct a new flight training centre. It will be the most advanced and largest training centre of its kind in the Southern Hemisphere. It will comprise purpose-built facilities where pilots and cabin crew will benefit from high level practical and theoretical training. The Project is crucial in maintaining Qantas' operational effectiveness as a global airline. In the absence of a flight training centre, Qantas' ability to operate nationally and internationally would be significantly impacted. Maintaining a flight training centre at the Mascot Campus is critical to reinforcing Sydney as the operational core of Qantas' operations.

Safety is Qantas' first priority. The flight training centre is a key pillar of this value. The facility enables pilots and flight crews to undertake periodic testing to meet regulatory requirements by simulating both aircraft and emergency procedural environments. 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. The Project is comprised of the following uses:

Flight Training Centre

The proposed flight training centre will occupy the southern portion of the site. It is a building that comprises 4 core elements as follows:

- An emergency procedures hall that contains;
 - cabin evacuation emergency trainers,
 - an evacuation training pool,
 - door trainers,
 - fire trainers
 - slide descent towers,
 - security room,
 - aviation medicine training and equipment rooms.
- A flight training wing that contains:
 - a flight training hall with 14 bays that will house aircraft simulators,
 - integrated procedures training rooms, computer rooms, a maintenance workshop, storerooms, multiple de-briefing and briefing rooms, pilot's lounge and a shared lounge.
- Teaching Space that contains
 - training rooms,
 - classrooms and two computer-based exam rooms.
- Office Space

- Office space for flight training staff and associated shared amenities including multiple small, medium and large meeting rooms, think tank rooms, informal meeting spaces, a video room and lunch/tea room.
- Ancillary spaces including the reception area at the ground floor, toilets, roof plant and vertical circulation. The external ground floor layout will include a loading dock, at-grade car parking for approximately 39 spaces and a bus drop-off zone at the northern site boundary.

Car Park

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 2,059 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.

- Specifically, this application seeks development consent for the following works at the site:
 - Demolition of existing site improvements (including removing asphalt) to facilitate the development;
 - Remediation of the site;
 - Removal of 85 trees;
 - Two new access driveways to the site off King Street;
 - Construction of a new flight training centre and multi-deck car park; and
 - Other associated works including landscaping and general site improvements.

THE SITE

The subject site is located at 297 King Street, Mascot and is legally described as Lots 2 & 4 of DP 234489; Lot 1 of DP 202747; Lot B of DP 164829; and Lot 133 DP 659434. A location plan is provided at **Figure 3**.

The site is located within the Bayside Local Government Area (**LGA**). The Site is located to the west of the Botany Freight Rail Line and Sydney Kingsford Smith Airport, with a road frontage to King Street, covering an area of approximately 5.408 hectares.

PROJECT BACKGROUND

The need for this Project is a direct result of the Sydney Gateway Project (**Gateway**) proposed by Roads and Maritime Services (**RMS**). The existing flight training centre will be directly impacted by this piece of critical road infrastructure, requiring relocation and construction of a new flight training centre.

The stated objective of Gateway is to improve connections to the ports and increase capacity of the road and rail network through expanding and improving the existing road and freight rail networks. As part of Gateway, Qantas Drive will be widened approximately 16 metres which will require the partial demolition of Qantas' existing flight training centre. The vibrations associated with the construction and operation of Gateway will exceed the Civil Aviation Safety Authority's (**CASA**) regulatory requirements in relation to the operation of Qantas' simulators.

Were the existing flight training centre not being critically impacted by the approximately 16 metre expansion of Qantas Drive as part of Gateway, Qantas would not be moving from its existing facility. This is due to the latent economic value, ongoing functionality and strategic location of the existing flight training centre.

RMS requires the existing flight training centre to be vacated by 30 June 2021 to enable Gateway to meet its construction deadlines. Qantas expects that construction of a new flight training centre would take 16 months to construct and then a further 7 months for the installation, commissioning and calibration of the simulators. In order to meet RMS' timeframes and to avoid either delaying the construction of Gateway or potential grounding their fleet, Qantas needs to begin construction of its replacement flight training centre by no later than 1 September 2019.

COST OF WORK AND PLANNING FRAMEWORK

The site was Gazetted as State Significant Development through a Ministerial Call-In Process on the 28 February 2018.

The Capital Investment Value (**CIV**) for the proposal is calculated at calculated at \$145,440,000 excluding GST. The CIV includes all design and construction costs together with relevant civil and infrastructure works, site services, all anticipated labour costs, consultant fees and authority fees. This cost does not include the cost of relocating and installing the existing simulators. There are no new full motion flight simulators included. This is detailed in the Quantity Surveyors Cost Assessment at **Appendix B**.

EMPLOYMENT GENERATION

The Project will generate a total of 380 FTE construction jobs. The Project will ensure the retention of 149 existing FTE jobs.

The Qantas Group makes a significant contribution to employment in NSW accounting for 12,983 direct full-time equivalent (**FTE**) jobs and an additional 10,011 indirect FTE jobs.

The proposed Flight Training Centre is a like for like translation of the existing facility which includes the transfer of existing employees (149), however it is noted that the facility will include provision for expansion in SIM bays 13 and 14 to accommodate growth in the Qantas Group fleet. This anticipated growth will see a direct growth of six full time employees necessary to operate and maintain the new SIMs.

The flight training centre currently supports and trains over 2,500 pilots to ensure they maintain compliance every year. The anticipated growth in the SIM's operation will indirectly lead to the creation of notionally 100-300 FTE roles across the Qantas Group and other airlines, relating to pilots, crew, ground services, and other ancillary transport and tourism sectors. This indirect job creation is a product of the QFTC increased capacity to train and certify additional pilots and crew, creating opportunity for Qantas Group airlines and other airlines introduce new fleets and increase their operations in NSW, Australia and internationally.

ASSESSMENT

The proposal has addressed the SEARs requirements issued for the Project on 29 March 2019 and has been assessed the applicable planning framework. In summary:

- **The proposal satisfies the applicable local and state planning policies.**

The proposal satisfies the objectives of all relevant planning controls and achieves a high level of planning policy compliance.

- **The proposal will not have any unacceptable impacts on neighbouring residential properties or the public domain.**

Subject to the various mitigation measures recommended by the specialist consultants, the proposal will not have any unacceptable impacts on adjoining or surrounding properties or the public domain in terms of traffic, visual, social and environmental impacts.

- **The proposal satisfies the SEARs as demonstrated in this EIS and accompanying specialist reports.**

Considering the above and the content contained in this EIS, it is recommended that that SSD is approved, subject to appropriate conditions.

Figure 1 – Flight Training Centre as Viewed from King Street



Source: Noxon Giffen

SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

A request was made to the Minister for the Secretary's Environmental Assessment Requirements (SEARs), pursuant to clause 3, Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*. The SEARs are addressed within this report and included in full at **Appendix A**.

Table 1 below provides a summary of the SEARs and identifies the section of the report where the relevant requirement is addressed and/or the appendix reference for the technical consultant's report associated with that requirement.

Table 1 – Secretary's Environmental Assessment Requirements

Item / Description	Document Reference
GENERAL REQUIREMENTS	
<p>The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in clauses 6 and 7 of Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i>. In addition, the EIS must include:</p> <ul style="list-style-type: none"> • a detailed description of the development, including: <ul style="list-style-type: none"> ○ accurate history of the site, including development consents applying to the site and the 'Mascot Campus' and any parking requirements; ○ the need for the proposed development; ○ justification for the proposed development; ○ likely staging of the development; ○ likely interactions between the development and existing, approved and proposed operations in the vicinity of the site including Sydney Airport, proposed Sydney Gateway Project and Botany Rail Duplication Project; ○ plans of any proposed building works; and ○ operational management details of the development. • consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments; • a risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment; • a detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes: <ul style="list-style-type: none"> ○ a description of the existing environment, using sufficient baseline data; ○ an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into 	<p>Refer to Declaration on page xxiii</p> <p>Environmental Risk Assessment at Section 9</p>

Item / Description	Document Reference
<p>consideration relevant guidelines, policies, plans and statutes; and</p> <ul style="list-style-type: none"> ○ a description of the measures that would be implemented to avoid, minimise, mitigate and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage significant risks to the environment. • a consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS. 	
<p>The EIS must also be accompanied by a report from a qualified quantity surveyor providing:</p> <ul style="list-style-type: none"> • a detailed calculation of the capital investment value (CIV) of the development as defined in clause 3 of the <i>Environmental Planning and Assessment Regulation 2000</i>, including details of all components of the CIV; • an estimate of the jobs that will be created by the development during the construction and operational phases of the development; and • certification the information provided is accurate at the date of preparation. 	Appendix B
KEY ISSUES	
<p>Strategic and Statutory Context – including:</p> <ul style="list-style-type: none"> ○ detailed justification for the proposal and the suitability of the site; and ○ demonstration the proposal is generally consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs) and justification for any inconsistencies. 	Section 4; Section 5
<p>Traffic and Transport – including:</p> <ul style="list-style-type: none"> ○ a Traffic Impact Assessment detailing all daily and peak traffic and transport movements likely to be generated (vehicle, public transport, pedestrian and cycle trips) during construction and operation of the development, including a description of vehicle type, access routes and the impacts on nearby intersections; ○ details of access to the site from the road network including intersection location, design and sight distance; ○ details of the likely arrival and departure times for vehicles for all components of the proposed development; ○ an assessment of predicted impacts on road safety and the capacity of the road network to accommodate the development; ○ an assessment of the implications for public and active transport, the potential for implementing a location specific sustainable travel 	Section 7.1; Appendix N

Item / Description	Document Reference
<p>demand management strategy and the provision of end of trip facilities to increase active transport usage to and from the site;</p> <ul style="list-style-type: none"> plans of any road upgrades or new roads required for the development, if necessary; details of the parking provision on-site, including the existing parking provided and its users and a justification for the amount of car parking proposed, demonstrating compliance with the appropriate parking codes; detailed plans of the proposed layout of the internal road network and parking provision on-site, in accordance with the relevant Australian Standards; and details of any likely dangerous goods to be transported on arterial and local roads to/from the site, if any, and the preparation of an incident management strategy, if necessary. 	
<p>Urban Design and Visual – including:</p> <ul style="list-style-type: none"> layout of the development including staging, gross floor area, site coverage, setbacks, proposed open space and landscaped areas and justification for any inconsistencies with the <i>Botany Local Environmental Plan 2013</i> and the Botany Bay Development Control Plan 2013; a detailed assessment and justification (including photomontages and perspectives) for the flight training centre and carparking buildings, including building height with reference to the height of surrounding buildings, building materials, architectural treatments and finishes, colour, scale, bulk and overshadowing, from nearby public receivers and significant vantage points within the broader public domain; an options analysis for the proposed building materials, architectural treatments, finishes and colour of the buildings, prepared in consultation with nearby sensitive receivers with evidence of consultation provided; a design report that provides an assessment of the proposal against the design excellence requirements of Clause 6.16 of the Botany Local Environmental Plan; details regarding security requirements and features and lighting; consideration of the obstacle limitation surface; suitable landscaping giving preference to local native provenance tree, shrub and groundcover species; the layout and design of the development having regard to the surrounding vehicular, pedestrian and cycling networks, if applicable; proposed cut and fill works associated with the development; and measures to minimise the extent of cut and fill. 	<p>Section 7.2 Section 6.2.3; Appendix C; Appendix D and Appendix FF</p>

Item / Description	Document Reference
<p>Noise and vibration – including:</p> <ul style="list-style-type: none"> ○ a description of all potential noise and vibration sources during the construction and operational phases of the development, including on and off-site traffic noise; ○ a noise impact assessment, including a cumulative noise impact assessment in accordance with relevant Environment Protection Authority guidelines; ○ a detailed construction programme considering sensitive receivers and other nearby construction activities, with justification for any requested extended construction hours; ○ consideration of the operational requirements of the development in relation to surrounding noise sources such as the proposed Sydney Gateway Project and the Botany Rail Duplication Project; and ○ details of noise mitigation, management and monitoring measures. 	<p>Section 7.5; Appendix X</p>
<p>Soils and water – including:</p> <ul style="list-style-type: none"> ○ a description of the water demands and a breakdown of water supplies; ○ a description of the measures to minimise water use; ○ a detailed water balance; ○ a description of all wastewater generated on-site; ○ a description of the proposed erosion and sediment controls during construction and operation; ○ a description of the surface and stormwater management system, including on-site detention, and measures to treat or re-use water; ○ an assessment of potential surface and groundwater impacts associated with the development; ○ an assessment of the impact of the development on acid sulfate soils; ○ an assessment of the impact of flooding on the proposed development for the full range of flood events up to the probable maximum flood; ○ an assessment of the impact of the proposed development on flood behaviour; and ○ details of impact mitigation, management and monitoring measures. 	<p>Section 7.11; Section 7.12 Appendix Y; Appendix Z</p>
<p>Social and economic impacts – including:</p> <ul style="list-style-type: none"> ○ identifying and analysing the potential social impacts of the development from the point of view of the affected community and other relevant stakeholders; 	<p>Section 7.6; Appendix NN</p>

Item / Description	Document Reference
<ul style="list-style-type: none"> assessment of the significance of positive, negative and cumulative social impacts; mitigation measures and monitoring of likely negative social impacts; and an analysis of any potential economic impacts of the development, including a discussion of any potential economic benefits. 	
Air Quality – including: <ul style="list-style-type: none"> an assessment of the air quality impacts at private properties during construction and operation of the development, in accordance with the relevant Environment Protection Authority guidelines; and details of any mitigation, management and monitoring measures required to prevent and/or minimise emissions. 	Section 7.8; Appendix GG
Hazards and Risks – including: <ul style="list-style-type: none"> a preliminary risk screening completed in accordance with <i>State Environmental Planning Policy No. 33 – Hazardous and Offensive Development</i> and <i>Applying SEPP 33</i> (Department of Planning, 2011) with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. Should the preliminary screening indicate that the development is “potentially hazardous”, a Preliminary Hazard Analysis must be prepared in accordance with <i>Hazardous Industry Planning Advisory Paper No. 6, ‘Hazard Analysis’</i> (Department of Planning, 2011) and <i>Multi-level Risk Assessment</i> (Department of Planning, 2011); and a report on the consultation outcomes with all operators of high pressure dangerous goods or gas pipelines within or in vicinity of the development with regards to requirements under <i>Australian Standard AS 2885 Pipelines – Gas and liquid petroleum</i> and provide sufficient details on how these outcomes will be delivered or implemented. 	Section 7.9; Appendix RR
Biodiversity – including: <ul style="list-style-type: none"> an assessment of the proposal’s biodiversity impacts in accordance with the <i>Biodiversity Conservation Act 2016</i>, including the preparation of a Biodiversity Development Assessment Report (BDAR) where required under the Act, except where a waiver for preparation of a BDAR has been granted. 	Section 7.3
Infrastructure requirements – including: <ul style="list-style-type: none"> a detailed description of the existing infrastructure on-site; identification of any infrastructure upgrades required to facilitate the development, and describe any arrangements to ensure the upgrades will be implemented in a timely manner and maintained; a detailed description of cooling/heating systems to be installed on-site; 	Section 7.13; Appendix AA

Item / Description	Document Reference
<ul style="list-style-type: none"> endorsement and/or approval from Sydney Water to ensure the development does not adversely impact on any Sydney Water Asset; an assessment of any potential impact on the Botany Rail Line; and preparation of an Infrastructure Management Plan, detailing the existing capacity and any augmentation and easement requirements of the development for the provision of utilities, including any staging. 	
Waste – including: <ul style="list-style-type: none"> details of the quantities and classification of all waste streams to be generated on-site; details of waste storage, handling and disposal; and details of the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the <i>NSW Waste Avoidance and Resource Recovery Strategy 2014-2021</i>. 	Section 7.14; Section 7.20; Appendix CC
Ecologically Sustainable Development – including: <ul style="list-style-type: none"> an assessment of how the development will incorporate ecologically sustainable development principles in all phases of the development; the use of green walls, green roof and/or cool roof into the design; and climate change projections developed for the Sydney Metropolitan area and how they are used to inform the building design and asset life of the project. 	Section; 7.21; Appendix Q
Fire and incident management – including details of the operational capability of all fire and life safety systems.	Section 7.23; Appendix VV
Heritage – including: <ul style="list-style-type: none"> consideration of heritage items within the vicinity of the site and any potential heritage impacts associated with the development; and the preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR). 	Section 7.14; Appendix I
Greenhouse gas and energy efficiency – including an assessment of the energy use on-site, and demonstrate the measures proposed to ensure the development is energy efficient.	Section 7.22; Appendix Q
PLANS AND DOCUMENTS	
The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the <i>Environmental Planning and Assessment Regulation 2000</i> . These documents should be provided as part of the EIS rather than as separate documents.	Noted
CONSULTATION	

Item / Description	Document Reference
<p>During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. In particular you must consult with:</p> <ul style="list-style-type: none"> • Ausgrid; • Australian Rail and Track Corporation; • Bayside Council; • Civil Aviation Safety Authority; • Department of Industry – Crown Lands and Water; • Environment Protection Authority; • Jemena; • NSW Fire and Rescue; • NSW Heritage Council; • NSW Office of Environment and Heritage; • Roads and Maritime Services; • Sydney Airport Corporation Limited; • Sydney Water; • Transport for NSW; and • local residents and stakeholders. <p>The EIS must describe the consultation process and the issues raised and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.</p>	<p>Section 6; Appendix FF</p>
FURTHER CONSULTATION AFTER 2 YEARS	
<p>If you do not lodge a Development Application and EIS for the development within 2 years of the issue date of these SEARs, you must consult further with the Secretary in relation to the preparation of the EIS.</p>	<p>Noted</p>
REFERENCES	
<p>The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. While not exhaustive, the following attachment contains a list of some of the guidelines, policies, and plans that may be relevant to the environmental assessment of this proposal.</p>	<p>Noted</p>

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1. INTRODUCTION

1.1. PROJECT OVERVIEW

The need for this Project is a direct result of the Sydney Gateway Project (**Gateway**) proposed by Roads and Maritime Services (**RMS**). Qantas support RMS's investment in road and rail infrastructure. In order to facilitate the widening of Qantas Drive as part of Gateway, Qantas needs to construct a new flight training centre as the existing centre located within the Jetbase will be directly impacted by this piece of critical road infrastructure.

Qantas seeks to construct a new flight training centre that will be the most advanced and largest training centre of its kind in the Southern Hemisphere. It will comprise purpose-built facilities where pilots and cabin crew will benefit from high level practical and theoretical training. The new flight training centre will contain bays for 14 full motion flight simulators (**simulators**), aircraft cabin mock-ups, ditching pools and multimedia learning centres. The Project also includes a new internal access road network within the site to enhance intra-campus connectivity, complemented by a considered landscaping strategy. Located on the adjacent site to the north of the Sydney Water drainage channel, the proposal includes a new multideck split-level staff carpark with spaces for some 2,059 cars to be built over two stages to a maximum height of 13 levels.

The proposed Qantas flight training centre and carpark offer a clear, pragmatic and informed response to the site, the industrial context and a unique set of functional operational requirements.

The design response creates a new strategic centre for airline operations, a new Qantas Corporate Precinct which brings together the existing Qantas Campus, new flight training facilities and consolidated staff car parking. The precinct is activated and connected through a regeneration of a unified Ground Plane linking distinct and separate building elements within the site.

Specifically, this application seeks development consent for the following works at the site:

- Demolition of existing site improvements (including removing asphalt) to facilitate the development;
- Remediation of the site;
- Removal of eighty-five (85) trees;
- Two new access driveways to the site off King Street;
- Construction and operation of a new flight training centre;
- Staged construction of a 13 Level multi-deck split-level car park for staff:
 - Stage 1: 736 car parks over ground plus four levels
 - Stage 2: 1,323 car parks across the remaining eight levels; and
- Other associated works including landscaping, at-grade parking, rationalisation of the internal road network and general site improvements.

The Project is crucial in maintaining Qantas' operational effectiveness as a global airline, whose headquarters/home base are at Mascot. In the absence of a flight training centre, Qantas' ability to operate and thus in turn effectively support the Airport will be undermined.

It is requested that the consent is structured to enable the staged construction of the car park to enable the consolidation of carparking across Qantas' landholdings into a central location. Additionally, it is requested that the consent is structured so that both the flight training centre and carpark are able to obtain Occupation Certificates independent of each other to ensure business continuity for Qantas and to limit project risk associated with construction timeframes.

Due to the specialised nature of the flight training centre and the length of time it takes to relocate, install and recalibrate the simulators, the process is expected to take a minimum of 23 months before the new flight training centre is operational. In order to meet RMS' construction timetable for Gateway (vacating existing facility by 30 June 2021), Qantas needs to begin construction of their new flight training centre by no later than 1 September 2019, and are requesting extended construction hours of 06:00am – 08:00pm seven days a week (inclusive of public holidays) and 24 hour construction during fitout works with no noisy works beyond the standard hours.

The proposed works are illustrated in the Architectural Plans prepared by Noxon Giffen Architects in **Appendix C**.

1.2. REPORT STRUCTURE

This EIS provides the following:

- A description of the site and surrounding context, including identification of the site, existing development on the site, and surrounding development;
- A detailed description of the proposed development;
- An assessment of the proposed development against the relevant strategic and statutory planning controls;
- An assessment of the key issues and impacts generated by the proposed development; and
- A detailed description of the consultation undertaken with respect to the proposal.

This EIS should be read in conjunction with the SEARs attached at **Appendix A**, and the supporting technical documents provided at **Appendix B – Appendix CCC**.

1.3. PROJECT TEAM

Specialist consultants were engaged to assist in the preparation of this SSD, as outlined in **Table 2**.

Table 2 – Project Team

Discipline / Input	Consultant	Appendix
Secretary's Environmental Assessment Requirements	Department of Planning and Environment	Appendix A
Quantity Surveyors Cost Assessment	BA Air	Appendix B
Architectural Drawings	Noxon Giffen Architects	Appendix C
Architectural Design Report	Noxon Giffen Architects	Appendix D
Landscape Architecture	Scott Carver	Appendix E
Public Domain and Landscape Report	Scott Carver	Appendix F
Planning	Urbis	Appendix G and Appendix H
Built Heritage	Urbis	Appendix I
Wind Assessment	Windtech	Appendix J; Appendix K and Appendix S
Preliminary Operational Plan of Management	Qantas	Appendix L
Landscape and Visual Impact Assessment	Scott Carver	Appendix M
Traffic and Transport	CBRK	Appendix N and Appendix O
Arboricultural Impact Assessment	The Ents Tree Consultancy	Appendix P

Discipline / Input	Consultant	Appendix
Greenhouse Gas, Energy Efficiency and Ecologically Sustainable Development (ESD)	Norman Disney and Young	Appendix Q
Biodiversity Assessment Report	WSP	Appendix R
Environmental Site Assessment	Arcadias	Appendix T
Environmental Management Plan	Arcadias	Appendix QQ
Hazardous Materials Work (Removal) & Management Plan	Edwards Blasche Group Pty Ltd	Appendix RR
Hazardous Materials Assessments	Presna Pty Ltd	Appendix U; Appendix V and Appendix W
Acid Sulfate Soil Management Plan	Arcadias	Appendix AAA
Noise and Vibrations Impact Assessment	Norman Disney & Young	Appendix X
Stormwater Management and Civil Design	Enstruct	Appendix Y and Appendix Z
Infrastructure Management Plan	Norman Disney & Young	Appendix AA
Geotechnical Report	Douglas Partners	Appendix BB
Operational and Construction Waste Management Plan	Waste Audit and Consultancy Services	Appendix CC
Preliminary Construction Management Plan	APP	Appendix DD
NCC – Section J Deemed to Satisfy	Norman Disney & Young	Appendix EE
Consultation	Urbis	Appendix FF
Air Quality Impact Assessment	SLR Consulting Australia Pty Ltd	Appendix GG
Accessibility	City Plan Services	Appendix HH
Building Code of Australia Reports	Steve Watson and Partners	Appendix II and Appendix JJ
Dangerous Goods	RiskCon Engineering	Appendix KK and Appendix XX
Historical Archaeological Assessment	Urbis	Appendix MM
Social Impact Assessment	Urbis	Appendix NN
Aboriginal Cultural Heritage Assessment Report	Urbis	Appendix OO
Crime Prevention Through Environmental Design (CPTED)	Urbis	Appendix PP

Discipline / Input	Consultant	Appendix
Aeronautical Impact Assessment	Landrum & Brown Worldwide	Appendix SS
Chemical Management	Qantas	Appendix TT
Construction Environmental Management Plan	Arcadias	Appendix UU
S7.11 Contributions Letter	Qantas	Appendix YY
Fire Safety Strategy	Xel Consulting	Appendix VV and Appendix WW
Reflectivity	Windtech	Appendix ZZ
Boundary Sketch and Site Survey	Land Partners	Appendix BBB and Appendix CCC

1.4. PROJECT OBJECTIVES

The Project's primary objective is to ensure business continuity for Qantas, by constructing a new flight training centre to replace their existing flight training centre that will be demolished as part of RMS' Gateway project. Absent for Gateway, Qantas would not be moving from their existing flight training centre.

As a result of Gateway, Qantas needs to relocate its existing flight training centre operations from their current location to the Site for the following reasons:

- The widening of Qantas Drive to facilitate Gateway will require the partial demolition of the flight training centre which will result in the demolition of the pool, classrooms and emergency procedures training area that are critical to Qantas' operations.
- The noise and vibrations associated with the construction and operation of Gateway will exceed CASA's regulatory requirements in relation to the operation of simulators, which necessitates their relocation.

Without a functioning and compliant flight training centre Qantas are unable to maintain the legislated level of training for their pilots and cabin crew. If pilots and cabin crew do not meet the training requirements as regulated by the CASA then they are unable to fly. This has an obvious knock-on effect of Qantas being able to effectively run their business and would have a significant impact on National economy across a broad range of sectors including: tourism, business, professional services, finance and freight and logistics.

In order to facilitate the current proposal Urbis was engaged to manage the recent consultation process, and to ensure effective communication about this significant piece of work with all relevant stakeholders (refer to Consultation Report at **Appendix DD**).

Engagement and consultation is considered to be central to delivering on Qantas' responsibility to be a 'good neighbour', and has driven Qantas' engagement philosophy:

- Clearly outline the facts of the proposal;
- Engage with a range of interests, beyond established groups and positions;
- Provide a range of ways for people to engage and provide feedback;
- All feedback is collated and documented, to inform ongoing design and planning; and
- Communications will be open, transparent and accountable.

To date, this has involved direct engagement with immediate neighbours through a door knock, communication to 1,200 surrounding addresses through letter distribution, face-to-face briefings with key stakeholder groups and Agencies. This is detailed further in subsequent sections of this report.

1.5. ANALYSIS OF FEASIBLE ALTERNATIVES

Five options for the Project were investigated:

1. A 'do nothing' approach
2. Relocation of the facility inter-State
3. Offshore training
4. Development of the Project at an alternative location
5. Development of the Project at the proposed location

A 'do nothing' approach

A 'do nothing' approach in this instance would mean not replacing the existing flight training centre that will be compromised by Sydney Gateway. This was not considered to be a feasible option as it would jeopardise Qantas' ability to operate and would mean that they would be unable to maintain the level of Pilot and Cabin Crew training legislated by CASA.

Relocation of the facility inter-State

Relocating the facility inter-state was considered, however this would mean that Qantas' Sydney operations hub would be compromised in the long-term and its position as the hub of the airline would be undermined in the medium to long term and possibility of additional land acquisition delays in the short term, should a new inter-state site need to be found.

Offshore training

The ability to accommodate Pilot training at other international centres was investigated, however there is not enough capacity in the global market to accommodate the Qantas Group's needs. This may have necessitated the relocation of Cabin Crew training and would undermine Sydney's position as the operational hub of the airline.

Development of the Project at an alternative location

Other locations within Qantas' freehold lands were investigated as possible sites for the Project. These locations were deemed to be unsuitable as they would result in incompatible uses being situated in close proximity. Due to the need for an accelerated delivery of the Project, other sites not owned by Qantas were not investigated as the length of time associated with site acquisition would mean that RMS' deadlines would be unable to be met.

Development of the Project at the proposed location

The subject site was identified as being the most suitable location for both the new flight training centre and carpark, for a variety of reasons, not least in that it placed the facilities at the heart of Qantas Campus and operations in a consolidated new Qantas Corporate Precinct. This will reinforce Sydney as the operations hub of the airline in the medium to long-term ensuring that high levels of employment are retained in New South Wales. The site also presented an opportunity to consolidate several disparate Qantas car parking facilities around the Airport and Mascot Campus into a centralised facility adjacent to both flight training and the Qantas Campus.

1.6. PROJECT HISTORY

In 2018 Qantas was informed by RMS and SACL that their existing flight training centre was going to be impacted by RMS' Gateway Project and were informed that in order to meet Gateway's construction deadlines they needed to vacate their existing facility by no later than 30 June 2021. In response to this a Design Feasibility process was undertaken by Qantas and Noxon Giffen Architects to explore site options and functional requirements for a new flight training centre with associated ancillary uses including an adjacent multi deck staff carpark. Extensive review of multiple sites within Qantas' existing Mascot landholdings resulted in the subject site being identified as the most suitable location for both the new flight training centre and Carpark, placing the facilities at the heart of Qantas Campus and operations in a consolidated new Qantas Corporate Precinct.

Urbis were engaged to provide planning pathways advice for the Project. It was determined that due to the State and National significance of the Project it was essential that there was a State based level of co-ordinated assessment so that the timeframes for the delivery of Gateway were achieved.

Pursuant to Section 4.36(3) of the *Environmental Planning and Assessment Act 1979* (**EP&A Act**):

The Minister may, by a Ministerial planning order, declare specified development on specified land to be State significant development, but only if the Minister has obtained and made publicly available advice from the Independent Planning Commission about the State or regional planning significance of the development.

A meeting was held with representatives of the Department of Planning & Environment's (**the Department**) on 21 November 2018 to confirm that a Ministerial Call-In Request (**MIC**) was the correct pathway for the Project

On 04 December 2018 a formal MIC was lodged with the Department for assessment. During its assessment the Department consulted with Bayside Council who agreed that the Department was the most appropriate authority to assess the Project.

On 20 December 2018 the Department finalised its Report to the Independent Planning Commission (**IPC**) and concluded that:

"The Department agrees with the position of the Applicant that the project is State significant. In summary, the Department considers the project would benefit from an SSD declaration...The Department is satisfied all relevant criteria have been addressed by the Applicant and sufficient information has been provided to determine that the proposal is SSD."

The IPC received the Department's Report on 07 January 2019 and on 09 January 2019 confirmed that they agreed with the Department's assessment and recommended that the Minister declare the Project as State Significant Development.

On 28 February 2019, the Minister declared the Project as State Significant Development (**SSD**), through a notice in the New South Wales Government Gazette Number 20. This allowed the Project to formally apply for SEARs.

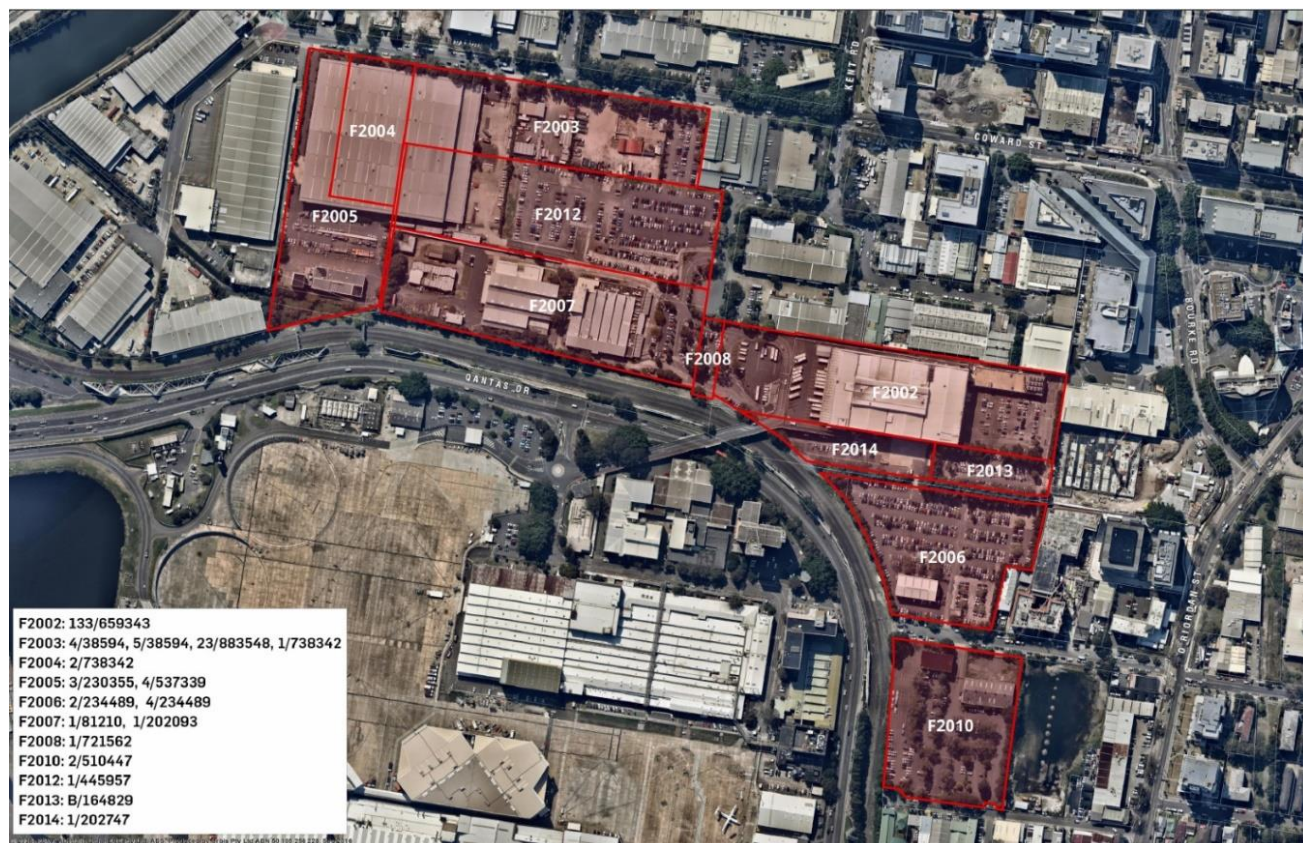
In accordance with the Department new protocol for conducting 'Pre-DA meetings' prior to formal lodgement of SEARs a meeting was held on 4 March 2019 with key Departmental staff to discuss the Project. A Scoping Report was formally lodged on 08 March 2019 with the Department to formally request SEARs.

SEARs were formally issued on 29 March 2019 and outline the key issues and specific matters that the EIS must address, these are reproduced at addressed in **Table 1**.

1.7. EXISTING CONSENTS

To understand the history of the site and the broader Mascot Campus **Table 3** below provides detail of the development consents that apply to the site. **Figure 2** shows the lots shaded red within the broader Qantas Mascot Campus that have been included as part of the existing consents audit.

Figure 2 - Qantas Freehold Land



Source: Urbis

Table 3 – Existing consents that apply to the site and broader Mascot Campus

Reference no. / Building Names	Lot/DP & Current /previous Address/s	Development Consents
F2002 & F2014 Qantas Catering Centre	1/659434; 1/202747 & 133/659434	07/038 – Addition of shelter for scissor platform lifts over existing flight training facility truck docks. 07/038 – Section 96(1A) to modify DA (above) by amending the number of docks for the addition of shelters for scissor platforms. 16/104* - Expansion of the existing trigeneration plant including additional plant and equipment at the existing generator building, construction of services trenches containing new pipes to extend the network, removal of existing trees and replacement landscaping.
	65 & 85 Kent Road	

Reference no. / Building Names	Lot/DP & Current /previous Address/s	Development Consents
F2003 & F2004 Qantas Sydney Distribution Centre	4/38594; 5/38594; 23/883548 & 1/738342	<p>99/101 – Temporary car parking facility</p> <p>99/0232 - Construction of a new carport for previously approved rental, storage and cleaning of campervans and associated office administration.</p> <p>99/0478 - Enclose existing car wash and detailing bay, together with the erection of an enclosure to house clothes washing/drying machines and the erection of an identity sign for the existing campervan rental business.</p> <p>03/198 - Remediation, site preparation works and foundation piling.</p> <p>04/492 - Detailed design of Qantas Priority Route between the Qantas Jetbase and the Qantas Central Stores Facility.</p> <p>04/529 - Erection of two business identification signs.</p> <p>11/012 – Alterations and additions to the existing warehouse mezzanine floor located in the southern portion of the warehouse building known as the Qantas Sydney Distribution Centre (QSDC), ancillary office development with associated stair/lift access and car parking facilities.</p>
	263-271 Coward Street	
F2005 Qantas Sydney Distribution Centre	3/230355 & 4/537339	<p>11/012 - Alterations and additions to the existing warehouse mezzanine floor located in the southern portion of the warehouse building known as the QSDC, ancillary office development with associated stair/lift access and car parking facilities.</p>
	273 Coward Street	
F2006 King Street North Car Park (the site)	2/234489 & 4/234489	<p>1667 – Use of the subject site as an employee car park with the provision of 584 car spaces.</p> <p>16/104* - Expansion of the existing trigeneration plant including additional plant and equipment at the existing generator building, construction of services trenches containing new pipes to extend the network, removal of existing trees and replacement landscaping.</p>
	297 King Street	
F2007 & F2008 Joy Building & Leo Building	1/81210; 1/202093 & 1/721562	<p>1874 - Alterations and additions to the existing building to be used as a new aircraft maintenance staff training facility.</p> <p>01/67 – Changes to the use of rooms, alterations to the layout of the premises and extension of hours of operation of the southern workshop.</p>

Reference no. / Building Names	Lot/DP & Current /previous Address/s	Development Consents
	78-86 Kent Road	<p>03/186 – Internal demolition works followed by the erection of partitions on the ground floor of the building to create rooms and corridors.</p> <p>03/320 – Erection of a temporary structure.</p> <p>11/166 – Additions of existing engine (aircraft) workshop, and the removal of selected trees.</p> <p>11/166/2 (s.96) – Amend the approved development consent by permitting the removal of one (1) tree.</p> <p>13/081 – Change of use of part of building from staff training room to luggage store/waiting room for Qantas staff and associated building works.</p>
F2010 King Street South Car Park	2/510447	<p>10/393 – Installation of a curved steel framed canopy cover over the existing truck servicing facility within the Qantas car park.</p> <p>95/0073 - Construction of a ground-level car park, containing 364 spaces.</p> <p>96/0198 - Fire safety upgrade works within the existing office and warehouse buildings.</p> <p>15/64 – Extensions of Mill store – special store, amenities – vehicle service bays and new office block (steel merchants).</p> <p>75/57 - Erection of a factory office, grain store and amenity block.</p>
	364 & 350 King Street	
F2012 Qantas Sydney Distribution Centre	1/445957	<p>14/187 – Demolition of existing awning.</p> <p>11/077 – Alterations and additions to improve the amenity and safety on a section of existing internal roadway located to the south east of the Qantas Distribution Centre.</p>
	62 Kent Road	
F2013 At grade staff car park	1/164829	<p>16/104* - Expansion of the existing trigeneration plant including additional plant and equipment at the existing generator building, construction of services trenches containing new pipes to extend the network, removal of existing trees and replacement landscaping.</p>
	67 Kent Road	

2. THE SITE AND SURROUNDING CONTEXT

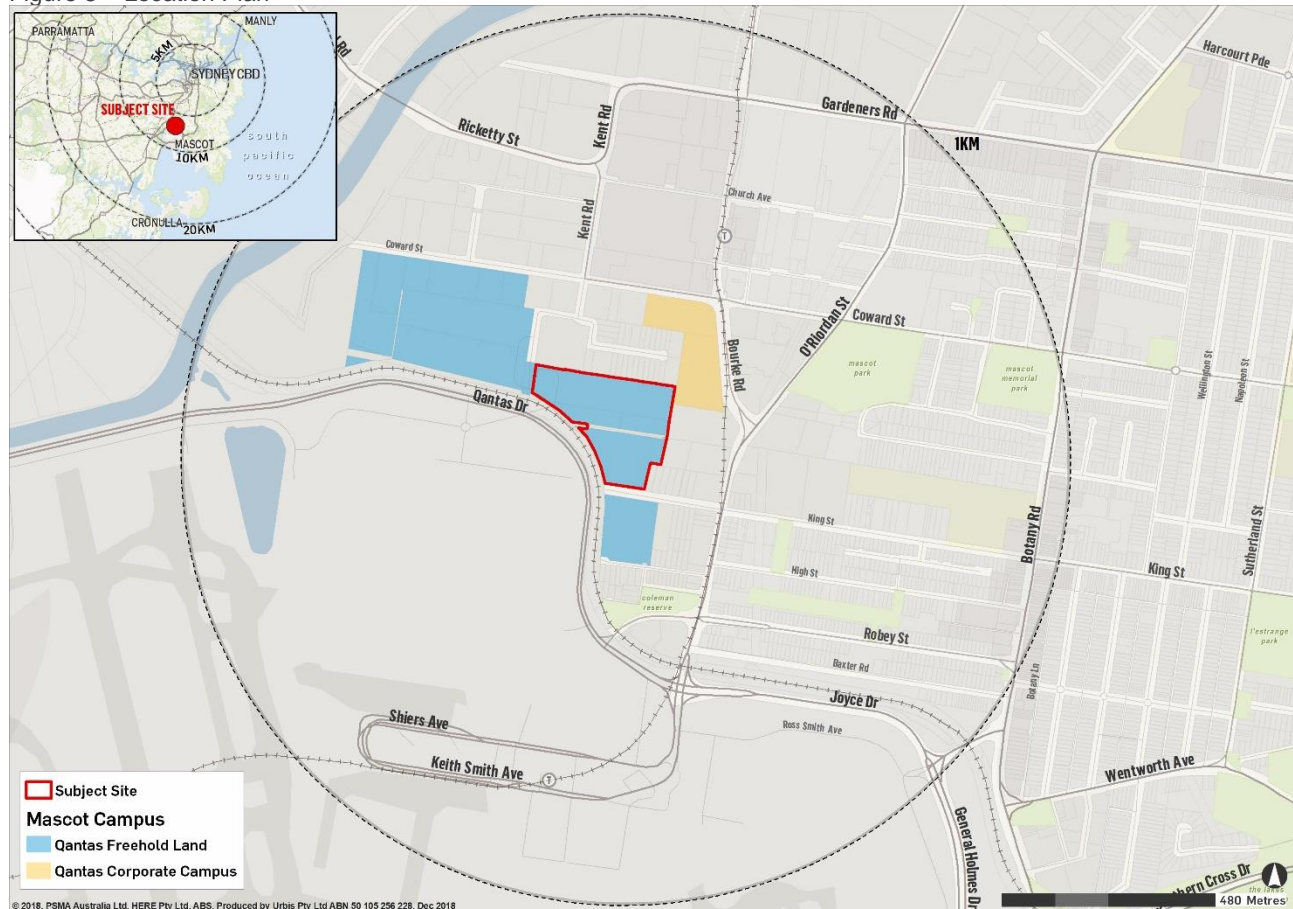
2.1. SITE DESCRIPTION

The subject site is located at 297 King Street, Mascot and is legally described as Lots 2 & 4 of DP 234489, Lot 1 of DP 202747, Lot B of DP 164829 and Lot 133 of DP 659434. A location plan is provided at **Figure 3**.

The numerous lots comprising the site are the result of Qantas' gradual acquisition of sites. It is Qantas' intention to retain the current lot arrangement and not amalgamate the site.

The site is located within the Bayside Council Local Government Area (**LGA**). The Site is bounded to the north by low scale industrial development, to the east by commercial office and hotel developments, to the south by King Street, and to the west by the Botany Freight Rail Line and Qantas Drive beyond which lies the Airport and covers an area of approximately 5.417 hectares.

Figure 3 – Location Plan



Source: Urbis

2.2. EXISTING DEVELOPMENT

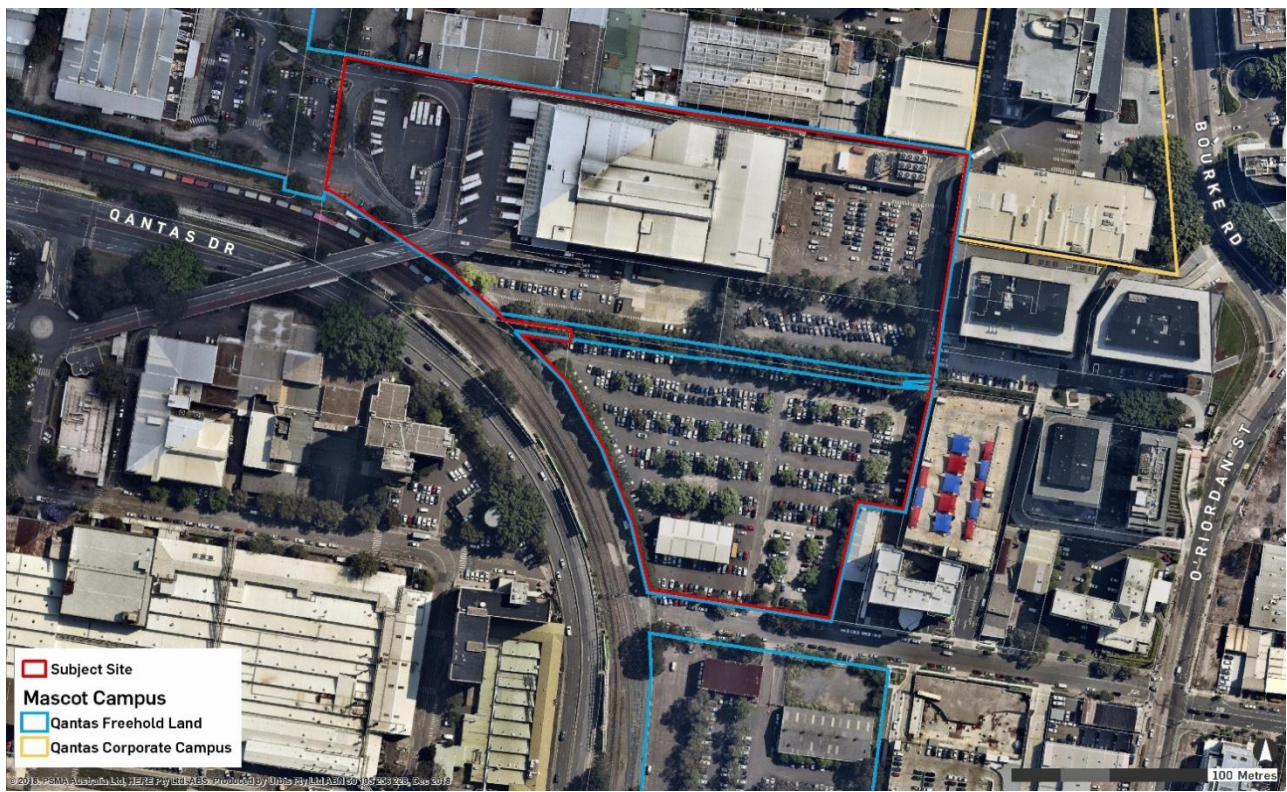
2.2.1. Subject Site

The subject site is characterised by its existing site improvements, including at-grade parking, an industrial shed used to store spare aviation parts, a substation, a disused gatehouse, a Sydney Water Asset (open drain) with driveways over it, the Qantas catering facility and Qantas' tri-generation plant (see **Figure 4**).

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 three connecting driveways in the north-east corner, centre and north-west corner of the site along the northern boundary which link it to the broader Mascot Campus.

The site is largely level and has a variety of native and exotic trees and vegetation around the perimeter of the site which help screen the site from surrounding uses. The site is currently planted with multiple mature Plane Trees scattered throughout the car park. Photographs of the existing site improvements are provided at **Figure 5**.

Figure 4 – The Site



Source: Urbis

Figure 5 – Photographs of Existing Site Improvements



Picture 1 – Image taken in the north-west corner of the Site facing the Catering Building



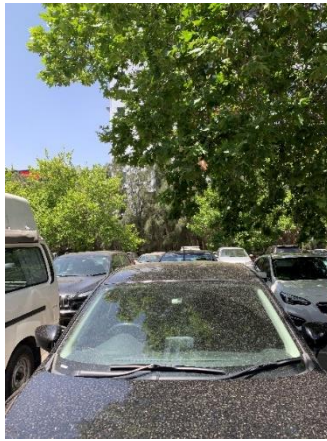
Picture 2 – Image taken along northern boundary of the Site with the Sydney Water Asset



Picture 3 – Image taken in north-east corner of the Site showing two-way driveway connecting to other parts of Mascot Campus



Picture 4 – Image taken in centre of the Site facing south to King Street driveway with Storage shed to the right



Picture 5 – Image taken in centre of the Site facing east



Picture 6 – Image taken in southern half of the site facing west showing Storage shed



Picture 7 – Image taken along southern boundary of the site facing east (Storage shed to left and disused ticket office shown in distance beyond driveway)



Picture 8 – Image taken along southern boundary of the site facing west (Storage shed to right and Qantas Jetbase shown in distance beyond the freight rail and Qantas Drive)



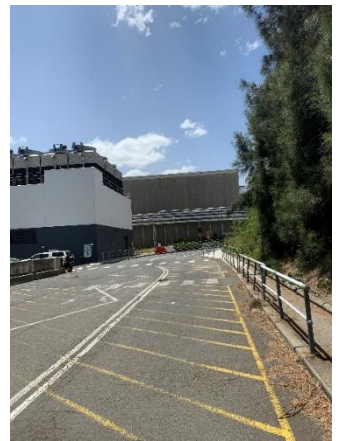
Picture 9 – Image taken facing north from King Street showing secure driveway and Storage shed to the right



Picture 10 – Image taken on eastern boundary facing in to lot to the north of Sydney Water Asset showing existing at-grade car parking



Picture 11 – Image taken on eastern boundary facing in to Catering Facility lot to the showing existing at-grade car parking, Catering Facility and tri-generation plant



Picture 12 – Image taken on eastern boundary facing north to connection in to the Corporate Campus with tri-generation plant to the left

2.2.2. Mascot Campus

Qantas has significant property interests in Mascot and within Sydney Kingsford Smith Airport (**the Airport**) to support their operations. These property interests are illustrated in **Figure 5**. This includes:

- Freehold ownership of over 16.5 hectares of land to north of the Airport in Mascot (that represents the majority of what is referred to as their 'Mascot Campus');
- Leases on significant portions of the Sydney Airport Corporation Limited (**SACL**) controlled Airport (including the existing flight training centre); and
- Long-term leases on 2.7 hectares relating to the location of their corporate headquarters at 10 Bourke Road (that represents the remainder of what is referred to as their 'Mascot Campus').

All of Qantas' Mascot (non-airside) land is collectively referred to as the Mascot Campus. The existing Mascot Campus is characterised by a mix of commercial office space, aviation related buildings and at-grade car parking, that support Qantas' operations.

The main vehicular and pedestrian access points to the campus are via Qantas Drive, Bourke Road, King Street, Coward Street and Kent Road, with car parking located throughout the campus. An aerial photograph of the site is provided at **Figure 6**. A direct road connection between their Mascot Campus and the Airport exists via a road bridge that spans Qantas Drive and the Botany Freight Rail Line. The bridge departs from Qantas owned State land and lands on SACL leased Federal land. The Project does not seek to modify the road bridge in any way.

Figure 6 – Aerial Photograph



Source: Urbis

2.3. SITE CONTEXT & SURROUNDING DEVELOPMENT

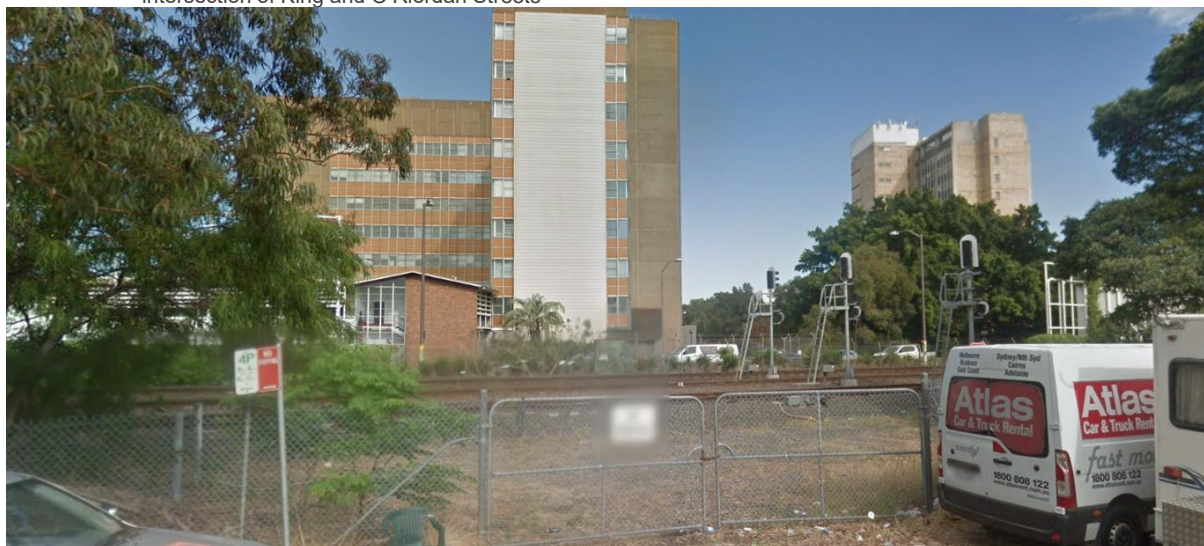
The site is bounded to the west by the Botany Freight Rail Line and Qantas Drive, with the immediate locality characterised by commercial and industrial uses including multiple hotels and the Qantas Mascot Campus (refer to **Figure 7**). The context of the site is characterised by:

- **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 around the Mascot Train Station.
- **East:** The site is bordered to the east by commercial development including the newly completed Travelodge which includes a commercial car park and the AMP/Goodman Connect Corporate Campus. Further east is more commercial development including the Ibis Hotel and Pullman Sydney Airport and O'Riordan Street. To the north-east of the site is the Qantas Corporate Campus.
- **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 within the Sydney Kingsford Smith 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).

Figure 7 – Surrounding Development



Picture 13 – View facing north-east along King Street showing Travelodge with commercial car parking and Ibis Hotel further east at intersection of King and O'Riordan Streets



Picture 14 – View facing west from end of King Street showing Botany Freight Rail Line and Qantas Drive, beyond which lies Sydney Kingsford Smith Airport and the Qantas Jetbase



Picture 15 – View facing south from King Street showing Qantas land used for secure at-grade car parking. Note buildings shown are Qantas owned and disused

Source: Google Street View

2.4. TOPOGRAPHY

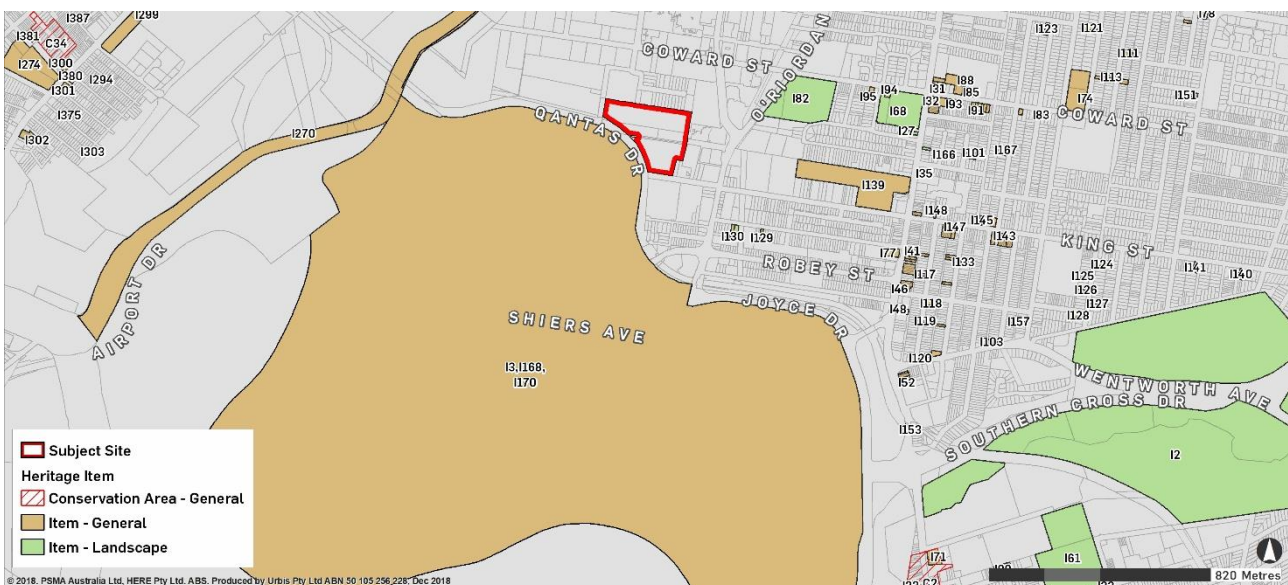
The site is approximately 5.417ha in size and is a largely level site with an RL 3m AHD at the northern periphery to RL 6m AHD to the southern periphery. The site has a minor slope from west to east, with an RL 3.5m AHD at the western periphery to 5m AHD at the eastern periphery.

2.5. BUILT HERITAGE

The site does not include any items of identified built heritage significance, however it is proximate to three general heritage items located within the boundary of Sydney Airport, see **Figure 8**. The items are the Sydney (Kingsford Smith) Airport Group, Ruins of the former Botany Pumping Station and the Commonwealth Water Pumping Station and Sewage Pumping Station.

A Heritage Impact Statement was prepared by Urbis and is attached at **Appendix I**. Heritage is addressed in detail at **Section 7.14** of this report.

Figure 8 – Extract from BBLEP 2013 Heritage Map



Source: Urbis

2.6. LANDSCAPING

The current site mostly consists of impervious areas including an at grade car park, internal paved roads, bitumen driveways, footpaths and buildings. A variety of native and exotic trees and vegetation are planted

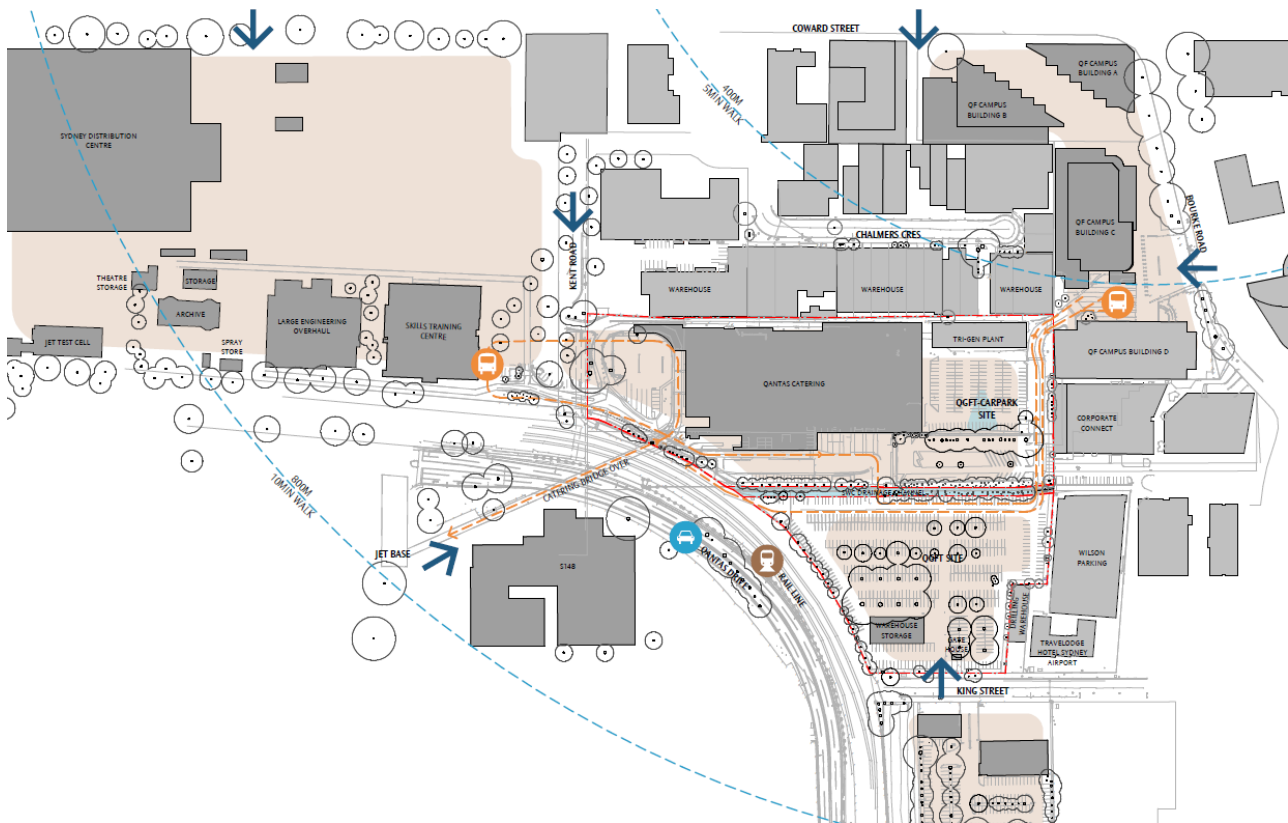
around the perimeter of the site which help screen the site from surrounding uses. Multiple mature Plane Trees are also scattered throughout the car park.

2.7. ACCESS AND PARKING

2.7.1. Corporate Campus

Vehicular access to the Corporate Campus is from primarily King Street, Kent Road, Bourke Road and Qantas Drive, as shown in **Figure 9**. No changes are proposed to the existing Kent Road and Qantas Drive Accesses. Two new accesses are proposed to King Street (at the eastern and western ends of the site). The two accesses will be designed to comply with the requirements of AS2890.

Figure 9 – Access to the Mascot Campus and Intra-Campus Connectivity



Source: Noxon Giffen

2.7.2. The Site

The site currently provides at-grade car parking for 791 vehicles. This parking area will be demolished to allow for the construction of the Project and will be replaced by Stage 1 of the car park. The existing and proposed car park is allocated parking for Qantas employees only. The existing car park is secured via a boom gate and access control. The car park is posted with a 20 k/hr speed limit and includes on road directional signage and pedestrian crossing markings. Vehicular ingress and egress to the car park from the local road network is via King Street. There are also intra-campus connections from the car park to the broader Mascot Campus. These are in the form of three connecting driveways along the northern boundary in the north-east corner, centre and north-west corner of the site.

Pedestrians can access the site from King Street, via the vehicle entry and exit point. A pedestrian path is located at the eastern boundary of the site, providing access to Qantas' Corporate Campus. Pedestrians can also move through the carpark to access the Qantas Catering building located to the north.

A Parking and Traffic Assessment was prepared by Colston Budd Rogers & Kafes Pty Ltd and is attached at **Appendix N**. Traffic related matters are discussed further at **Section 7.1** of this report.

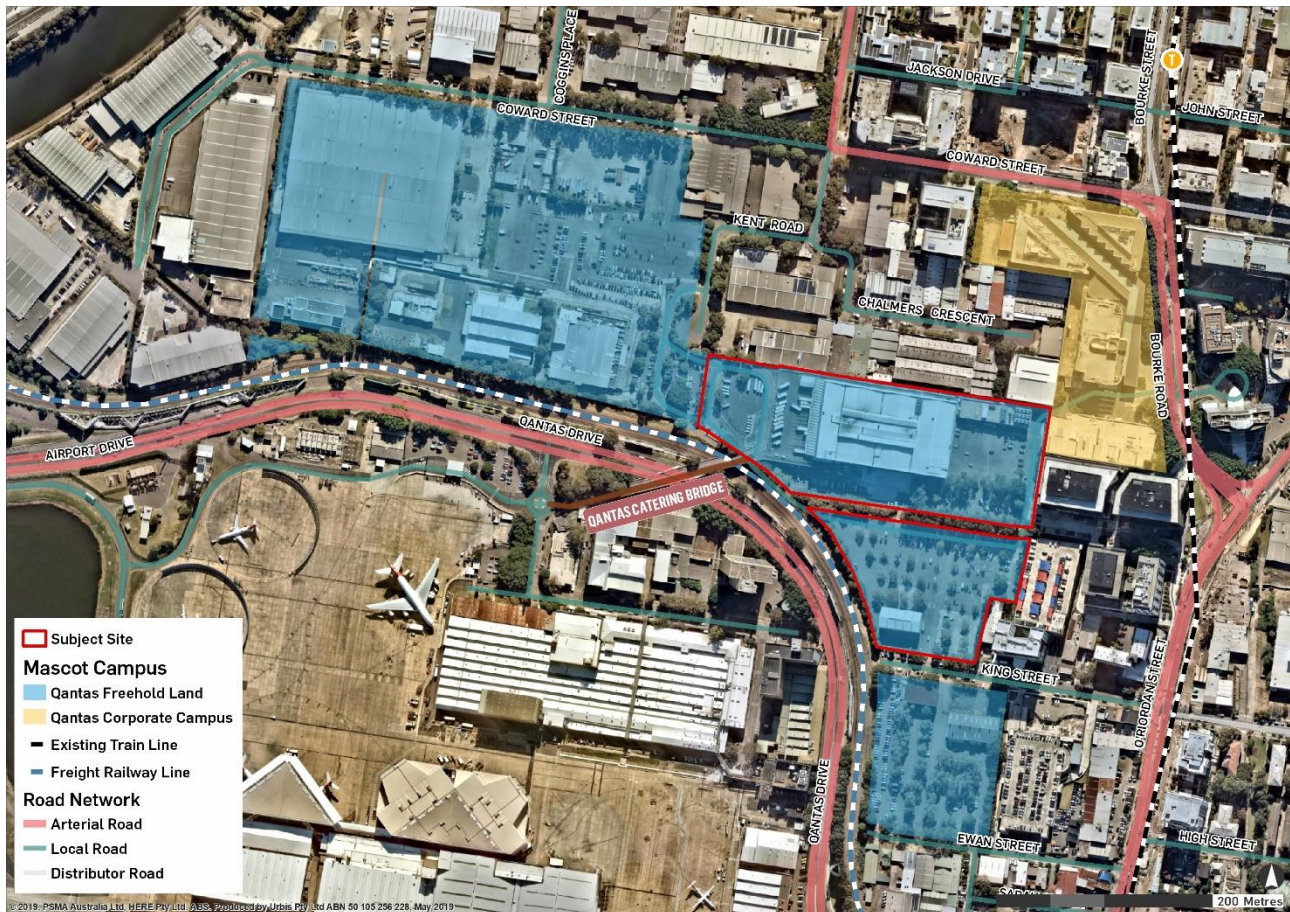
2.8. ROAD NETWORK

The roads proximate to the site include Qantas Drive, Joyce Drive, Robey Street, O'Riordan Street, Bourke Road, Coward Street, Kent Road and King Street, as shown in **Figure 10**.

- **Qantas Drive and Joyce Drive** are located on the northern boundary of Sydney Airport and are major access roads to Sydney Airport, connecting to the M5 Motorway in the west (via Marsh Street) and Southern Cross Drive/General Holmes Drive in the east. Adjacent to the airport, both roads are constructed as dual carriageways, with two to four lanes in each direction. Major intersections along the road are traffic signal controlled.
- **Robey Street** (between Qantas Drive and O’Riordan Street) has recently been modified to be one way eastbound. East of O’Riordan Street, it provides for two way traffic. The intersections of Robey Street with Qantas Drive and O’Riordan Street are traffic signal controlled. Access to the Qantas Corporate campus is provided to Qantas Drive via the overpass adjacent to the existing Flight Training Centre.
- **O’Riordan Street** runs in a north south direction through Mascot and forms part of a route connecting Sydney Airport with the CBD. Currently it is generally a four lane undivided road, with works underway for an upgrade to a six lane dual carriageway. Between Robey Street and Joyce Drive, O’Riordan Street is one way south bound. North of Robey Street it provides for two way traffic. The intersections of O’Riordan Street with King Street, Bourke Road and Coward Street are traffic signal controlled.
- **Bourke Road** runs in a north south direction through Mascot to the west, and generally parallel to, O’Riordan Street. It varies between a four lane divided road (south of Coward Street) and a four lane undivided carriageway (north of Coward Street). Access to developments either side of Bourke Road (including a Qantas car park on the western side) is provided by a traffic signal controlled intersection, between Coward Street and O’Riordan Street.
- **Coward Street** runs in an east direction to the north of the Qantas Corporate Campus. It connects Mascot with Botany to the east. Through Mascot it varies from two traffic lanes in each direction to one traffic lane in each direction plus kerb side parking. The intersections of Coward Street with Bourke Road and Kent Road are traffic signal controlled. In addition a traffic signal controlled access to a Qantas car park is provided in the section between Bourke Road and Kent Road.
- **Kent Road** runs in a north south direction and connects Coward Street with Rickety Street/Gardeners Road to the north. North of Coward Street, Kent Road provides four traffic lanes with kerb side parking outside of peak periods. South of Coward Street it provides access to development sites including the Qantas Corporate campus.
- **King Street** runs in an east direction and connects O’Riordan Street with Botany to the east. West of O’Riordan Street it is a no through road with one traffic lane in each direction with kerb side parking. Access to the Qantas Corporate campus is provided to King Street (via the King Street North car park).

A Parking and Traffic Assessment was prepared by Colston Budd Rogers & Kafes Pty Ltd and is attached at **Appendix N**. Traffic related matters are discussed further at **Section 7.1** of this report.

Figure 10 – Road Network and Access to the Campus



Source: Urbis

2.9. PUBLIC TRANSPORT

The site benefits from bus and train public transport services located in close proximity to the site as demonstrated in **Figure 11**:

- Bus stop located on O’Riordan Street approximately 350m from the site. This bus stop services the 305 bus route which connects to Redfern Station.
- Mascot Train Station is located 700m from the site is serviced by the T8 Airport & South Line, providing access to surrounding suburbs, Sydney CBD and Sydney’s southern suburbs to Macarthur.

Figure 11 – Public Transport Proximate to Qantas Campus



Source: Urbis

3. PROJECT DESCRIPTION

3.1. OVERVIEW

As a result of Roads and Maritime Services' (RMS) Sydney Gateway Project (**Gateway**), Qantas Airways Limited (**Qantas**) need to relocate their existing flight training centre from its current location within Sydney Kingsford Smith Airport (**the Airport**) to a new location within their landholdings in Mascot. This requirement has arisen due to Gateway's proposal to acquire part of the existing flight training centre and demolish it in order to widen Qantas Drive. An operational flight training centre is critical to Qantas' business and operational continuity.

Absent for Gateway, Qantas would not be moving from their existing flight training centre due to the latent economic value, ongoing functionality and strategic location of the existing centre.

'The Project' seeks consent for the construction and operation of a new flight training centre to service the Qantas' fleet. It will include space to house full motion flight simulators for pilot training, and emergency training for pilots and cabin crew. The existing Qantas flight training centre at Mascot is the largest flight training centre in the Southern Hemisphere. The Project represents a modern purpose-built replacement of their existing facility.

The location of the flight training centre in Sydney enables Qantas' long-term employment generation to remain predominantly in Sydney and represents a logical co-location with Qantas' Head Office in its corporate campus. More specifically the Project will create a new strategic centre for the airline's operations, within a new Qantas Corporate Precinct which brings together the existing Qantas Campus, new flight training centre and consolidated staff car parking.

Safety is Qantas' first priority; the flight training centre is a key pillar of this value. The facility enables pilots and flight crews to undertake periodic testing to meet regulatory requirements by simulating both aircraft and emergency procedural environments.

The Project includes the removal of 791 existing at-grade car parks which will be replaced as part of the proposed 2,059 space multi-deck carpark, the construction of which is to be staged according to broader campus demand.

The development is consistent with the surrounding commercial/industrial context and the broader strategic land use objectives of retaining the land surrounding the airport for industrial and airport-related uses.

The CIV for the proposal is calculated at calculated at \$145,440,000 excluding GST. The CIV includes all design and construction costs together with relevant civil and infrastructure works, site services, all anticipated labour costs, consultant fees and authority fees. The proposal will generate a total of 380 FTE construction jobs, and will relocate 149 existing FTE jobs.

3.2. PROPOSED WORKS

3.2.1. Demolition of Existing Site Improvements and Remediation of Site

Specifically, this application seeks development consent for the following works at the site:

- Demolition of existing at-grade car parking, industrial shed and disused gatehouse to facilitate the construction of the new flight training centre and associated works;
- Demolition of an at-grade car park to the north of the Sydney Water Asset to facilitate the staged construction of a 13 storey multi-deck split-level car park;
- Removal of 85 trees across the site and retention of trees along King Street, various trees and tree groups at the eastern boundary of the site, all trees along the western boundary of the site and tree groups on either side of the Sydney Water Drainage Channel;

The majority of works are contained within the boundary of the site. Some works, including landscaping and civil works, are shown outside the site boundary and as such consent from Bayside Council will be required before these can be delivered. Works proposed to a public road will require approval under s138 of the *Roads Act 1993*. Approval will be sought from Bayside Council for these works at a later stage and has not been provided as part of this application.

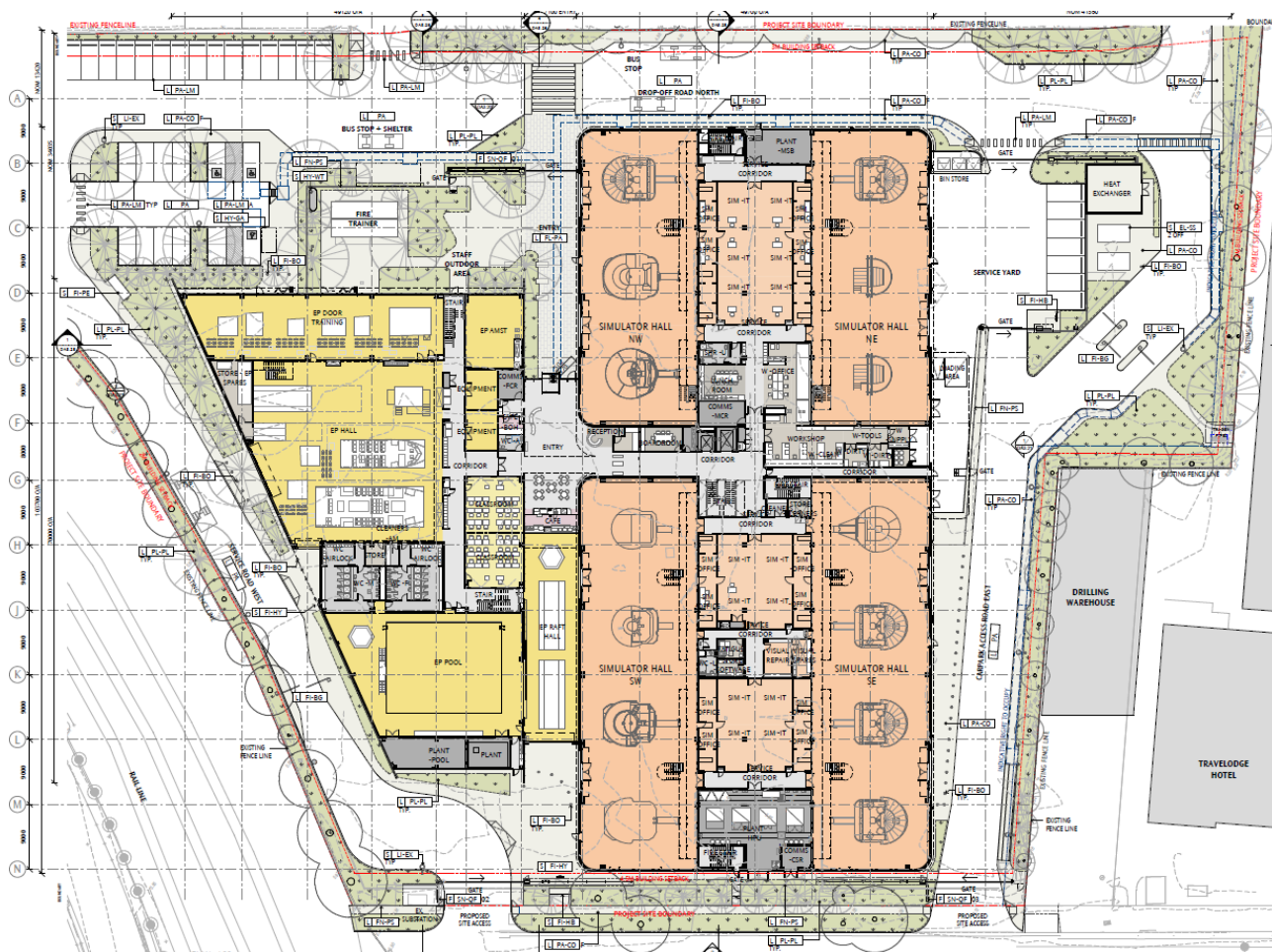
Figure 12 – Demolition Plan



The current warehouse storage building and gate house accommodate a combined total of 730sqm of floor space. The new flight training centre will have a total GFA of 15,051sqm. This results in a net increase in GFA of 14,321sqm.

The flight training centre is defined by one building with two distinct forms that are internally connected. The two distinct forms are reflective of the different functional requirements of the proposed uses, one being for the emergency procedures training and related classrooms, and the other for the simulators and associated briefing rooms with the fourth floor dedicated to office space. A more detailed summary is provided below.

Figure 13 – Site Plan and Ground Floor of the Flight Training Centre



Source: Noxon Giffen

Emergency Procedures Hall

On Level 00 an emergency procedures hall (EPH) is proposed at the western extent of the flight training centre. The EPH is primarily accessed via the main external gate and foyer at the ground floor level. The EPH will contain:

- **2 cabin evacuation emergency trainers** – Full-scale cabin mock-ups are used as practical training devices. Within these, emergency situations are accurately portrayed. These allow pilots and cabin crew to handle emergency situations in both wide and narrow-bodied aircraft.
- **1 x (12.5 x 16) evacuation training pool** – Indoor pool facilitates realistic training for ditching emergencies. Water evacuations incorporating various types of slide rafts and survival equipment are rehearsed, this will include 2 wet rafts.
- **Door trainers** – Enables realistic training of use of emergency exits to evacuate aircraft for pilots and cabin crew.
- **Rafts (2 x static and 2 x wet)** – Full-scale rafts are used as practical training devices.
- **Fire trainers** – Enables practical tuition on firefighting within the confined nature of an aircraft.
- **Slide descent tower** – Enables realistic training of deployment and use of slides to evacuate aircraft for pilots and cabin crew.
- **Aviation medicine training** – Enables practical training on emergency medicine and aviation specific procedures.
- **9 x equipment rooms** – Training rooms with emergency equipment (oxygen tanks, defibrillators etc.) that supports the training and assessment of cabin crew and pilots on aviation medicine.
- **Café** – On-site café for pilots, cabin crew and Qantas staff.

Flight Training Hall

On Level 00, 01 and 02 a simulator hall (**SH**) is proposed, located at the eastern extent of the flight training centre. The EPH is primarily accessed via the main external gate and foyer at the ground floor level. At the eastern façade, entry and exit points are provided, however will be primarily used for servicing the simulators.

- **14 x simulator bays**– *State of the art full motion flight simulators with visual fidelity, motion and sound. This allows crew to be trained in all aspects of normal and non-normal operations; including instrument approaches and landings in all weather conditions. The current flight training centre is the largest in the Southern Hemisphere and at opening will include 14 full motion flight simulators based on specific aircraft type within the Qantas fleet.*
- **14 x SIM IT rooms and 12 SIM office rooms** - *Storage of the computers & power cabinets that drive and relate to each of the simulators.*
- **11 x integrated procedures trainers** – *Enable pilot training on lower level devices, these are smaller simulators for learning flight management systems.*
- **28 x briefing and de-briefing rooms** – *Pre-flight and post-flight rooms required for pilot simulator training.*
- **Spares storage** - *On-site storage of spare parts for simulators.*
- **Maintenance workshop and visual repair** – *Workshop for the on-site maintenance and repair of simulator components.*
- **Fatigue room** – *Room available for overnight stay of technicians.*
- **Pilots and Crew Lounges** – *Area for pilots and crew to wait prior to simulator sessions or general teaching sessions.*
- **QF Frequent Flyer Lounge** – *Area intended to be used for Qantas frequent flyers to 'buy' time on simulators (if available) with their frequent flyer points.*

General Teaching

Classrooms for general teaching will be located on Level 01 and 02 for the purposes of computer based training and general teaching courses. Classrooms will be located either adjacent the simulator bays on Level 02 in the FTH or located on Level 01 above the EPH. These general teaching spaces can be accessed either via stairs from the EPH or via a walkway from the lobby of the FTH on Level 01. The general teaching spaces include:

- **20 x classrooms** – *Cabin crew, pilot & third-party classrooms for courses on emergency procedures and other relevant issues.*
- **4 x CBT rooms and 1 CBT exam room** – *Computer based training rooms and exam room for online training courses and testing.*
- **1 x auditorium** – *For larger group discussions.*

Ancillary Uses

To support the operation of the EPH and the FTH, ancillary uses are proposed across Level 00, 01 and 02 and include:

- **Meeting rooms** – *To support teaching services.*
- **Lunch/tea room** – *To support both teaching and training services.*
- **Reception** – *To control access and oversee centre.*
- **Toilets, plant, loading dock, vertical circulation** – *to support centre generally.*
- **Internal roads** – *New internal roads will be required to be constructed to service the flight training centre and car park.*

Office space

On Level 03 an open plan office is proposed for the use of Qantas Flight training staff. The primary access will be via lifts from the ground floor level. In addition to the open plan office, this space will also provide meeting rooms, informal meeting spaces, a video conferencing room, storage and utility storerooms and a staff kitchen.

Service Yard

At the western extent of the site, a service yard is proposed for simulator maintenance and loading bay purposes. The service yard will be secured with fencing and gates to the north and south. Seven (7) car parking spaces are also provided within the yard, which will be primarily used for service vehicles or a loading bay for trucks if required.

General Site Works

- Installation of a new landscaping including new trees and planting areas throughout the site, including additional trees to the southern side of the Sydney Water Drainage Channel to increase the site canopy;
- Two new access driveways to the proposed site from King Street;
- Construction of a new secure line fence around southern perimeter of the site to meet Qantas' security requirements;
- No changes are proposed to the existing substation along King Street frontage in the south west corner of the site.
- Revision of internal driveways, including site improvements to the existing driveway at the eastern boundary of the site, to accommodate more efficient routings for both vehicles and pedestrians; and
- New electricity substation kiosks and heat exchanger at the service yard at the north-eastern extent of the site connecting into the Tri-gen system.

3.2.3. Staged Construction of Car Park

It is proposed that a multi-deck car park is constructed in stages in the north east corner of the site adjacent to the existing catering facility and trigeneration plant. The proposed car park is intended to be constructed as follows:

- Stage 1: 748 car parks in the multi-deck car park and 39 car parks at grade (787 total); and
- Stage 2: 1,272 car parks in the multi-deck car park.

This totals 2059 car parks in the multi-deck car park and 39 car parks at grade on site, or 2098 across the Project.

The car park represents a replacement and consolidation of existing car parks across the Qantas Campus operations. The total spaces that will be lost across the Campus equates to some 2090, with 2098 spaces proposed to replace them in the new car park structure, resulting in a net minor increase of 8 spaces as discussed at **Section 7.1.1**.

3.2.4. Massing and Built Form

Flight Training Centre

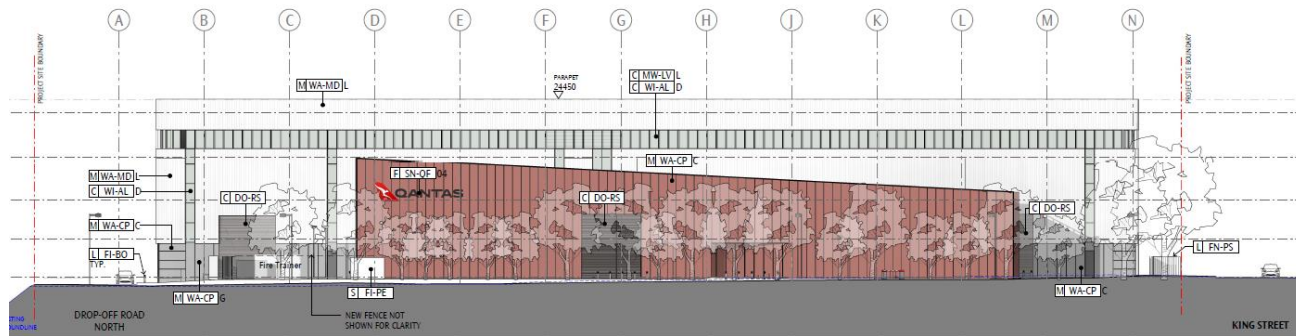
The flight Training centre is defined by one building with two distinct forms that are internally connected. The two distinct forms are reflective of the different functional requirements of the proposed uses. The distinctly separate building forms are articulated and with glazing, setbacks and rebates. This is demonstrated in **Figure 15, Figure 16 and Figure 17**.

The building form and design addresses the urban design constraints of the site and the functional requirements of the facilities. The critical operational and regulatory requirements regarding safety training and emergency procedures have driven the building design 'from within', whilst a clear understanding of the industrial context and site parameters has influenced an appropriate contextual design response.

The maximum height of the new flight training centre will be RL 22.950 AHD or 17.5m from the existing ground level to the ceiling of level four and RL24.450 AHD of 19m to the top of the parapet.

This height sits comfortably within its context and well below the maximum building height of 44m and the surrounding development heights near to the maximum building height. The building's low scale will not adversely impact views available from the Travelodge to the Airport.

Figure 14 – Western Elevation of Flight Training Centre Showing Massing and Built Form



Source: Noxon Giffen

Figure 15 – Render of western façade of the Flight Training Centre as viewed from Gateway



Source: Noxon Giffen

Figure 16 – Render of southern façade of the Flight Training Centre as viewed from King Street



Source: Noxon Giffen

Figure 17 – Render of northern façade of the Flight Training Centre as viewed from north-west corner of the site



Source: Noxon Giffen

Car Park

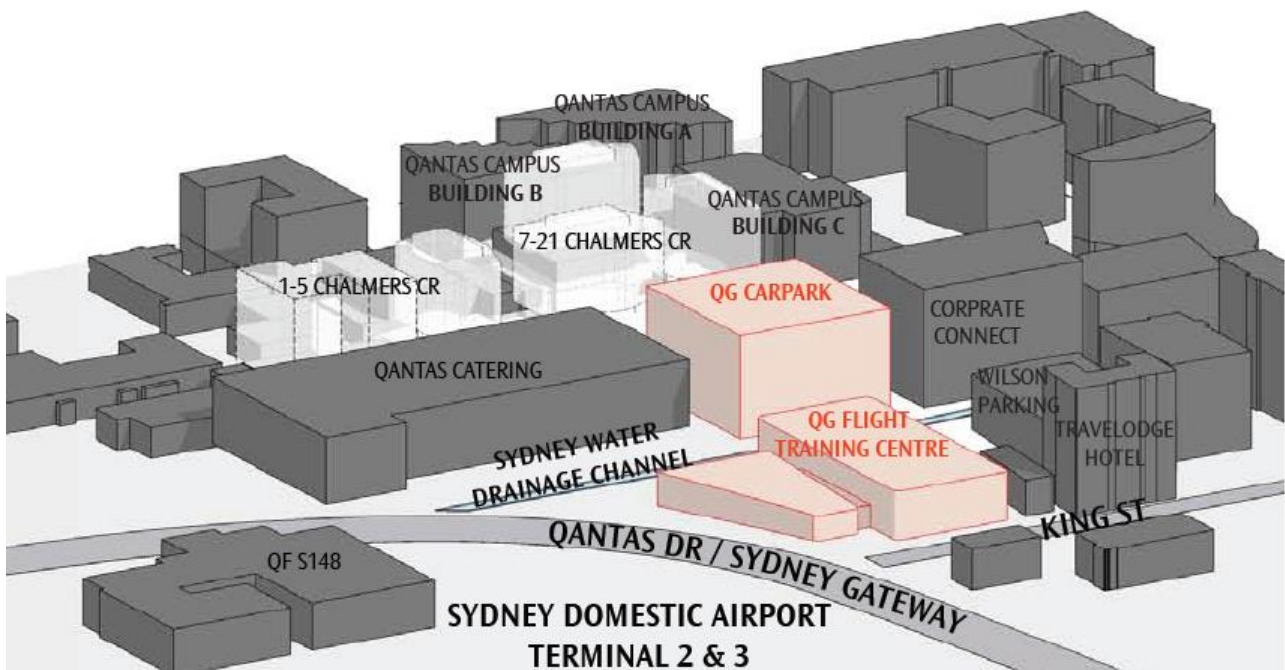
The carpark's massing has been concentrated towards the northern half of the site, setback from King Street and views from Qantas Drive in order to reduce the perceived bulk and scale of the structure. The carpark comparable in scale to other existing and approved development immediately north. This location will also

facilitate the efficient movement of staff from the car park to their place of work throughout the Corporate Campus either by foot or via existing shuttle bus service.

Figure 18 and **Figure 19** illustrates the massing and built form of the Project in its surrounding context. The massing of future developments (either lodged or with Concept Plan Approval) along Chalmers Crescent is shown in a semi-transparent form to illustrate the future character of the area. When seen in context the bulk and scale of the Project is seen as entirely appropriate to its context and represents a logical massing that responds to surrounding development.

The maximum height of the new car park will be RL 47.530 AHD or 43.8m from the existing ground level to the top of the lift overrun.

Figure 18 – Proposed Massing of the Project in its Surrounding Context



Source: Noxon Giffen

Figure 19 - Render of Car Park as viewed from Bridge over Sydney Water Channel



Source: Noxon Giffen

3.2.5. Materials and Finishes

As discussed earlier the flight training centre is made up of two distinct forms, each of which is meant to be a material expression of Qantas' identity as the national carrier:

- The Emergency Procedures Hall being 'earth' inspired to reflect the red earth of the Australian soil; and
- The Flight Simulator Wing being 'air' inspired referencing aviation and the sky.

This is discussed in detail at **Section 7.2.**

3.2.6. Site Operations

Qantas have prepared an Operational Plan of Management (refer **Appendix L**) to ensure that the operation of the proposed new facilities are operated and managed effectively. The Operational Plan of Management includes details of the proposed operations, including staff numbers, hours of operation and security management procedures.

3.2.6.1. Staff Numbers

The Qantas Group makes a significant contribution to employment in NSW accounting for 12,983 direct full-time equivalent (FTE) jobs and an additional 10,011 indirect FTE jobs.

The proposed Flight Training Centre is a like for like translation of the existing facility which includes the transfer of existing employees (149), however it is noted that the facility will include provision for expansion in simulator bays 13 and 14 to accommodate growth in the Qantas Group fleet. This anticipated growth will see a direct growth of six full time employees necessary to operate and maintain the new simulators.

The flight training centre currently supports and trains over 2,500 pilots to ensure they maintain compliance every year. The anticipated growth in the SIM's operation will indirectly lead to the creation of notionally 100-300 FTE roles across the Qantas Group and other airlines, relating to pilots, crew, ground services, and other ancillary transport and tourism sectors. This indirect job creation is a product of the QFTC increased capacity to train and certify additional pilots and crew, creating opportunity for Qantas Group airlines and other airlines introduce new fleets and increase their operations in NSW, Australia and internationally.

3.2.6.2. Hours of Operation

The existing flight training centre operates 24 hours a day 7 days per week. No change is proposed to these operating hours which are required to meet the demand for the simulators. However, the majority of staff using the existing carpark work standard hours as shown in the traffic modelling. This pattern is expected to remain for the new carpark.

3.2.7. Signage

As part of the Project, the following signage is proposed:

- 3 building identification signs (see **Figure 20**):
 - 1 on the western elevation of the flight training centre; and
 - 1 on both the eastern and southern facades of the carpark
- Wayfinding signage including:
 - 1 Building identification sign at the pedestrian entrance to the flight training centre; and
 - 2 external wayfinding signs at each of the new crossovers to King Street to identify the flight training centre and direct vehicle movements.

All of the signage has been designed to identify the flight training centre and Corporate Campus more broadly in a format consistent with the overall design of the proposed development. All of the signage is integrated to the architecture of the proposal and will not result in any adverse impacts. The proposed signage is consistent with Qantas' brand story and is directly related to the airport character of the wider locality. Signage details are provided on the architectural drawings at **Appendix C** and an assessment of the signage against SEPP 64 is appended at **Appendix H**.

Figure 20 – Detail of Proposed Building Identification Signage



Source: Noxon Giffen

3.2.8. Site Landscaping

The existing site is a large at-grade car park with unmaintained landscaping at the perimeter of the site and throughout. The Project will replace the at-grade car park with a new flight training centre with new integrated landscaping and more efficient access pathways for pedestrians and vehicles. This will deliver a higher level of perceived safety, functionality and amenity for users of the site.

The Landscape Design Report and Landscape Plans for the Project prepared by Scott Carver are included at **Appendix E**. The key landscape features in each area are detailed below.

Figure 21 – Landscape Site Plan



Source: Scott Carver

Flight Training Centre Entry Forecourt

As part of the landscaping strategy, at the north of the flight training centre an entry forecourt is proposed to accommodate a number of different functions. This space will provide the main entry zone to the flight training centre with signage and a gate to remain open during the day. This space will be secured with a 2.4m high fence to allow after-hours access. The forecourt will be a largely open, paved area and act as a staff breakout space with fixed timber benches and shade structures fixed to the security fence. The breakout space will include perimeter planter areas, including the planting of native trees which will provide additional shade, visual amenity and soft screening from the internal street.

The forecourt will also include a fire trainer (within a container) and provide access to the cabin training facilities for the replacement of training equipment, when necessary through a roller door. The internal bus stops are also located at the entry forecourt. The southern side bus stop will include a green roof and will be supported against the security fence.

Car Park Landscape

Car park landscaping is incorporated as part of the design to improve its visual quality and add to the landscaped character of the site. Existing trees will be retained along the Sydney Water Channel, to the south of the car park. Existing trees will also remain to the west of the car park with additional landscaping proposed outside the building footprint. At the eastern and southern facades of the car park building, a planter is proposed to allow climbers to grow up the mesh façade, on the outside of the building, for the height of the ground floor level.

Additionally, at the rooftop level of the car park a raised planter and pergola structure will provide both trailing and climber plants to provide shade to parked cars and provide an improved visual amenity for surrounding buildings and where visible, from the public domain.

Eastern and Western Boundary Treatments

The eastern boundary will retain existing tree and shrub plantings, augmented with additional planting where weeds or gaps in the existing planter exist.

At the western boundary the existing trees will be retained and protected, including the existing under storey planting. Any additional planting will be undertaken where gaps are presented.

King Street Frontage

From a visual perspective, the King Street frontage is considered of importance as it offers the only major interface to the public domain. A security fence will be located at this frontage with landscaped planting to be incorporated along the fence line to provide visual softening. This will include small trees with clear trunks and lower level planting to ensure passive surveillance and clear sightlines are maintained.

Three existing trees will be removed at the King Street frontage to allow the new eastern driveway and vehicle access points. The public verge is proposed to be reinstated to include turf and a concrete path.

Flight Training Centre Surrounds and Surrounds

The landscaping strategy will incorporate planting and soft landscaping around the periphery of the building where considered necessary. Landscaping will be focused to residual areas and in areas where screening of service areas is needed. Paving is also proposed where building, maintenance or equipment replacement access is required.

Sydney Water Channel

No works are proposed to be undertaken within the Sydney Water land and the existing fence will be retained. The existing trees will also be retained at the northern and southern extent of the Sydney Water Channel. The areas adjacent the Sydney Water Channel are to be weeded and additional native planting and trees are proposed to increase the site canopy cover including within bays of the car park.

3.2.9. Vegetation Removal

The proposed development will require the removal of eight-five (85). Of these, 2 trees (identified as trees 4 & 5) are Council street trees identified as having average health and a high or medium life expectancy. The removal of these trees is required to allow for new vehicle and pedestrian access points on King Street. The others required to be removed are located in the existing car park areas or in narrow garden beds surrounding the car parking areas, identified as trees 6 to 51, 75 to 81 & trees 94 to 110. The trees are identified for removal as they are in the position of the new proposed building, entry paths, the car park building or new access roads.

Trees 6 to 51 are predominately *Platanus orientalis* or *Platanus x hybrida*, Plane Trees. The majority of the trees have poor health and or poor form with insect and pest infestation such as Sycamore Lace Bug, Powdery Mildew and Anthracnose.

Trees 75 to 81 and trees 94 to 110 are predominately *Casuarina cunninghamiana* (River She Oak), *Casuarina glauca* (Grey She Oak) and *Corymbia maculata* (Spotted Gums). The majority of the Spotted Gums have poor health and the River She Oaks are beginning to develop extensive root systems that are damaging hardscapes. One River She Oak tree is also dead.

This is discussed in more detail in the Arboricultural Impact Assessment at **Appendix P**.

The Landscape Design prepared by Scott Carver (refer to **Appendix E**) identified that 68 new trees will be planted as well as the provision of the two shelters, the bus stop and the staff amenity shelter to include low profile green roofs.

As discussed in the Public Domain and Landscape Report, prepared by Scott Carver (refer to **Appendix F**) the site currently has a canopy area of 9,062sqm (including the Sydney Water land). Immediately following the construction of the proposal, 3,228sqm of this will be removed. The retention of existing trees and the additional planting of canopy trees will result, at maturity, in a future canopy of 9,831sqm. This figure does not take into account further growth of the retained trees, and thus it can be expected this figure will increase.

3.2.10. Staging and Construction Management

The Project to be constructed in three stages, being:

1. Construction of flight training centre and internal road network;

2. Construction of Stage 1 of the multi-deck carpark (first 4 levels which equates to 736 spaces) and 40 at grade spaces; and
3. Construction of Stage 2 of the multi-deck carpark (levels 5 to 13 which equates to 2,059 spaces).

A Preliminary Construction Management Plan is attached at **Appendix DD** that fully details the expected construction process and management protocol.

It is intended that the construction of the flight training centre and Stage 1 of the car park will happen concurrently, however in order to minimise programme risk it is requested that the consent is structured to allow independent Construction and Occupation Certificates for each of the three stages identified above.

3.2.11. Extended Construction Hours

As per the Preliminary Construction Management Plan (attached at **Appendix DD**) the following extended construction hours are sought for the Project in order to facilitate the delivery of the Project within the timeframes set down by RMS in their delivery of the Sydney Gateway project:

Standard working hours are to be:

Permitted work hours are generally proposed to be between 6am to 8pm Monday to Sunday for external works and internal works permitted to be conducted 24 hours Monday to Sunday, but with specific restrictions as follows:

- *External works - 6am to 8pm Monday to Friday; 6am to 5pm Saturday and 7am to 5pm Sunday (NB: Sunday required for maintaining progress of critical works or recovering lost time to meet Construction completion milestone date)*
- *Upon completion of building envelope, Internal 'non-noisy' works – 24 hours Monday to Saturday and Sunday is required only for maintaining progress of critical works or recovering lost time to meet Construction completion milestone date . (NB: Deliveries would generally be restricted to 6am to 8pm Monday to Friday and 6am to 5pm Saturday)*

A number of operations such as service shutdowns and connections, and tower crane erection and removal from King Street will be conducted out of normal business hours and in accordance with the building methodology and program proposed by the appointed Contractor and following any necessary authority approvals.

The relocation of flight simulators will occur outside of approved hours as required by the Police or other authorities (including RMS) for safety reasons.

4. STATUTORY PLANNING CONTEXT

4.1. OVERVIEW

In accordance with the SEARs, the following statutory planning policies have been considered in the assessment of the proposal:

- *State Environmental Planning Policy (State & Regional Development) 2011;*
- *State Environmental Planning Policy (Infrastructure) 2007;*
- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Developments;*
- *State Environmental Planning Policy No. 55 – Remediation of Land;*
- *State Environmental Planning Policy No. 64 – Advertising and Signage; and*
- *Botany Bay Local Environmental Plan 2013.*

4.2. STATE ENVIRONMENTAL PLANNING POLICY (STATE AND REGIONAL DEVELOPMENT) 2011

State Environmental Planning Policy (State and Regional Development) 2011 (SEPP SRD) identifies development types that are of State significance, or infrastructure types that are of State or critical significance. The Project does not fit within an established planning pathway under Schedule 1 of SEPP SRD, and was declared State Significant Development (SSD) through a Ministerial Call In process and gazetted by the Minister on 28 February 2019.

Clause 13 of SEPP SRD extends the application of clauses 9-11 of SEPP SRD to applications that have been called in and declared SSD under Section 4.36(3) of the EP&A Act. Of importance is clause 11 which relates to the exclusion of application of development control plans to SSD:

Development control plans (whether made before or after the commencement of this Policy) do not apply to:

(a) State significant development, or

(b) development for which a relevant council is the consent authority under section 4.37 of the Act.

As such, the proposed application is exempt from the controls outlined in the Botany Bay Development Control Plan 2013.

4.3. STATE ENVIRONMENTAL PLANNING POLICY (INFRASTRUCTURE) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State by improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services and by identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development. The following Sections of the ISEPP are relevant to the Project.

Division 12A Pipelines and pipeline corridors

66C Determination of development applications

Clause 66C of the ISEPP applies to development within the licensed area of a pipeline for gas, petroleum or other liquid fuels, within 20 metres of the centreline (measured radially) of a relevant pipeline or within 20 metres of land the subject of an easement for a relevant pipeline.

A Consultants Advice Notice (CAN) prepared by RiskCon Engineering (refer to **Appendix XX**) with regards to high-pressure pipelines in the vicinity of the proposal confirmed that the proposal will not impact on the high-pressured dangerous goods or gas pipeline located within the Mascot area. As stated in the CAN all pipeline operators have “cleared” the construction of the proposal.

Division 15 Railways

86 Excavation in, above, below or adjacent to rail corridors

Clause 86 of the ISEPP applies to development that involves the penetration of ground to a depth of at least 2m below ground level (existing) on land within 25m (measured horizontally) of a rail corridor. The proposal will need to be forwarded to the rail authority responsible for the rail corridor for concurrence, as piling and localised excavation (for the pool) will occur within 25m of the rail corridor adjacent to the western boundary of the site.

Division 17 Roads and traffic

104 Traffic generating development

Developments listed in Schedule 3 of the ISEPP are to be referred to the RMS (formerly RTA). Schedule 3 lists categories and sizes or capacity of developments which have access to any road. Certain characteristics of developments trigger referral to RMS for comment, such as:

- Area used exclusively for parking or any other development having ancillary parking accommodation containing **200 or more motor vehicles**.
- Any other purpose generating **200 or more motor vehicles per hour**.

The nature of the proposed development triggers referral under the ISEPP, as the development contains parking accommodation for a total of 2,098 cars and will generate in excess of 200 motor vehicles per hour. An assessment of the proposal's traffic, access and parking implications has been prepared by CBRK and is further detailed in **Section 7.1**, and at **Appendix N**.

4.4. STATE ENVIRONMENTAL PLANNING POLICY NO. 33 – HAZARDOUS AND OFFENSIVE DEVELOPMENTS

State Environmental Planning Policy No. 33 – Hazardous and Offensive Developments (SEPP 33) provides a state-wide systematic approach to planning potentially hazardous and offensive development for the purpose of industry or storage. SEPP 33 provides for a merit-based approach to the assessment of uses considered to be potentially hazardous or offensive which links a proposal's permissibility to its safety and pollution control performance. This is to ensure that only proposals which are suitably located, and able to demonstrate that they can be built and operated with an adequate level of safety and pollution control, can proceed.

Clause 8 requires the consent authority to give consideration to current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development in determining whether a development is:

- (a) *a hazardous storage establishment, hazardous industry or other potentially hazardous industry, or*
- (b) *an offensive storage establishment, offensive industry or other potentially offensive industry,*

An assessment against the requirements of SEPP 33 and its associated guidelines has been prepared by RiskCon Engineering Pty Ltd (**RiskCon**) and is attached at **Appendix KK**. The methodology used for the SEPP 33 assessment included:

- Review the types and proposed quantities of Dangerous Goods (**DGs**) to be stored at the site.
- Compare the quantities of DGs the threshold quantities listed in "Applying SEPP 33 – Hazardous and Offensive Development" to identify whether the storage location or quantity triggers SEPP 33.
- Review the likely vehicular movements as a result of DGs being stored and compared against the applicable thresholds detailed in Applying SEPP33; and
- Report on the findings of the SEPP33 assessment.

The Project will hold on site a small quantity of DGs of varying classification, including a number of: aerosols (Class 2.1); non-flammable gases (Class 2.2); flammable liquids (Class 3); toxic substances (Class 6.1); corrosive substances (Class 8); and miscellaneous goods (Class 9). All of which are classified as DGs under the provisions of the *Australian Dangerous Goods Code*. **Table 4** provides an overview of the DGs proposed to be stored on site (further detail can be found in **Appendix KK**).

Table 5 provides an assessment of the proposed DGs to be held on site against the thresholds of SEPP33 and demonstrates that none of the threshold volumes will be exceeded and thus SEPP33 does not apply.

Table 4 – Overview of Dangerous Goods Proposed to be Stored on Site

Classification	Quantity
Class 2.1 (Aerosols)	20.5L (11 kg)
Class 2.2 (Non-flammable/non-toxic gas)	100 L*
Class 3 (Flammable Liquids)	94 L
Class 6.1 (Toxic Substances)	20 L
Class 8 (Corrosive Substances)	3 L
Class 9 (Miscellaneous DG)	403 L

* WC – water capacity of cylinders

Source: RiskCon Engineering

Table 5 – Summary of Dangerous Goods Assessment

Class	Description	PG	Quantity Stored (Max)	SEPP33 Threshold	SEPP33 Applies (Y/N)
2.1	Aerosols	-	20.5 L (0.0205 m ³)	16 m ³	N
2.2	Gas Cylinders	-	Not subject to SEPP33		
3	Flammable Liquids	II	94 L (0.076 tonne)	Distance based only over 8 tonnes	N
6.1	Toxic Substances	II	20 L (0.015 tonnes)	5 tonnes	N
8	Corrosives	II	3 L (4.2 kg or 0.042 tonnes)	25 tonnes	N
9	Miscellaneous	III	Not subject to SEPP33		

Source: RiskCon Engineering

Transportation of Dangerous Goods

In addition to the storage of Dangerous Goods, SEPP33 also requires the review of the transport of DGs to the site against specified threshold levels for transport for each class of DG, as outlined in **Table 6**.

Table 6 – Assessment of Project Against DGs Transport Screening Thresholds

	Vehicle movements		Minimum quantity*		Vehicle movements		Max Load (Tonnes)
	Cumulative	Peak	Per load (tonne)		Cumulative	Peak	
Class	Annual or	Weekly	Bulk	Packages	Annual	Weekly	
1	See note	See note	See note		Not transported		

	Vehicle movements		Minimum quantity*		Vehicle movements		Max Load
2.1	>500	>30	2	5	50	1	0.005
2.3	>100	>6	1	2	Not transported		
3PGI	>500	>30	1	1	Not transported		
3PGII	>750	>45	3	10	50	1#	0.01
3PGIII	>1000	>60	10	No limit	50	1#	0.01
4.1	>200	>12	1	2	Not transported		
4.2	>100	>3	2	5	Not transported		
4.3	>200	>12	5	10	Not transported		
5	>500	>30	2	5	Not transported		
6.1	All	All	1	3	20	0.5	0.005
6.2	See note	See note	See note		Not transported		
7	See note	see note	See note		Not transported		
8	>500	>30	2	5	6	0.1#	0.003
9	>1000	>60	No limit		Not subject to SEPP 33		

* If quantities are below this level, the potential risk is unlikely to be significant unless the number of traffic movements is high

Note: All loads will be transported as packages no bulk transport

Source: RiskCon Engineering

As demonstrated in **Table 6** the number of vehicle movements involving DGs, does not exceed the threshold limits listed in “Applying SEPP33”. Based on the transport analysis, SEPP33 would not apply to the Project.

Assessment Summary

The proposed development is not considered to be potential hazardous. A Preliminary Hazard Analysis (PHA) is not required for the assessment of the proposed development.

The assessment concludes that:

“...the threshold levels of Dangerous Goods, proposed for storage at the Qantas site, do not exceed the threshold levels listed in “Applying SEPP33”. Further, the transport of DGs does not exceed the threshold levels published in “Applying SEPP33” and there are no “offensive” operations at the site. Hence, it is concluded that SEPP33 would not apply to the proposed site.”

As such, SEPP 33 does not apply to the Project and no further assessment of this issue is required.

4.5. STATE ENVIRONMENTAL PLANNING POLICY NO. 55 – REMEDIATION OF LAND

State Environmental Planning Policy No.55 – Remediation of Land (SEPP 55) provides a state-wide planning approach for the remediation of land and aims to promote the remediation of contaminated land to reduce the risk of harm to human health or the environment. Clause 7(1) requires the consent authority to consider whether land is contaminated prior to the issuance of consent to a development application.

A combined Preliminary Site Investigation (**PSI**) and Detailed Site Investigation (**DSI**), also referred to as an Environmental Site Assessment (**ESA**) was undertaken by Arcadis Australia Pacific Pty Ltd (**Arcadis**) (refer to **Appendix T**). The ESA found both soil and groundwater contamination on the site and concluded that subject to mitigation measures the site will be able to be suitably remediated. This is discussed in detail in **Section 7.12**.

4.6. STATE ENVIRONMENTAL PLANNING POLICY NO. 64 – ADVERTISING AND SIGNAGE

State Environmental Planning Policy No. 64 – Advertising and Signage (SEPP 64) aims to ensure that advertising and signage is compatible with the desired amenity and visual character of an area and provides effective communication in suitable locations and is of high-quality design and finish. It does not regulate the content of signs and advertisements.

Clause 8 and clause 13 of SEPP 64 prevents development consent from being granted to signage unless the consent authority is satisfied that it is consistent with the objectives of the SEPP and has satisfied the assessment criteria specified in Schedule 1.

As part of the Project, the following signage is proposed:

- 3 building identification signs (see **Appendix C** for details of the signs):
 - 1 on the western elevation of the flight training centre; and
 - 1 on both the eastern and southern facades of the carpark
- Wayfinding signage including:
 - 1 Building identification sign at the pedestrian entrance to the flight training centre; and
 - 2 external wayfinding signs at each of the new crossovers to King Street to identify the flight training centre and direct vehicle movements.

All of the signage has been designed to identify the flight training centre and Corporate Campus more broadly in a format consistent with the overall design of the proposed development. All of the signage is integrated to the architecture of the proposal and will not result in any adverse impacts. The proposed signage is consistent with Qantas' brand story and is directly related to the airport character of the wider locality.

An assessment of the proposed signage against Schedule 1 of SEPP 64 is included at **Appendix H**, which concludes that the proposed signage is compliant with SEPP 64 and is consistent with its objectives. On this basis, it is considered that the signage satisfies the requirements of SEPP 64.

4.7. BOTANY BAY LOCAL ENVIRONMENTAL PLAN 2013

The *Botany Bay Local Environmental Plan 2013 (BBLEP 2013)* is the principal environmental planning instrument governing development at the subject site. An assessment against the relevant provisions of the BBLEP 2013 has been undertaken in the subsections below. The proposal is compliant with all relevant provisions.

4.7.1. Zoning and Permissibility

The Site is zoned as IN1 – General Industrial in the *Botany Bay Local Environmental Plan 2013 (BBLEP 2013)* (refer to **Figure 22**).

The land use table for IN1 lists development that is permitted without consent, development that is permitted with consent, and development that is prohibited.

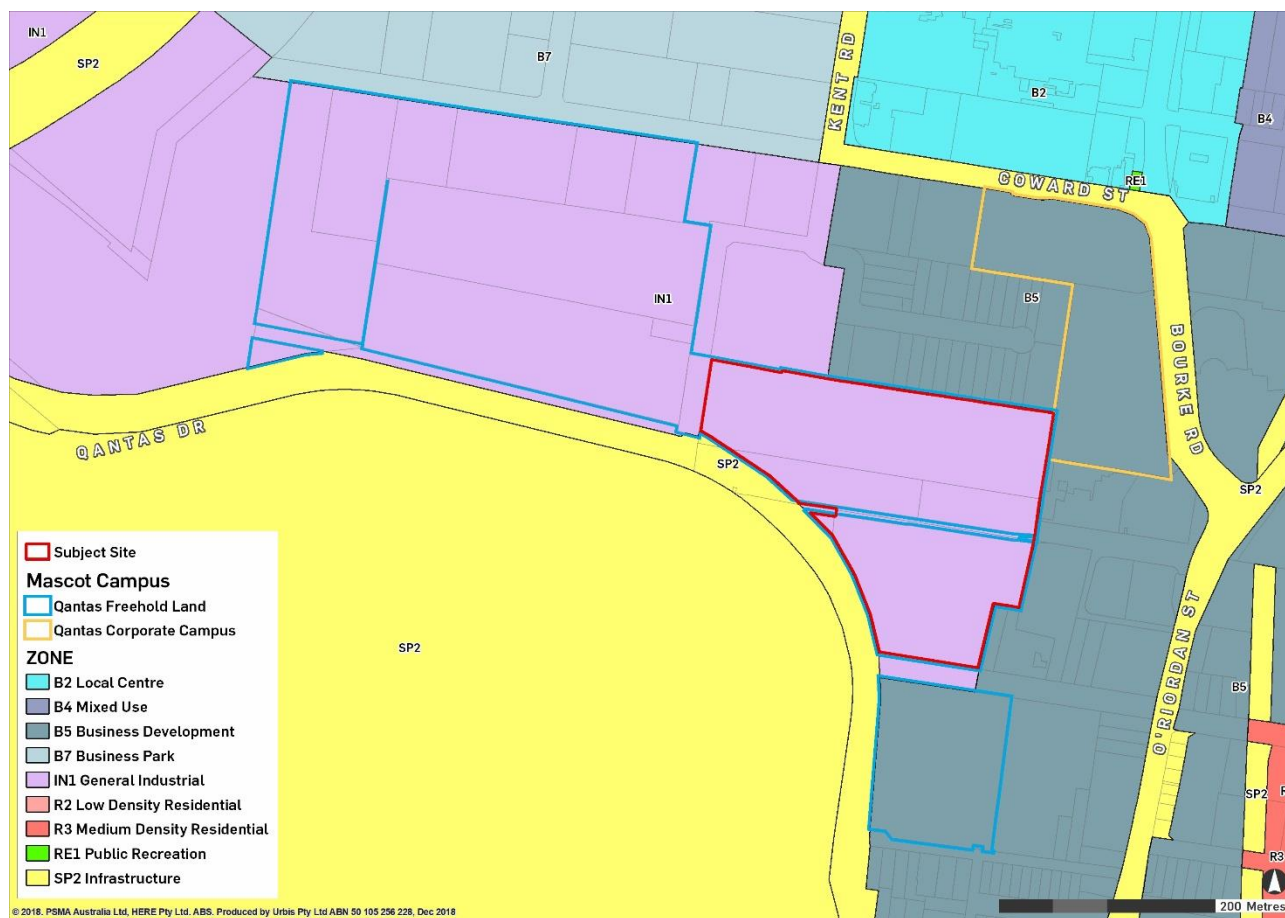
The flight training centre is best defined as an industrial training facility, which is defined in the Dictionary of the BBLEP 2013 as *a building or place used in connection with vocational training in an activity (such as forklift or truck driving, welding or carpentry) that is associated with an industry, rural industry, extractive industry or mining, but does not include an educational establishment, business premises or retail premises*.

Fundamentally a flight training centre is a building or place used in connection with vocational training in an activity (pilot and cabin crew training) that is associated with an industry (aviation). It is not an educational establishment because it is not constituted by or under an Act.

Industrial training facilities are listed as works permitted with consent in the land use table.

The site is also subject to site specific Additional Permitted Uses as outlined in Schedule 1 which are discussed in **Section 4.7.3**.

Figure 22 – Extract from BBLEP 2013 Zoning Map



Source: Urbis

4.7.2. Zone Objectives

The IN1 – General Industrial Zone objectives are outlined below:

- To provide a wide range of industrial and warehouse land uses.
- To encourage employment opportunities.
- To minimise any adverse effect of industry on other land uses.
- To support and protect industrial land for industrial uses.

The proposal is consistent with these objectives for the following reasons:

- It will support Qantas' ongoing contribution to significant employment. Construction jobs will also be generated by the project.
- It will reinforce the aviation / specialised industrial and business related character of the area.
- The proposed development and use have been appropriately designed and incorporates mitigation measures to ensure it will not unreasonably impact on the amenity of surrounding properties.

4.7.3. Additional Permitted Uses

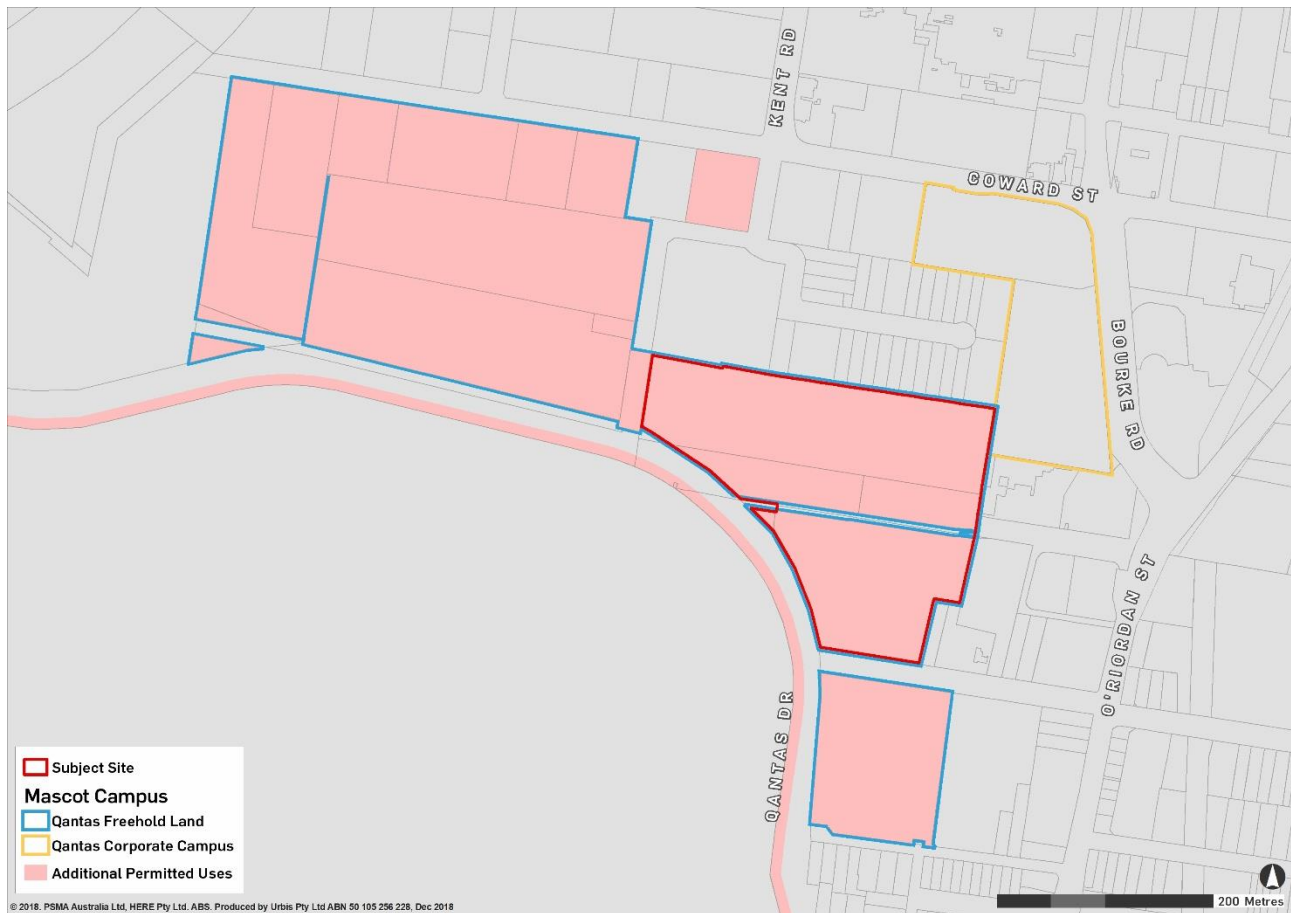
Clause 2.5 of the BBLEP 2013 outlines the requirements for Additional Permitted Uses (**APU**) for particular land within the LGA; it states:

- (1) Development on particular land that is described or referred to in Schedule 1 may be carried out:
- (a) with development consent, or

- (b) if the Schedule so provides—without development consent,
in accordance with the conditions (if any) specified in that Schedule in relation to that development.
- (2) This clause has effect despite anything to the contrary in the Land Use Table or other provision of this Plan.

The site is identified as benefitting for APU as outlined in clause 9A(1) of Schedule 1 by virtue of being listed as applicable parcels of land (see **Figure 23**).

Figure 23 – Additional Permitted Uses



Source: Urbis

Sub-clause 9A(2) and (3) identify the types of development that is permitted with consent under the clause:

- (2) Development is permitted with development consent:
- (a) for any of the following purposes, but only if the purpose relates to the use of Sydney (Kingsford Smith) Airport:
- (i) commercial premises,
 - (ii) function centres,
 - (iii) information and education facilities,
 - (iv) passenger transport facilities,
 - (v) tourist and visitor accommodation, or
- (b) for the purpose of any other building or place used only for purposes that relate to the use of Sydney (Kingsford Smith) Airport.
- (3) Without limiting subclause (2), development is permitted with development consent for the purpose of a building or place used for the provision of any of the following services:

- (a) *services related to any of the following uses carried out at Sydney (Kingsford Smith) Airport:*
- (i) *the assembly, storage or land transport of air freight,*
 - (ii) *the accommodation, or transportation by air or land, of air passengers or air crew,*
 - (iii) *the storage, operation, maintenance or repair of aircraft or aircraft components,*
 - (iv) *the administrative functions associated with the airport, such as airport management and security,*
 - (v) *the functions of government departments and authorities related to air passengers and air freight,*
- (b) *services provided for hotel or motel guests, including banking, dry cleaning, hairdressing and the like, that are located within the confines of the hotel or motel building.*

The proposed development of a new flight training centre will only be used for purposes that relate to the Airport, being the training of Qantas pilots and cabin crew to enable the safe and lawful operation of commercial aircraft.

Additional requirements that a consent authority must consider in determining whether to grant development consent under the clause are outlined in sub-clause 9A(4), specifically:

- (a) *whether or not the development is likely to support the role of Sydney (Kingsford Smith) Airport and environs as a transport gateway,*
- (b) *whether or not the development is likely to compromise the viability of adjoining industrial uses.*

The proposal is critical to the successful operation of the Airport as a transport gateway. The site has no adjoining industrial uses, being bounded to the east and south by land zoned B5 Business Development, and to the north by land zoned IN1 General Industrial that is currently developed as airport related uses that service the Qantas' operation.

4.7.4. Other LEP Provisions

Other relevant provisions contained to the BBLEP 2013 are addressed in **Table 7** below.

Table 7 – BBLEP 2013 Compliance Table

Clause	Control	Proposal
4.3 Height of Buildings	44m	COMPLIES Flight Training Centre: 19m Carpark: 43.8m
4.4 Floor Space Ratio	The site has a base floor space ratio (FSR) of 1.2:1, however under clause 9A of Schedule 1 the maximum FSR is 1.5:1. Refer to Section 5.3.3.	COMPLIES Flight Training Centre: 0.86:1 Carpark (inclusive of existing catering facility): 0.63:1 Total FSR: 0.7:1
5.10 Heritage Conservation	The site is not listed as a heritage item under the BBLEP 2013, however it is proximate to three general heritage items located within the boundary of Sydney Airport (See Section 2.5)	COMPLIES A Heritage Impact Statement has been prepared by Urbis and is attached at Appendix I .

Clause	Control	Proposal
6.1 Acid Sulfate Soils	The Project is located on Class 2 land on the acid sulfate soils map.	COMPLIES An acid sulfate soils management plan has been prepared for the Project in accordance with the Acid Sulfate Soils Manual, and is enclosed at Appendix AAA .
6.2 Earthworks	Development consent is required for earthworks.	COMPLIES Consent is specifically sought for all earthworks associated with this project.
6.3 Stormwater Management	Development consent must not be unless the consent authority is satisfied that the development: (a) is designed to maximise the use of water permeable surfaces on the land having regard to the soil characteristics affecting on-site infiltration of water, and (b) includes, if practicable, on-site stormwater retention for use as an alternative supply to mains water, groundwater or river water, and (c) avoids any significant adverse impacts of stormwater runoff on adjoining properties, native bushland and receiving waters, or if that impact cannot be reasonably avoided, minimises and mitigates the impact.	COMPLIES A Comprehensive Stormwater Management Plan is included at Appendix Y and Appendix Z .
6.8 Airspace Operations	The Obstacle Limitation Surface Map for the Airport identify that the Limitation or Operations Surface above the site is 51m.	COMPLIES The Project will not breach the Obstacle Limitation Surface during either construction or operation. An Aeronautical Impact Assessment has been prepared as part of this application, refer to Appendix SS .
6.9 Development in Areas Subject to Aircraft Noise	The site is located between the 25 – 30 ANEF contour.	COMPLIES The proposal does not include a residential component, and will be designed to ensure compliance with all relative Australian Standards, refer to BCA Report at Appendix II and Appendix JJ for further detail.

4.7.5. Design Excellence

Clause 6.16(3) of the BBLEP 2013 outlines the requirements for Design Excellence in areas identified on the Key Sites Map. The site falls within the Mascot Station Precinct. The objective of the clause is to deliver the highest standard of sustainable architectural and urban design. The key parts of the clause are reproduced and addressed below:

(3) Development consent must not be granted to development involving the construction of a new building or to external alterations to an existing building on land to which this clause applies unless the consent authority considers that the development exhibits design excellence.

(4) In considering whether the development exhibits design excellence, the consent authority must have regard to the following matters:

(a) whether a high standard of architectural design, materials and detailing appropriate to the building type and location will be achieved,

The proposed flight training centre and associated carpark represent a considered design solution to a series of complex technical and functional requirements associated with the operation of a flight training centre. The site is located in an industrial precinct which is characterised by similar operational facilities and the Project represents an appropriate response to this context and typology.

The buildings and their materiality have been designed to respect and celebrate their primary function as operational facilities within an industrial precinct. The materials and finishes of both the flight training centre and carpark are generally self finished and durable. Materials are integrated into the architectural language in response to both the industrial site context and building types being operational and infrastructure facilities. This is discussed further in **Sections 7.2.1** and **7.2.2**.

(b) whether the form and external appearance of the development will improve the quality and amenity of the public domain,

The Project's building forms respond to both the site geometries and operational requirements. Materials and composition articulate the buildings to meet technical requirements whilst addressing the broader public realm.

The architectural treatment addresses King Street by breaking the flight training centre into two distinct elements being Emergency Procedures on the west and flight training on the eastern side, thereby offering articulation and reduced scale.

Operational requirements necessitate a security fence line along King Street which is integrated with a perimeter landscape zone to the King Street frontage.

King Street will retain a degree of existing landscape that partially screens the new flight training centre whilst the relatively low level scale and articulation of the proposed flight training centre assists in making a positive contribution to and improved the streetscape and public domain. This is discussed further in **Section 7.2.5**.

(c) whether the development detrimentally impacts on view corridors,

The building mass of the carpark and flight training centre steps back from King Street to minimise impacts on view corridors. The relatively low scale flight training centre is well below the permissible building envelope thereby reducing impact on views from the neighbouring Travelodge. The proposed development will not impact on any Key Views as defined by the *Tenacity Planning Principle*.

By focusing the building mass in the interior of the site where it will be surrounded by development of a similar scale (both existing and approved) the Project is unlikely to materially impact on any existing view corridors.

This is discussed further in **Section 7.2.7**.

(d) the achievement of the principles of ecologically sustainable development.

Ecologically sustainable design (**ESD**) principles have been considered throughout the design process and in the final design resolution. The existing Trigeneration Plant has been utilised to provide 100% of the power requirements for the project whilst, 100% of the heating and cooling are sourced from heated and chilled water from the Tri-generation Plant.

Environmental design principles are adopted within the building design generally, addressing thermal performance, amenity, durability and performance. The Project is targeting 5 Star Green Star equivalency with 6 Star aspiration. This is discussed further in **Section 7.21**.

An Architectural Design Report has been prepared by Noxon Giffen that demonstrates how the development exhibits design excellence, refer to **Appendix D**.

4.8. CONTRIBUTIONS

The Site is subject to Bayside Council's *Former City of Botany Bay s7.11 Development Contributions Plan 2016 (Amendment 1) (s7.11 Plan)* and is located within the Mascot Station Precinct for the purposes of the s7.11 Plan. The intention of the s7.11 Plan is to levy development where it would lead to a net increase in GFA or employment within the Mascot Station Precinct and nominates a rate of \$5,215.72 per additional worker.

As discussed earlier in this report, the Project is the direct result of RMS' Gateway Project and seeks to relocate Qantas' existing flight training centre approximately 150m east from its current location with the Jetbase to the subject site.

Qantas is of the view that any contributions payable in respect of the Project should only reflect the net increase in demand for public amenities or public services over and above the demand generated by the existing flight training centre.

Whilst the Project will technically relocate 149 jobs to within the LGA boundary, the Project at opening will not create any additional operational jobs, and thus the imposition of a condition covering the whole workforce is considered onerous and would be contrary to the reasonableness test set out in *Newbury District Council v Secretary of State for the Environment* [1980] 2 WLR 379; [1980] 1 All ER 731 (Newbury).

The consent authority is required to have regard to the Contributions Plan when it determines whether to grant development consent. However, the Minister for Planning (or their delegate) is not bound to impose any such condition, or if such a condition is imposed, it will not be required to impose that condition in accordance with the Contributions Plan. The Project is seeking to maintain the status quo and as such should not be required to pay a contribution in respect of the relocation of existing jobs.

As such, it is requested that the Department not impose any condition of consent requiring the payment of contributions.

This is discussed in further detail in a Legal Opinion relating to the payment of s7.11 contributions at **Appendix YY**.

5. STRATEGIC PLANNING CONTEXT

5.1. OVERVIEW

In accordance with the SEARs, the following strategic planning policies have been considered in the assessment of the proposal:

- *NSW State Priorities;*
- *A Metropolis of Three Cities – The Greater Sydney Region Plan 2018;*
- *Eastern City District Plan 2018;*
- *Future Transport 2056 Strategy;*
- *State Infrastructure Strategy 2018-2038;*
- *Sydney's Cycling Future 2013;*
- *Sydney's Walking Future 2013;*
- *Sydney's Bus Future 2013;*
- *Crime Prevention Through Environmental Design (CPTED) Principles;*
- *Healthy Urban Development Checklist, NSW Health;*
- *Better Placed – An integrated design policy for the built environment of NSW 2017;*
- *Sydney Airport Master Plan 2033 (2014);*
- *Draft Sydney Airport Master Plan 2039 (2018); and*
- *Botany Bay Development Control Plan 2013;*

Consistency with the relevant goals contained to the above strategic policies is discussed below.

5.2. NSW STATE PRIORITIES

NSW State Priorities is the State Government's plan to guide policy and decision making across the State. The proposed redevelopment of the site is consistent with relevant priorities contained within the Plan, including:

- ***Delivering Infrastructure:*** *Key infrastructure projects to be delivered on time and on budget across the state.*

The proposal is a direct result of the Gateway, which is an important infrastructure project for increasing efficiencies to Port Botany and taking away vehicular traffic from local roads. The timely delivery of the proposal will enable the delivery of the Gateway project.

- ***Creating Jobs:*** *150,000 new jobs by 2019.*

The proposal is a replacement of the existing flight training centre, the largest in the Southern Hemisphere. The proposal will maintain employment in NSW and more critically, enable Qantas' to continue operation.

Overall, it is considered that the proposed development is entirely consistent with the goals and objectives set out within the *NSW State Priorities*.

5.3. A METROPOLIS OF THREE CITIES – THE GREATER SYDNEY REGION PLAN

A Metropolis of Three Cities – the Greater Sydney Region Plan (2018) (the Regional Plan) sets a 40-year vision (to 2056) and establishes a 20-year plan to manage growth and change for Greater Sydney in the context of social, economic and environmental matters. The Project is located within the Eastern Harbour City.

The Regional Plan identifies that passenger trips at the Airport are forecast to grow from 37 million to 74 million passengers by 2033. It is critical that Qantas have an operational flight training centre to ensure they can service the growing demand for Australia as an international tourism location, and Regional Financial Centre for the Asia-Pacific Region.

Objective 1. Infrastructure supports the three cities – The Project has arisen in response to RMS' Gateway Project. It is acknowledged and accepted that as a growing city Sydney's road and rail infrastructure will invariably need to be upgraded or added to in order to safe-guard future growth. Qantas support RMS's investment in road and rail infrastructure but in doing so must not be unduly impacted operationally. The relocation of their existing flight training centre from the Jetbase onto their own land adjacent to the Airport will enable Qantas Drive to be widened as part of Gateway. Absent for Gateway, Qantas would not be moving from their existing flight training centre.

Objective 16. Freight and logistics network is competitive and efficient – The Region Plan recognizes that retaining internationally competitive operations at both the Airport and Port Botany is vital to the productivity of the NSW economy. A key objective of the Region Plan is to prevent development that would impact or jeopardise the operations of both the Airport and Port Botany. The Gateway Project will help ensure that transport networks continue to support the needs of the Nationally significant Airport and Port Botany. However, the construction timetable for Gateway must be cognisant of Qantas' ability to operate as an airline, and upon which a continually operational flight training centre is critical.

The development of the new training facility is imperative to enable business continuity for Qantas. The redevelopment of the site aligns with the Regional Plan by re-locating and replacing the existing flight training centre. This will enable a legislated level of training for their pilots and cabin crew to be maintained thus enabling servicing the forecasted growth in air craft passenger travel, outlined in this plan.

5.4. EASTERN CITY DISTRICT PLAN

Eastern City District Plan (2018) (**the District Plan**) gives effect to the Regional Plan and provides more detailed guidance for the LGA areas of Bayside, Burwood, City of Canada Bay, City of Sydney, Inner West, Randwick, Strathfield, Waverley and Woollahra.

The site is located within the identified Green Square-Mascot Strategic Centre and is adjacent to and is inter-dependent with the Airport trade gateway, as shown in **Figure 24**.

The following three Planning Priorities have been identified as being most relevant to the Project:

Planning Priority E1 – Planning for a city supported by infrastructure

The Project seeks to ensure that the delivery of a key piece of city-shaping infrastructure (the Gateway Project) does not inadvertently impair the operations of a key piece of Nationally significant infrastructure (the Airport) by its most significant user (Qantas).

Planning Priority E9 – Growing international trade gateways

The District Plan recognises that it is critical to protect the Airport's function as an international gateway for passengers and freight, and to support airport-related land uses and infrastructure in the area around the Airport. The Project seeks to enable the continuation of the Airport as an international gateway for passengers and freight by constructing a new flight training centre to replace the existing flight training centre that will be impacted by the Gateway project.

Planning Priority E9 gives effect to Objective 16 of the Region Plan and is supported by identified Actions. The Project will help realise *Action 31. Protect and grow the trade gateways by: ...*

j. protecting Sydney Airport's function as an international gateway for passengers and freight, and support airport-related land uses and infrastructure in the area around the Airport; and

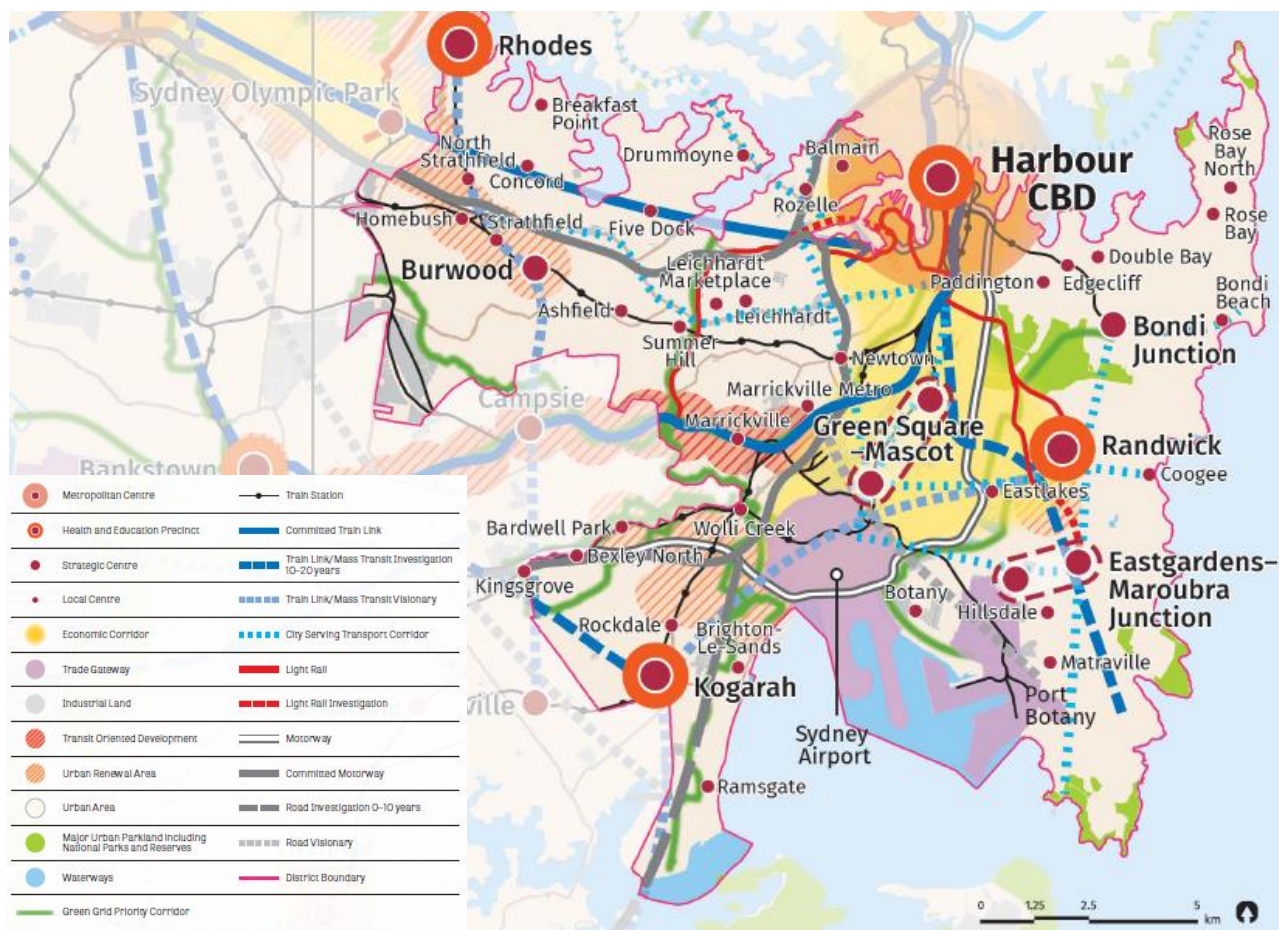
k. facilitating road planning to connect Sydney Airport to WestConnex

The Project is an airport-related land use which directly supports Qantas' operations both at the airport and globally. As such, this SSDA is consistent with Action 31. J. as it enables both the protection of the Airport's function as an international gateway and would support the establishment of additional airport-related land uses in the area around the Airport.

Additionally, the need for the Project has arisen as a direct result of the Gateway Project, which is intended to realise Action 31.k. which relates to facilitating road planning to connect Sydney Airport to WestConnex.

In accordance with the Eastern District Plan the Project is consistent with the planning priorities and associated actions and will protect and reinforce the Airport's function as an international gateway for passengers and freight.

Figure 24 – Eastern Harbour City



Source: Greater Sydney Commission

5.5. FUTURE TRANSPORT STRATEGY 2056

Future Transport Strategy 2056 is the NSW Government's update of the 2012 NSW Long Term Transport Master Plan and was finalised on 18 March 2018.

The *Greater Sydney Services and Infrastructure Plan* is Transport for NSW's 40-year plan for transport in Sydney. It is designed to support the land use vision for Sydney as identified in the Region Plan and District Plans. Building on the state-wide transport outcomes identified in the *Future Transport Strategy 2056*, the Plan establishes the specific outcomes transport customers in Greater Sydney can expect and identifies the policy, service and infrastructure initiatives to achieve these.

The focus of the plan is to enable people and goods to move safely, efficiently and reliably around Greater Sydney. Additionally, the plan recognises the contribution of the transport system on the economy. Sydney Airport and Port Botany are critical international gateways helping to move people and goods and ultimately contributing to NSW's economy. The Gateway Project intends to support a more efficient connection, reduce travel time to Sydney's airport and take pressure off local roads by increasing rail freight. The development of this critical road infrastructure will directly impact Qantas' existing flight training facility, requiring the relocation and construction of a new flight training facility.

The Project is aligned with outcomes identified in the *Future Transport Strategy 2056* by ensuring that Sydney Airport and Port Botany are able to maintain their functionality and cater for future demand. The Gateway Project is recognised as critical road infrastructure to strengthen links to key international gateways. However, this should not impact on Qantas' ability to operate, which would equally have far-reaching economic consequences.

5.6. STATE INFRASTRUCTURE STRATEGY 2018-2038

State Infrastructure Strategy 2018-2038 was released by Infrastructure NSW on 18 March 2018 to accompany the Region Plan, Transport Strategy and District Plans.

This 20-year Strategy sets out Infrastructure NSW's independent advice on the current state of NSW's infrastructure and the needs and priorities over the next 20 years. It looks beyond the current projects and identifies policies and strategies needed to provide infrastructure that meets the needs of a growing population and a growing economy. The Strategy is set out in three parts, this being, Strategic Directions, Geographic Directions, and Sectors.

The NSW Geographic infrastructure directions outline the importance of infrastructure networks as the foundation of the economy, including international gateways. This includes improving access and prepare for growth to international gateways and support the visitor economy, including overseas tourism. The proposed development will meet these directions by maintaining the operation of Australia's flag carrier and largest airline. The Project will train Australian pilots and cabin crew and contribute to the continued growth of Sydney Airport as an international gateway.

5.7. SYDNEY'S CYCLING FUTURE 2013

Sydney's Cycling Future (2013) seeks to make bicycle riding a feasible transport option within Sydney by encouraging in the use of Sydney's existing bicycle network. The proposed development includes dedicated bicycle pathways at the western extent of the site and bicycle storage facilities for 69 bikes. The flight training centre will be served by an existing on-road cycle route along King Street. This route provides wider access to the local cycle network and links to the greater Sydney cycle network. This will encourage employees, pilots and cabin crew using the flight training centre to consider cycling as a means of transport and decrease vehicular use.

5.8. SYDNEY'S WALKING FUTURE 2013

Sydney's Walking Future (2013) aims to promote walking as a means of effective transport within Sydney by encouraging investment in safe, permeable walking networks.

The site is approximately a 950m walk from Mascot Station which will encourage employees, pilots and cabin crew using the flight training centre to access this transport option. The proposal also includes a dedicated walking pathway from King Street to the flight training centre and the corporate campus to the north-east of the site. This will be a permeable walking surface and defined by landscaping treatments. This will promote healthy practices for users of the site and decrease vehicular use.

5.9. SYDNEY'S BUS FUTURE 2013

Sydney's Bus Future (2013) outlines the NSW Government's long-term plan to deliver fast and reliable bus services to meet current and future customer needs.

The site is serviced by a bus stop on O'Riordan Street which services the 305-bus service. This provides access between Sydney Airport and Redfern Station.

In addition to the STA bus routes services, Qantas operates their own private shuttle-bus service for staff, enabling access throughout the campus.

5.10. CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED) PRINCIPLES

The principles of CPTED have been incorporated into the proposed design of the flight training centre and the car park. A CPTED assessment was undertaken by Urbis and is attached at **Appendix PP**. The Safer by Design evaluation process is used by the NSW Police to identify and quantify crime risks. The evaluation measures statistical probability of crime, consequence, 'hotspots' analysis and situational opportunity. The four key principles to minimise the opportunity for crime are outlined in **Table 8**.

Table 8 – CPTED Principles

	Principle	Definition
1	Surveillance	Natural surveillance is a by-product of well-planned, well-designed and well-used space. It involves maximising opportunities for passers-by and users to observe what happens in an area (the 'safety in numbers' concept). Higher risk locations can also benefit from organised surveillance, which involves the introduction of formal measures such as on-site security guards or CCTV.
2	Access control	Control of who enters an area so that unauthorised people are excluded, for instance, via physical barriers such as fences, grills etc.
3	Territorial reinforcement	People are more likely to protect territory they feel they own and have a certain respect for the territory of others. This can be expressed through installation of fences, paving, signs, good maintenance and landscaping. Territoriality relates to the way in which a community has ownership over a space.
4	Space and activity management	Ensures that space is appropriately utilised and cared for. Space management strategies include: activity coordination (i.e. having a specific plan for the way different types of activities are carried out in space), site cleanliness, rapid repair of vandalism and graffiti, the replacement of burned out lighting and the removal or refurbishment of decayed physical elements.
Source: Urbis		

CPTED principles have informed the design in the following way:

- The site layout of the flight training centre incorporates perimeter fencing and boom gates on both access roads to control entry and exit to the site. The additional of bollards are also incorporated into the design to provide perimeter security while allowing controlled vehicle access to the flight training centre as required.
- The proposal incorporates dedicated bus stops and drop-off zones at the northern extent of the site to minimise potential conflicts with other vehicles and pedestrians. Dedicated cycle and walking paths are also provided to enable safe pedestrian and cycle movements throughout the site.
- The proposed location of the flight training facility will replace an existing at-grade car park and consolidate car parking in a multi-deck car park away from the perimeter of the site. This aligns with the BBDCP 2013 as large at-grade car parking, close to perimeter boundaries are discouraged.
- The proposal incorporates perimeter landscaping to define pathways and provide a sense of ownership of the space. The landscaping proposed will also help create a more attractive urban space and streetscape setting.

5.11. HEALTHY URBAN DEVELOPMENT CHECKLIST, NSW HEALTH

Prepared by NSW Health, the *Healthy Urban Development Checklist* seeks to ensure built environments are created within NSW that are sustainable and promote healthy habits. The proposal satisfies a range of items contained in the checklist, including:

- Promote opportunities for walking, cycling and other forms of active transport;
- Reduce and prevent crime through design and increasing perceptions of security;
- Access to essential job training;
- Provide an improved streetscape that encourages activation; and
- Promote a sense of place through an outdoor seating area for staff.

5.12. BETTER PLACED – AN INTEGRATED DESIGN POLICY FOR THE BUILT ENVIRONMENT OF NSW 2017

Better Placed – An integrated design policy for the built environment of NSW 2017 is the New South Wales Government Architect Office's policy to guide design. Better Placed provides clarity on what the NSW Government means by good design, not just how a place looks, but how it works and feels for people, and outlines processes for achieving this. It has been created to assist everyone involved in design projects or the development assessment process and advocates that everyone has a role in ensuring our cities and towns are better places. The policy is based on seven objectives that define the key considerations in the design of the built environment:

1. Better fit: contextual, local and of its place
2. Better performance: sustainable, adaptable and durable
3. Better for community: inclusive, connected and diverse
4. Better for people: safe, comfortable and liveable
5. Better working: functional, efficient and fit for purpose
6. Better value: creating and adding value
7. Better look and feel: engaging, inviting and attractive

The proposal will improve the local site context by providing a more active use with enhanced opportunities for passive surveillance. The proposal incorporates CPTED principles including providing through-site cycling and pedestrian links to the flight training centre, car park and Qantas' corporate campus. Due to modern construction efficiencies, the floor plate is more efficient and smaller than the existing flight training centre. Therefore, the proposed building is more functional and fit for the site. Landscaping at the perimeter and throughout the site is proposed to improve on the existing unmaintained landscaping on the site. This will provide a more attractive setting for both the general public and employees of the flight training centre.

5.13. SYDNEY AIRPORT MASTER PLAN 2033 (2014)

The *Sydney Airport Master Plan 2033 (2014)* outlines Sydney Airport's plan for the operation and development of the airport for the period up until 2033. The plan contains a development plan to guide future air traffic scenarios and increase the productivity and flexibility of the airport, including improvements to the ground transport access within the airport, as well as improved traffic flows for non-airport related traffic in the area.

In 2033, Sydney Airport is projected to handle approximately 74.3 million passengers, 388,000 passenger aircraft movements and 1.0 million tonnes of freight. The plan also outlines the enhanced importance of Sydney Airport for all aviation activities as a result of the closure of other aviation capacity in the Sydney region.

The plan also outlines the economic and regional significance of Sydney Airport as one of Australia's most important pieces of infrastructure. Directly and indirectly, Sydney Airport generates economic activity equivalent to 6% of the NSW economy and almost 300,000 jobs. A large number of jobs are also undertaken by residents of the communities surrounding the airport, with significant numbers living in Kogarah, Hurstville, Canterbury, Randwick and Botany Bay. The re-location of the flight training facility will retain existing employment and support Qantas' on-going economic contribution to the NSW economy.

5.14. DRAFT SYDNEY AIRPORT MASTER PLAN 2039 (2018)

The *Draft Sydney Airport Master Plan 2039 (2018)* is an update to the *Sydney Airport Master Plan 2033 (2014)* and extends the planning period to 2039. The plan aims to reflect changes in the past five years, new forecasts for activation and commercial activity, and ground transport improvements to be undertaken at the airport. The objectives of the plan are to:

- Enhance safety and security for users of the airport;
- Consider the community impact in all planning, development and operational activities;
- Enhance the experience of all passengers and airport users;

- Continue to improve ground access to, from and past the airport;
- Continue to improve environmental performance at the airport;
- Further embed sustainability into airport-decision making;
- Improve the efficiency of the airport;
- Provide adaptable and flexible plans to accommodate activation growth;
- Maximise capacity of the airport to meet demand within existing operational constraints;
- Stimulate leisure and business travel to generate benefit and value for the economy; and
- Create an airport that is able to compete internationally to capture aviation demand.

The proposal is aligned to these objectives by:

- Improving the existing security of the site by incorporating access control measures to the site and multi-level car park.
- Better integrating the flight training centre with the balance of the Qantas Campus.
- Replace an existing at-grade car park and improve the activation and overall visual presentation of the site.

Contribute to the continued growth and establishment of Sydney Airport as an international gateway acknowledging that the flight training centre, notably the flight simulators, are also available for use by other airline pilot crew.

5.15. BOTANY BAY DEVELOPMENT CONTROL PLAN 2013

The Botany Bay Development Control Plan 2013 (BBDCP 2013) provides guidelines to guide the design and assessment of development applications for land covered by the BBLEP 2013.

However, under clause 11 of *State Environmental Planning Policy (State and Regional Development) 2011*, the application of Development Control Plans is excluded when assessing SSD projects. Notwithstanding this, the proposal has been assessed against the key relevant controls of the BBDCP 2013 at **Appendix G**. The proposal is generally consistent with the requirements of the BBDCP 2013.

The following outlines the key non-compliances:

- The proposed front setback to King Street is 4.5 metres. This is a non-compliance with the front building setback of 9 metres as outlined in Section 6.3.5 of the BBDCP 2013, refer to **Section 7.2.5** for further detail.
- The height of the front building fence at the King Street frontage is 2.4m. This is a non-compliance with the maximum height of 1.8m for fences at street frontages as outlined in Section 6.3.10 of the BBDCP 2013, refer to **Section 7.2.5** for further detail.
- The proposal achieves a soft landscaping area of 4,722m² or 9%. This is a non-compliance with the BBDCP 2013 which stipulates that no less than 10% of the development site shall be landscaped, refer to **Section 7.2.6** for further detail.

6. CONSULTATION

Consultation has commenced on the project and will continue as the assessment of the application progresses and during construction. The purpose of the consultation process to date has been to inform and seek feedback from key agency stakeholders identified in the SEARs, as well as targeted consultation with the community and other stakeholders considered of relevance.

6.1. AGENCY CONSULTATION

The Project team conducted stakeholder consultation with identified agencies in the SEARs including:

- Australian Rail and Track Corporation;
- Bayside Council;
- Civil Aviation Safety Authority;
- Department of Industry – Crown Lands and Water;
- Jemena;
- NSW Fire and Rescue;
- NSW Heritage Council;
- NSW Office of Environment and Heritage;
- Roads and Maritime Services
- Sydney Airport Corporation Limited;
- Sydney Water;
- TransGrid;
- Ausgrid;
- Transport for NSW and
- Water NSW.

The consultation with agency stakeholders involved conducting a meeting with relevant representatives of the project team and agency to discuss any key issues with the Project.

The following sections are a summary of the consultation with agencies undertaken to date.

6.1.1. Australian Rail Track Corporation

A meeting was held with representatives from the Australian Rail Track Corporation (**ARTC**) to understand key issues between the Project and the Botany Rail Duplication Project. This meeting was held between representatives of ARTC and project team representatives from Qantas, APP, Noxon Giffen Architects, Norman Disney Young and Urbis on 29 January 2019.

The key items covered were:

- The expected delivery project timeframe for the Botany Rail Duplication Project is mid 2020-2023. This means that Qantas should be near completion of the flight training centre before ARTC begins construction.
- The construction works involved with the Botany Rail Duplication Project are similar to that of regular, ongoing maintenance works that can occur at any time along the rail corridor.
- Maintenance works were undertaken in 2016 on part of the Botany Rail Corridor adjacent the existing flight training centre which did not seem to cause any operational issues for the simulators.
- ARTC has no plans to acquire the site or land surrounding the site.

- The 2015-2024 Sydney Metropolitan Freight Strategy (2015) predicts the operation of 56 trains per day to and from Port Botany.
- The 'worst case scenario' from an acoustic perspective is the ability for ARTC to build up to 3.5m away from the fence line, with the measurement taken from the centre of the track. At this stage it is too early for ARTC to confirm this detail.
- The key issue will be when Qantas flight training centre is operational and ARTC is well into their construction timeframes which will require truck access along King Street to the rail line. Ongoing consultation at this time will be essential to ensure no operational impacts on the flight training centre.

6.1.2. Bayside Council

A meeting was held with representatives from Bayside Council and project team representatives from Qantas, APP, Noxon Giffen Architects, CBRK and Urbis on 01 February 2019.

The key items covered were:

- *The proposed location of the flight training facility results in a 4.5 metre setback to King Street which is non-compliance with the 9 metre setback required in the BBDCP 2013. Council acknowledges that the BBDCP 2013 does not apply to the development under clause 13 of State Environmental Planning Policy (Stage and Regional Development) 2011, however recommends a 9 metre setback to remain consistent with the neighbouring site at 289-293 which has a setback ranging between 7 and 9 metres.*

Due to functional design requirements the 4.5m setback to King Street is required, refer to **Section 7.2.5** for further detail.

- *Council advised that Bayside LGA currently lacks green coverage and canopy and opportunities to include quality landscaping throughout the site should be considered.*

A comprehensive landscape strategy has been prepared by Scott Carver which seeks to maximise the retention of existing landscaping on-site and the provision of new landscaping where possible including green rooves, refer to **Section 7.2.6** and **Appendix E and Appendix F** for further detail.

- *The thirteen-storey car park height should take into consideration the Obstacle Limitation Surface and any potential impacts from wind turbulence. Council advised that an Aeronautical Impact Assessment report will be required to support any future Development Application (DA).*

An Aeronautical Impact Assessment has been prepared by Landrum & Brown and provided at **Appendix SS** which concludes that the Project's built form does not require approval from SACL, CASA or DIRC. However, it is noted that construction activity and methodology will need consideration prior to gaining approval from SACL and DIRDC to ensure the construction of the Project will not cause disruption to the safety and regularity of flight operations at Sydney Kingsford Smith Airport, refer to **Section 7.17** for further details.

- *In relation to traffic impacts, Council advised that the increase in the amount of car movements within and surrounding the site will need to be considered. Council primarily expressed concern with the degree of impact on the existing King Street/O'Riordan Street intersection as this is the only point of entry and exit into King Street.*

A Comprehensive Traffic Assessment has been prepared by CBRK for the Project which considers the impact of the Project on the surrounding road network (**Appendix SS**). It concludes that the surrounding road network is able to accommodate the traffic generated by the proposed development with surrounding intersections considered to be operating at satisfactory or better levels of service in the peak periods (refer to **Section 7.1** for further detail).

- *Council advised that they generally do not support 24-hour construction operations due to impact of construction noise and vibrations on surrounding sites. Adequate justification and appropriate mitigation measures would need to accompany the application for 24-hour construction operations. Council may consider longer hours (6am to 8pm) provided that these activities are appropriate and do not involve activities such as shoring/piling, drilling and hammering.*

The Project proposes construction hours consistent with Council's advice, as detailed in **Section 3.2.11**.

- *The site is located within the Mascot Station Precinct under the section 7.11 Contributions Plan 2016 – Amendment 1. Council advised that the proposal will require contributions to be paid as per the plan,*

however, will consider justification to demonstrate why the proposal should be exempt from paying any contributions.

Whilst the Project will technically relocate 149 FTE existing jobs to within the LGA boundary, the Project at opening will not create any additional operational jobs, and thus the imposition of a condition covering the whole workforce is considered onerous. As such, it is requested that the Department not impose any condition of consent requiring the payment of contributions, refer to **Section 4.8** and **Appendix YY**.

- *Clause 6.16 Design Excellence of the Botany Bay LEP 2013 applies to the site. Council advised that the proposal does not require a design competition however may be referred to a Design Review Panel for consideration.*

Compliance with clause 6.16 of the BBLEP 2013 is demonstrated in **Section 4.7.5**, and is supported by an Architectural Design Report included at **Appendix D**. Since issuance of their letter dated 11 February 2019, Council have informed Urbis and the Department that the Project will not be required to be referred to a Design Review Panel for consideration.

An additional meeting was held with representatives of Bayside Council and the Project Team on 2 May 2019 to update Council on the evolution of the Project and how their comments were addressed. Council raised no objections in the meeting to the Project, however it is noted that Council will have an opportunity to formally comment on the application when it is on public exhibition.

6.1.3. Civil Aviation Safety Authority

A meeting was held with a representative from the Civil Aviation Safety Authority (**CASA**) with a representative from Qantas on 12 March 2019. Key items covered were:

- The impacts of Gateway on the existing flight training centre.
- The construction programme was highlighted as being tight.
- The new site for the flight training centre and carpark was identified and outlined.
- Design of the flight training centre including increase to 14 simulator bays.
- CASA well aware of the importance of the project to Qantas' operations and the need for a functioning flight training centre to remain operational.
- CASA were interested in the process around the staged relocation of the simulators, and how the facility would provide for an improved learning environment.
- CASA were generally positive about the project.
- Commitment from Qantas to keep CASA informed throughout the project.

CASA provided a letter, dated 27 March 2019, to the Department in response to the SEAR's request. CASA stated that they have no specific input to the SEAR's and comments should be obtained from Sydney Airport Corporation Ltd (SACL) in the first instance in regard to any potential impacts on aircraft operations from the proposed building.

6.1.4. NSW Department of Industry

A meeting was held with representatives from the NSW Department of Industry and the NSW Department of Planning and Environment and project team representatives from Qantas, APP, Noxon Giffen Architects, and Urbis on 20 March 2019.

Key items covered were:

- The impacts of Gateway on the existing flight training centre.
- Design of the flight training centre and car park and associated costs and timeframes for construction.
- Discussion of potential other locations for the flight training centre.
- Quantum of car parking reflects a replacement of current parking losses as well as future known losses.
- The need for extended construction hours to facilitate the project.

- The importance of the project to Qantas' operations and the need for a functioning flight training centre to remain operational.
- The quantum of pilots and cabin crew trained at the facility both internal and external to the Qantas Group.

6.1.5. NSW Fire and Rescue

A meeting request was made to the NSW Fire and Rescue on behalf of XEL Consulting on 27 February 2019. A meeting request form, meeting request letter with the project overview and current architectural drawings were provided. NSW Fire and Rescue acknowledged the receipt of application via email on 6 March 2019 without requesting a meeting time.

In response to the Department's request for agency comments for SEAR's, NSW Fire and Rescue provided a letter dated 19 March 2019. This letter states that at this time there is no requirement for a fire safety audit, however as additional detail becomes available NSW Fire and Rescue request the following:

- *to be consulted with on the operational capability of the proposed fire and life safety systems and their configuration at the project's preliminary and final design phases through the fire engineering brief process;*
- *the opportunity to review and comment on the EIS report once completed; and*
- *may require a fire safety audit to be undertaken at a later stage should information be provided such it is deemed that the development poses unique challenges to the response to and management of an incident.*

A meeting was held on 03 April 2019 with representatives of NSW Fire and Rescue and the consultant team. The following were the key outcomes of the meeting:

- It was confirmed that as per their advice to the Department, NSW Fire and Rescue may require a Preliminary Hazard Assessment (PHA) and Fire Safety Study as a result of EIS review.
- NSW Fire and Rescue prefer booster assembly locations along and parallel to King St.
- It was requested that the security boom gates and sliding gates be provided with a manual override with a 003 key and the security pin shall be provided to the brigade for ease of access.
- It was requested that thermal detection be provided with extended spacing of the carpark to help activate the EWIS system. This is the operational preference of NSW Fire and Rescue and would help them to respond faster to any emergency within the car park.
- It was noted that the location of the fire hydrant booster assembly being located away from the ramp of the car park and Qantas Catering loading dock could be used as the hardstand if required.
- It was requested that an overall site plan (including Simulator Building and Car Park) shall be provided at the booster assembly of the Simulator Building and Car Park to avoid confusion of attending firefighters.

6.1.6. NSW Office of Environment and Heritage and NSW Heritage Council

In response to the Department's request for agency submissions, the NSW Heritage Council provided a letter stating that there are no State Heritage concerns in relation to the proposed development and therefore the Department are not required to refer the project, including any future modifications, to the Heritage Council (this being the Heritage Division of OEH).

6.1.7. Roads and Maritime Services and Transport for NSW

A meeting was held with CBRK and representatives of RMS/TfNSW on 27 February 2019.

The traffic matters set out in the SEARS reflect the matters that RMS/TfNSW identified at the meeting to be addressed in the traffic/transport assessment of the proposed development.

6.1.8. Service Providers

6.1.8.1. Ausgrid

In response to the Department's request for agency submissions, Ausgrid provided email correspondence with the following recommendations in relation to the proposal:

- *Prepare an Infrastructure Management Plan in consultation with relevant agencies, detailing information on the existing capacity and any augmentation and easement requirements of the development for the provision of utilities including staging of infrastructure.*
- *Identify any potential impacts of the proposed construction and operation on the existing utility infrastructure and service provider assets and demonstrate how these will be protected or impacts mitigated.*

An Infrastructure Management Plan has been prepared by Norman Disney Young (**Appendix AA**) and infrastructure requirements are discussed in more detail in **Section 7.13** of this report.

6.1.8.2. Jemena

In response to the Department's request for agency submissions, Jemena provided email correspondence confirming that:

"The proposed development is consistent with land uses in the immediate area. Jemena is not proposing any additional control measures to mitigate against external interface that could lead to a gas release from the gas main in proximity to the development site."

Norman Disney Young made an application to Jemena to extend the existing gas run from the gas main owned by Jemena and located at King Street to serve the site, which was approved.

6.1.8.3. Transgrid

In response to the Department's request for agency submissions, Transgrid provided advice that the site is not affected by either a TransGrid Asset or Easement and therefore has no further comments to raise regarding the Project.

6.1.9. Sydney Airport Corporation Limited

Meetings were held with representatives from Sydney Airport Corporation Limited (SACL) and representatives from Qantas and APP on 1 November 2018, 23 January 2019 and 4 February 2019.

The key items covered were:

- The impacts of Gateway on the existing flight training centre.
- Design of the flight training centre and car park and associated costs and timeframes for construction.
- A tour was provided of the existing flight training centre to illustrate the complexity of the building.
- Discussion of potential other locations for the flight training centre, including discussion of this being located on SACL land.

6.1.10. Sydney Water

A meeting was held with representatives from Sydney Water and project team representatives from Qantas, APP, Noxon Giffen Architects, Enstruct, NDY and Urbis on 13 February 2019.

The key items covered were:

- Licences were discussed including the proposed tri-generation connection (pipework and HV cable).
- Proposed building setbacks and kerblines from the boundary.
- Landscaping matters including the setback from the boundary, landscaping proposed within the Sydney Water channel, CPTED principles, the proposed fence line, maintenance and access.
- Discussion of the advice provided by Bayside Council regarding flooding.
- The discharge point, on-site detention and water quality.

In a letter dated 12 April 2019 (refer to **Appendix LL**), Sydney Water confirmed that the Project *"does not adversely impact on Sydney Water Assets which is located within the development site."*

6.1.11. Water NSW

In response to the Department's request for agency submissions during the request for SEARs, WaterNSW provided a response that stated *"The proposal is not located near any WaterNSW land assets or*

infrastructure, therefore we have no particular requirements for the EIS.” As such no further consultation is required.

6.2. TARGETED COMMUNITY AND KEY STAKEHOLDER CONSULTATION

Urbis conducted Phase One of their consultation strategy during the preparation of the SSDA application. This involved targeted community and stakeholder consultation with immediate industrial and commercial neighbours located on Bourke Road and O’Riordan Street and industrial, commercial and residential neighbours in the area bounded by O’Riordan Street, Qantas Drive, Coward Street, High Street and King Street.

Phase Two of the consultation strategy will occur at the lodgement and assessment of the SSDA, the goal being to keep the community and stakeholders informed of the impending project.

The engagement approach is informed by the following key principles:

- Clearly outline the facts of the proposal;
- Engage with a range of interests, beyond established groups and positions;
- Provide a range of ways for people to engage and provide feedback;
- All feedback is collated and documented, to inform ongoing design and planning; and
- Communications will be open, transparent and accountable.

The preliminary consultation (Phase One) undertaken in respect of the proposed development to date is documented in the Consultation Outcomes Report attached at **Appendix FF**.

The following sections are a summary of the consultation activities undertaken to date.

6.2.1. Letter Distribution

A three page, A4 letter was prepared and distributed to approximately 1,200 neighbours on 6 and 7 March 2019. The letter outlined the key messages of the project and provided details for a phone number and email address for people to provide feedback and make queries. At the time of writing this report one enquiry has been made through the engagement channel and this was neutral.

A copy of the letter is included in the Consultation Outcomes Report at **Appendix FF**.

6.2.2. Door Knock With Industrial Neighbours

A door knock was completed on 6 March 2019 with neighbours on Bourke Road and O’Riordan St. Feedback collected during the door knock was neutral. A door knock was completed on 6 March 2019 with neighbours on Bourke Road and O’Riordan Street. Overall feedback was neutral and focused on questions of clarification about the proposal and possible construction impacts.

6.2.3. Stakeholder Briefings

Three stakeholder briefings were completed with Goodman, Travelodge (and other parties) and AMP on 01 and 11 April 2019 respectively and attended by Urbis and Qantas representatives. Overall observation from the briefings indicate high levels of existing stakeholder trust and business partnerships resulting in positive or neutral support for project. This consultation was conducted as part of a broader engagement strategy and in order to satisfy the SEARs Key Issue: Urban Design and Visual:

- *an options analysis for the proposed building materials, architectural treatments, finishes and colour of the buildings, prepared in consultation with nearby sensitive receivers with evidence of consultation provided;*

A summary of feedback collected in these briefings is provided below.

6.2.3.1. Goodman

A meeting was held with representatives of Goodman on 01 April 2019, and representatives of Qantas, Urbis and the consultant team. Goodman were specifically consulted with as the landowner of Connect Corporate Stage 3 fronting O’Riordan Street. Overall observation from the briefings indicate high levels of existing stakeholder trust and business partnerships resulting in positive or neutral support for project. The following are the three key takeaways from the consultation:

1. The proposed design of the flight training centre and car park was explained with plans and visualisations shared. Goodman raised no concerns about the bulk, scale or materiality of the proposal.
2. Accepting of the extended construction hours and were supportive of weekend work and work outside standard office hours, on the condition that there is clear and open communication with their tenants.
3. High level of communication would be appreciated with notices to their tenants informing key period of construction, especially in periods where the impact may be more significant (e.g. high levels of noise, vibration).

6.2.3.2. Travelodge and Others

A meeting was held on 01 April 2019 with representatives of the Audary Group, Adina Hotels and Travelodge and Qantas, Urbis and the consultant team. Travelodge was specifically consulted with as an adjacent neighbour, that is likely to be impacted to a degree during construction. Overall observation from the briefings indicate high levels of existing stakeholder trust and business partnerships resulting in positive or neutral support for project. The following are the four key takeaways from the consultation:

1. It was noted that proposed construction hours are long, and this may impact guests wanting to sleep in or go to bed early. Weekend works were not seen as any more intrusive than week day construction due to the nature of their operation.
2. Queries raised about the potential for mutually beneficial outcomes including shared car parking.
3. High level of communication would be appreciated informing them of key periods of construction, especially where the impacts may be more significant (e.g. high levels of noise, vibration).
4. The proposed design of the flight training centre and car park was explained with plans and visualisations shared. Travelodge raised no concerns about the bulk, scale or materiality of the proposal.

6.2.3.3. AMP

A teleconference was held on 11 April 2019 with representatives of AMP, Qantas, Urbis and the consultant team. AMP were specifically consulted with as they are the current owners of Connect Corporate Stage 2 which is adjacent to the proposed carpark. In summary, AMP were neutral to positive about the proposed works and the following are the four key takeaways from the consultation:

1. Accepting of the extended construction hours and were supportive of weekend work and work outside standard office hours, on the condition that there is clear and open communication with their tenants.
2. High level of communication would be appreciated with notices to their tenants informing key period of construction, especially in periods where the impact may be more significant (e.g. high levels of noise, vibration).
3. Concern for potential dust impacts on their windows.
4. The proposed design of the flight training centre and car park was explained with plans and visualisations shared. AMP raised no concerns about the bulk, scale or materiality of the proposal.

7. KEY ASSESSMENT ISSUES

The Key Issues as per the SEARs have been assessed in addition to other issues deemed relevant, with impacts noted and mitigation measures proposed where necessary in this report:

- Traffic and Transport
- Urban Design and Visual
- Design Excellence
- Landscaping
- Arboricultural Impacts
- Noise and Vibration
- Soils and Water
- Acid Sulfate Soils
- Social and Economic
- Air Quality
- Hazards and Risks
- Biodiversity
- Infrastructure Requirements
- Waste Management
- Ecologically Sustainable Development
- Fire and Incident Management
- Heritage
- Greenhouse Gas and Energy Efficiency
- Operational Management

7.1. TRAFFIC AND TRANSPORT

A Traffic Report has been prepared by Colston Budd Rogers & Kafes (**CBRK**) to examine the traffic implications of the Project, in accordance with the technical requirements of the SEARs and is attached at **Appendix N**. The genesis of the Project is the need for Qantas to relocate their existing flight training centre from its current location due to the noise and vibration impacts associated with the construction and operation of proposed road upgrades as part of the Sydney Gateway project, which will result in the flight simulators within the training centre being unable to operate.

The effective day to day operation of Qantas' business at Mascot generates demand from some 5,480 spaces across multiple airside and non-airside locations which Qantas controls through ownership, lease or rental arrangements (refer to **Section 7.1.1.2** for further detail).

This demand is generated by flight crew; technical; engineering; ground operations, airport customer service and corporate activities. This demand is multi-faceted reflecting factors such as:

- Round the clock operations
- Shift working
- Short stay v long stay, especially for Flight Crew with variable
- Ready access for aircraft servicing staff, engineers and ground crew
- Airport operations being time restricted
- Parking demand is unlikely to significantly change over the medium term
- Variations to frequency and service coverage of public transport more broadly

The supply of car parking needs to be aligned to this demand and the factors that drive this demand. Qantas will lose 1,700 of their existing spaces by June 2020. Factors impacting this loss include:

- Relocation of flight training centre will displace existing spaces on King Street North;
- Gateway Works and lease expiry at Jetbase; and
- Closure of the Coward Street car park (380 spaces) to accommodate the relocation of Dnata catering.

The proposed multi-deck car park provides an opportunity to:

- Ensure supply continues to match existing demand (i.e. circa 5,480 spaces) generated to maintain effective flight operations;
- Consolidate and centralise parking onto Qantas freehold land from dispersed and disconnected locations;
- Formalise and better regulate the access to car parking for Qantas employees; and
- Facilitate a better interaction between car parking locations and the surrounding road network (and proximity to public transport nodes).

Overall the proposed development will not result in major changes in staff numbers or parking provision with respect to Qantas's operations at Mascot and Sydney Airport.

The following sections provide an assessment in response to the SEARs Key Issue: Traffic and Transport.

7.1.1. Car Parking

- *details of the parking provision on-site, including the existing parking provided and its users and a justification for the amount of car parking proposed, demonstrating compliance with the appropriate parking codes;*

7.1.1.1. Car Parking Strategy

As outlined in **Section 7.1** Qantas's parking strategy is to maintain existing parking supply by proactively replacing existing parking lost as part of the relocation of the Flight Training Centre and to replace known losses of parking due to future development or end of leases. Construction of the new car park will allow for consolidation of Qantas staff parking within the campus site resulting Qantas being able to better manage its parking facilities.

7.1.1.2. Consolidation of Car Parking

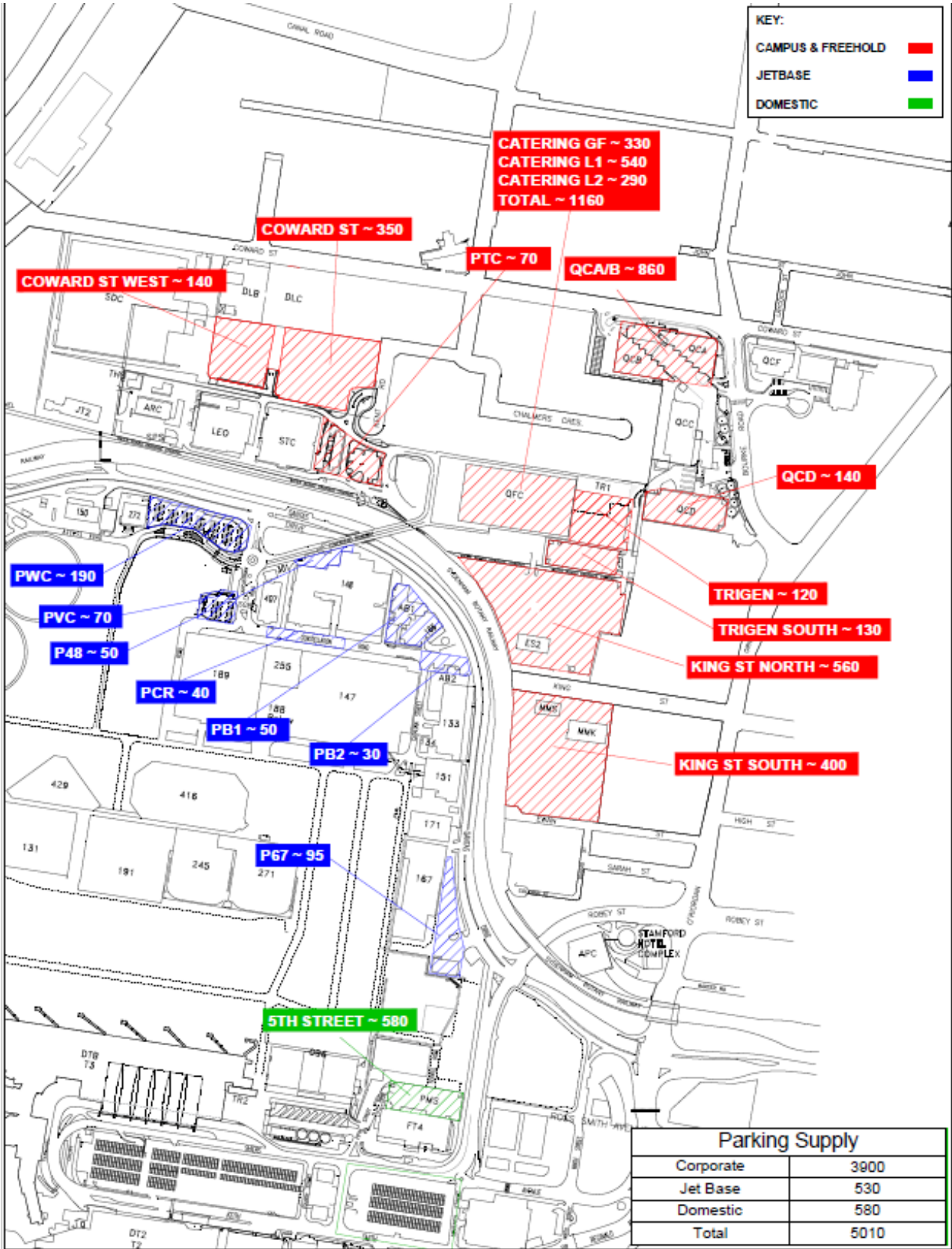
Qantas currently has access to some 5,480 car parking spaces at Mascot through ownership, lease or rent. The parking is located over four precincts (Corporate Campus, Domestic Terminal, International Terminal and Jetbase) as summarised in **Table 10**.

Table 9 – Summary of Existing Qantas Parking Provision

Precinct	Current Number of Spaces
Corporate Campus	3,900
Jetbase	530
Domestic Terminal	580
International Terminal	470
Total	5,480
<i>Source: Qantas & Colston Budd Rogers & Kafes Pty Ltd</i>	

Table 10 reveals that the majority of parking available to Qantas is located within the Corporate Campus (some 71%). Parking within the Corporate, Domestic and International precincts is highly utilised during peak periods. The location of existing Qantas parking within Corporate Campus, Domestic Terminal and Jetbase precincts is demonstrated in **Figure 25**, however due to scale parking at the International Terminal is not shown.

Figure 25 – Qantas Current Parking Supply (Corporate, Jetbase and Domestic)



Source: Colston Budd Rogers & Kafes Pty Ltd

7.1.1.3. Known Changes to Existing Parking Provision

The following changes to existing parking provision are known, this information is summarised in **Table 10**:

- Parking within the Domestic Terminal located in Fifth Street (580 spaces) is leased from SACL who have indicated that it will be unavailable to Qantas when the lease expires;
- Similarly parking within the Jetbase (530 spaces) is leased from SACL and will be unavailable to Qantas when the lease expires and as spaces are lost to accommodate the RMS' Gateway project;
- Closure of the King Street North car park (560 spaces) is required to accommodate the relocated Flight Training Centre;
- Closure of Trigen, Trigen South (250 spaces) is required to accommodate the new multi-deck car park to offset parking losses;
- Closure of the Coward Street car park (380 spaces) to accommodate the relocation of Dnata catering;
- Availability of additional parking on Level 3 of the Catering Building (300 spaces) following the relocation of Dnata to the Coward Street car park.

Table 10 – Summary of Known Changes to Qantas Parking Provision

Precinct	Existing Supply		Known Changes
Corporate Campus	3,900	King Street North	-560
		Trigen & Trigen South	-250
		Coward Street	-380
		L3 Catering	+300
Jetbase	530		-530
Domestic Terminal	580		-580
International Terminal	470		
Total	5,480	Net Shortfall without Proposed Car Park	-2,000

Source: Qantas & Colston Budd Rogers & Kafes Pty Ltd

The above changes summarised in **Table 10** will result in a net loss of some 2,000 spaces that need to be replaced in order to maintain Qantas' existing supply and to allow it to continue to successfully operate.

7.1.1.4. Proposed Car Parking

It is proposed that a multi-deck car park is constructed in stages in the north east corner of the site adjacent to the existing catering facility and trigeneration plant. The proposed car park will be built in stages, as follows:

- Stage 1: 748 car parks in the multi-deck car park and 39 car parks at grade; and
- Stage 2: 1,311 additional car parks in the multi-deck car park.

This results in 2059 car parks in the multi-deck car park and 39 car parks at grade on site or a total of 2,098. The provision of 2,098 spaces will accommodate parking that will be lost by Qantas as a result of the Project, as well as future development as outlined in **Section 7.1.1.3**. The total spaces that will be lost equates to 2,000, with 2098 spaces proposed to replace them, resulting in a minor net gain of an additional 98 spaces. Overall the proposed development will not result in any major change in staff numbers or parking provision with respect to Qantas's operations at Mascot and Sydney Airport.

Construction of the multi-deck car park will allow for consolidation of Qantas staff parking within the campus site, resulting in Qantas being able to better manage its parking facilities.

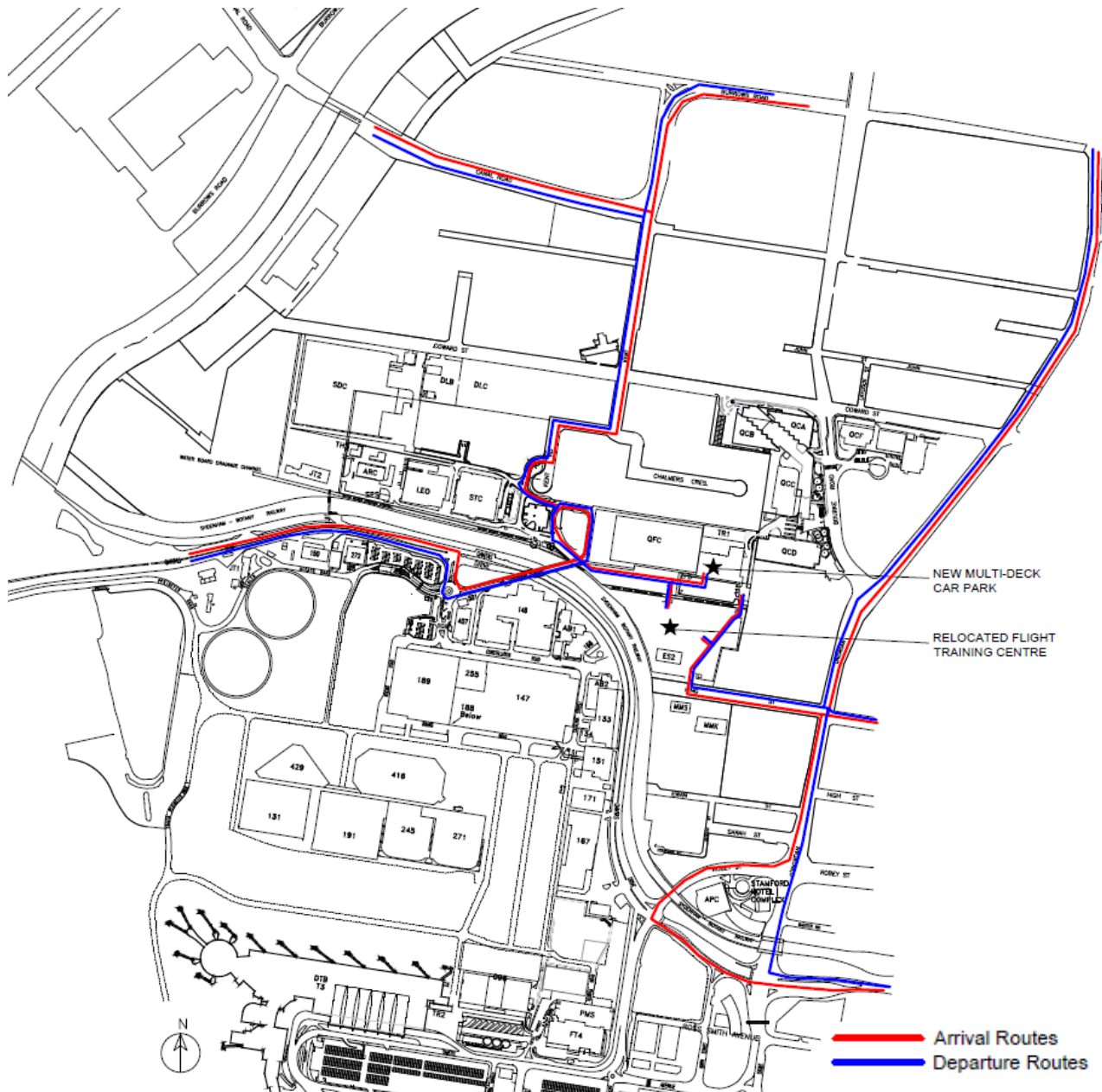
7.1.2. Access to the Site

- details of access to the site from the road network including intersection location, design and sight distance;

Access to the proposed development will be via King Street, Kent Road and Qantas Drive. No changes are proposed to the existing Kent Road and Qantas Drive Accesses. Two new accesses are proposed to King Street (at the eastern and western ends of the site). The two accesses will be designed to comply with the requirements of AS2890.

Figure 26 demonstrates the expected the major arrival and departure routes to the flight training centre and new multideck car park. Access to the flight training centre and multi-deck car park is provided directly from King Street or from Kent Road and Qantas Drive via internal roads through the Corporate Campus.

Figure 26 - Major Arrival and Departure Routes to New Multi-Deck Car Park and Relocated Flight Training Facility



Source: Colston Budd Rogers & Kafes Pty Ltd

7.1.3. Traffic Generated by the Development

- a Traffic Impact Assessment detailing all daily and peak traffic and transport movements likely to be generated (vehicle, public transport, pedestrian and cycle trips) during construction and operation of the

development, including a description of vehicle type, access routes and the impacts on nearby intersections;

- details of the likely arrival and departure times for vehicles for all components of the proposed development;
- an assessment of predicted impacts on road safety and the capacity of the road network to accommodate the development;

Weekday morning and afternoon peak period traffic counts were undertaken at various locations surrounding the site. **Figure 27** identifies the carried traffic flows per hour two-way during the peak periods:

- Qantas Drive: 4,375
- Lancastrian Drive: 465
- Robey Street: 2,190
- O'Riordan Street: 3,560
- King Street: 580
- Bourke Road: 1,405
- Kent Road: 1,045
- Coward Street: 1,205

In addition to traffic counts on the surrounding road network, surveys were undertaken at the King Street North car park and adjacent car park to the north to determine traffic movements in and out and to determine traffic generation of parking that will be replaced as part of the relocation of the flight training centre. The survey found that the two car parks generate some 450 vehicles per hour (two way) in the morning peak hour and some 300 vehicles per hour in the afternoon peak hour. It is also noted that the car parks were at capacity at the time of the surveys. Some 75% of the traffic generation of the two car parks was inbound in the morning with the reverse in the afternoon peak hour.

Based on the surveys, the arrival/departure routes of traffic using the two car parks are set out in **Table 11**, which reveals that arrival and departure routes vary between the morning and afternoon peak periods, however that Qantas Drive accommodates the majority (55%) of AM Arrivals and (45%) PM Departures, showing it to be the dominant route.

Table 11 – Summary of Existing Arrival/Departure Routes

Access	Arrivals		Departures	
	AM	PM	AM	PM
King Street	25%	25%	55%	35%
Qantas Drive	55%	25%	20%	45%
Kent Road	25%	50%	25%	20%
Total	100%	100%	100%	100%

Source: Colston Budd Rogers & Kafes Pty Ltd

The proposed car park will result in some 965 new spaces to the Corporate Campus which will generate additional traffic in and out of the Corporate Campus. However, as stated in the Traffic Report, they are relocated from either the Jetbase or Domestic Terminal and therefore will not result in new traffic to or from the airport precinct, rather it is considered to be a redistribution of existing trips.

Figure 27 - Existing Two-Way (Sum of Both Directions) Peak Hour Traffic Flows

Road	Weekday Morning	Weekday Afternoon
Qantas Drive		
– west of O’Riordan Street	4,375	3,435
– east of Robey Street	4,375	3,545
– east of Lancastrian Drive	3,665	3,415
– west of Lancastrian Drive	3,790	3,615
Lancastrian Drive		
– south of Qantas Drive	465	405
Joyce Drive		
– east of O’Riordan Street	3,350	2,870
Seventh Street		
– south of Qantas Drive	1,930	2,230
Robey Street		
– east of Qantas Drive	2,190	1,965
– west of O’Riordan Street	2,170	1,945
– east of O’Riordan Street	690	630
O’Riordan Street		
– north of Qantas Drive	1,520	2,100
– north of Robey Street	3,190	3,385
– north of King Street	3,195	3,560
– north of Bourke Road	2,435	2,795
– north of Coward Street	2,260	2,385
King Street		
– east of O’Riordan Street	510	580
– west of O’Riordan Street	280	325
Bourke Road		
– north of O’Riordan Street	1,255	1,405
– north of Qantas Access	1,190	1,170
– north of Coward Street	660	975
Kent Road		
– north of Coward Street	1,045	1,010
– south of Coward Street	330	230
Coward Street		
– east of O’Riordan Street	960	1,205
– east of Bourke Road	535	620
– east of Qantas Access	1,155	1,040
– east of Kent Road	1,165	1,090
– west of Kent Road	460	310

Source: Colston Budd Rogers & Kafes Pty Ltd

7.1.3.1. Impact on Surrounding Network

The relocation of the Flight Training Centre and construction of the new multi-deck car park will not result in any major change in staff numbers of parking provision with respect to Qantas’ operations at Mascot and Sydney Airport.

In assessing the traffic effects of the proposed development on the surrounding road network, it has been assumed that some 75% traffic generated by the 1,110 new/relocated spaces to the Corporate Campus would be new trips (this takes into account that some traffic generated by the existing car parks would use the same access points/routes as the new car park). Using the surveyed generation rates per parking space and applying the 25% reduction, the relocated 1,110 spaces would generate some 450 and 310 vehicles per

hour (two way) in the weekday morning and afternoon peak hours respectively. This additional traffic has been assigned to the road network, based on existing arrival/departure routes to/from the Corporate Campus and taking into account changes to the road network as part of the RMS upgrades.

The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The surveyed intersections have been analysed using the SIDRA 8 network model taking into account the road network improvements currently under construction. SIDRA analyses intersections controlled by traffic signals, roundabouts and signs.

SIDRA provides a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle.

For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, outlined in **Table 12**. **Table 13** summarises the level of service (LOS) at the surveyed intersections with and without the project's development traffic.

Table 12 – Definitions of LOS Ratings

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

Source: Colston Budd Rogers & Kafes Pty Ltd

Table 13 – Summary of Intersection Levels of Service (LOS)

Intersection	Level of Service (LOS)	
	No Development	With Development
Qantas Drive/Lancastrian Drive	B	B
Qantas Drive/Robey Street	C	C
Qantas Drive/O'Riordan Street	D	D
O'Riordan Street/Robey Street	A/B	A/B
O'Riordan Street/King Street	B/C	B/C
O'Riordan Street/Bourke Road	B	B
O'Riordan Street/Coward Street	B/C	B/C
Bourke Road/Coward Street	C	C
Coward Street/Kent Road	C	C

Source: Colston Budd Rogers & Kafes Pty Ltd

Table 13 demonstrates that the surrounding road network is able to accommodate the traffic generated by the proposed development with surrounding intersections considered to be operating at satisfactory or better levels of service in the peak periods.

7.1.4. Travel Demand Management

- *an assessment of the implications for public and active transport, the potential for implementing a location specific sustainable travel demand management strategy and the provision of end of trip facilities to increase active transport usage to and from the site;*

To encourage travel modes other than private vehicle, a travel demand management approach would be adopted. The site is accessible by public transport, being within walking distance of Mascot train station and serviced by a number of bus routes that provide local and regional connections. To achieve this, Qantas would prepare a work place travel plan and transport access guide to support the objectives of encouraging the use of public transport. The work place travel plan and travel access guide would include the following:

- encourage the use of public transport, including rail services through Mascot train station and accessibility by buses;
- work with public transport providers to improve services;
- encourage public transport by employees and visitors through the provision of information, maps and timetables;
- raise awareness of health benefits of walking (including maps showing walking and cycling routes, including through and adjacent to the site);
- encourage cycling by providing safe and secure bicycle parking, including the provision of lockers and change facilities.

The travel access guide would be developed in accordance with the principles identified by TfNSW and RMS, and distributed with marketing material for the proposed development. The travel access guide would assist in delivering sustainable transport objectives, by considering the means available for reducing dependence solely on cars for travel purposes, encouraging the use of public transport, cycling and walking and supporting the efficient and viable operation of public transport services.

Travel demand management would apply to Qantas employees that work during the day (typically 8.00am to 6.00pm). It is recognized that for a proportion of employees (for example flight crew and support staff that work shifts that start or finish at night or early morning) the majority of these will continue to drive to work as there are not suitable alternative means of travel.

7.1.4.1. Active Transport and End of Trip Facilities

The site currently has pedestrian and cyclist connections to the adjacent road network. Within the site the network of pedestrian paths, that connect the main corporate building on Bourke Road with car parking areas and other building within the campus, will be maintained. Around the new multi-deck car park and Flight Training Centre, new paths will be constructed, improving pedestrian connectivity and separating pedestrians from parking areas within this part of the Corporate Campus.

Within the ground floor of the new multi-deck car park, additional bicycle parking will be provided. Cyclists will be able to use the existing end of trip facilities within the main corporate building on Bourke Road.

7.1.5. Required Road Upgrades

- *plans of any road upgrades or new roads required for the development, if necessary;*

No upgrades to the external road network are required as part of the proposed development.

7.1.6. Internal Road Network

- *detailed plans of the proposed layout of the internal road network and parking provision on-site, in accordance with the relevant Australian Standards; and*

All new car parks, access roads and service areas will be designed to comply with the requirements of AS2890.1-2004, AS2890.2-2002 and AS2890.6-2009.

Vehicular Access

Vehicular access to the proposed development will be as currently exists to Corporate Campus, that is, from King Street, Kent Road and Qantas Drive. As part of the proposed development, the existing separate entry/exit driveways on King Street will be closed and replaced with two new driveways at the eastern and western ends of the site. Both driveways will cater for two way traffic. The eastern driveway will be the

primary access, and will provide access to the new multi deck car park, Flight Training Centre and ingress for vehicles servicing the Flight Training Centre. The western access will be a secondary access for the Flight Training Centre and provide egress for vehicles servicing the Flight Training Centre.

Access to the site from King Street will be controlled via boom gates. On both driveways the boom gates will be located well within the site thus providing adequate queuing area. On the eastern access three boom gates will be provided. These will operate in a tidal arrangement, with two entry/one exit lane in the morning peak and one entry lane/two exit lanes in the afternoon peak. On the western access a single lane boom gate will be provided. This will allow service vehicles to exit the site. Traffic flows on this secondary access will be low and thus a single lane will provide appropriate capacity. At the single lane section, signage will be provided indicating that vehicles exiting the site should give way to vehicles entering the site.

Internal Road Network Upgrades

Within the King Street North car park, a new road will be constructed to the south of the canal. Parking and bus stops will be located along this new road. The existing bridge connections across the canal will be retained, with traffic flow as per the existing situation (eastern bridge two way flow and western bridge one flow southbound). Both bridges will retain the existing pedestrian paths. The existing one way road (westbound) from the King Street North car park (adjacent to the freight line) will be retained, allowing vehicles to access Qantas Drive and Kent Road.

As part of the new multi deck car park, a new road will be constructed between the car park and the canal. In addition the area between the canal and the catering building will be reconfigured, to separate car park traffic from the operation of the catering docks. A service road between the new car park and the Tri-Gen building (to the north of the car park) will be provided to allow access to the Tri-Gen building. Some at grade parking will be provided along this service road.

Loading and Services Access

Loading for the Flight Training Centre will be provided within a service area, located on the eastern side of the building. The docks will be designed to accommodate rigid trucks and to comply with the requirements of AS2890.2-2002 with all trucks entering and departing the docks in a forward direction.

Trucks will access the site via King Street, entering via the eastern driveway and departing via the western driveway.

A secondary service area will be located adjacent to the western driveway, to allow delivery of hydraulics to the flight simulators. It is understood that access is required by a medium rigid truck at this location on an infrequent basis (typically twice a year). When required, the truck would enter the site via the western driveway, reverse into the service area and exit via the western driveway in a forward direction. Given the infrequency of this service and that the western driveway is a secondary access (carrying low traffic flows), this arrangement is satisfactory.

On occasions an articulated truck will need to access the Flight Training Centre (such as to install or remove a flight simulator). The service area and internal roads adjacent to the flight centre building will be designed to allow circulation by an articulated truck. However as the truck would take up the full width of the roads, appropriate traffic management will need to be provided to manage traffic flow when these trucks are on-site. These events will occur outside of peak traffic flow periods (such as the weekday morning and afternoon).

7.1.7. Dangerous Goods

- *details of any likely dangerous goods to be transported on arterial and local roads to/from the site, if any, and the preparation of an incident management strategy, if necessary.*

As per **Section 4.4**, the proposed development does not exceed the threshold levels published in “Applying SEPP33” for the transportation of dangerous goods and there are no “offensive” operations at the site. Hence, it is concluded that the preparation of an incident management strategy is not required (**Appendix KK**).

7.2. URBAN DESIGN AND VISUAL

The following sections provide an assessment in response to the SEARs Key Issue: Urban Design and Visual, requiring:

- *layout of the development including staging, gross floor area, site coverage, setbacks, proposed open space and landscaped areas and justification for any inconsistencies with the Botany Local Environmental Plan 2013 and the Botany Bay Development Control Plan 2013;*
- *a detailed assessment and justification (including photomontages and perspectives) for the flight training centre and carparking buildings, including building height with reference to the height of surrounding buildings, building materials, architectural treatments and finishes, colour, scale, bulk and overshadowing, from nearby public receivers and significant vantage points within the broader public domain;*
- *an options analysis for the proposed building materials, architectural treatments, finishes and colour of the buildings, prepared in consultation with nearby sensitive receivers with evidence of consultation provided;*
- *a design report that provides an assessment of the proposal against the design excellence requirements of Clause 6.16 of the Botany Local Environmental Plan;*
- *details regarding security requirements and features and lighting;*
- *suitable landscaping giving preference to local native provenance tree, shrub and groundcover species;*
- *the layout and design of the development having regard to the surrounding vehicular, pedestrian and cycling networks, if applicable;*
- *proposed cut and fill works associated with the development; and*
- *measures to minimise the extent of cut and fill.*

7.2.1. Design and Built Form

The new facilities provide a dramatically improved and centralised precinct for staff with flight training and Qantas Campus co-located and serviced by a new consolidated centralised carpark facility accessibly located within the site. This is discussed in detail at **Sections 3.2.4.**

The flight training centre is defined by one building with two distinct forms that are internally connected. The two distinct forms are reflective of the different functional requirements of the proposed uses. The distinctly separate building forms are articulated and animated with glazing, setbacks and rebates. This is demonstrated in **Figure 15, Figure 16 and Figure 17.**

The building form and design addresses the urban design constraints of the site and the functional requirements of the facilities. The critical operational and regulatory requirements regarding safety training and emergency procedures have driven the building design 'from within', whilst a clear understanding of the industrial context and site parameters has influenced an appropriate contextual design response, as detailed in the Architectural Design Report at **Appendix D.**

The maximum height of the new flight training centre will be 19m from the existing ground level to the top of the parapet. This height sits comfortably within its context and well below the maximum building height of 44m and the surrounding development heights near to the maximum building height. The building's low scale will not adversely impact views available from the Travelodge to the Airport.

7.2.2. Materials and Facades

The Emergency Procedures Hall is solid and grounded with an earth toned concrete protective acoustic skin comprised of vertical precast panels (see **Figure 28**). To the north the Emergency Procedures Hall incorporates open and transparent elements with a mix of colorbond and glazing offering light and aspect into the Door Training area and the Classrooms within.

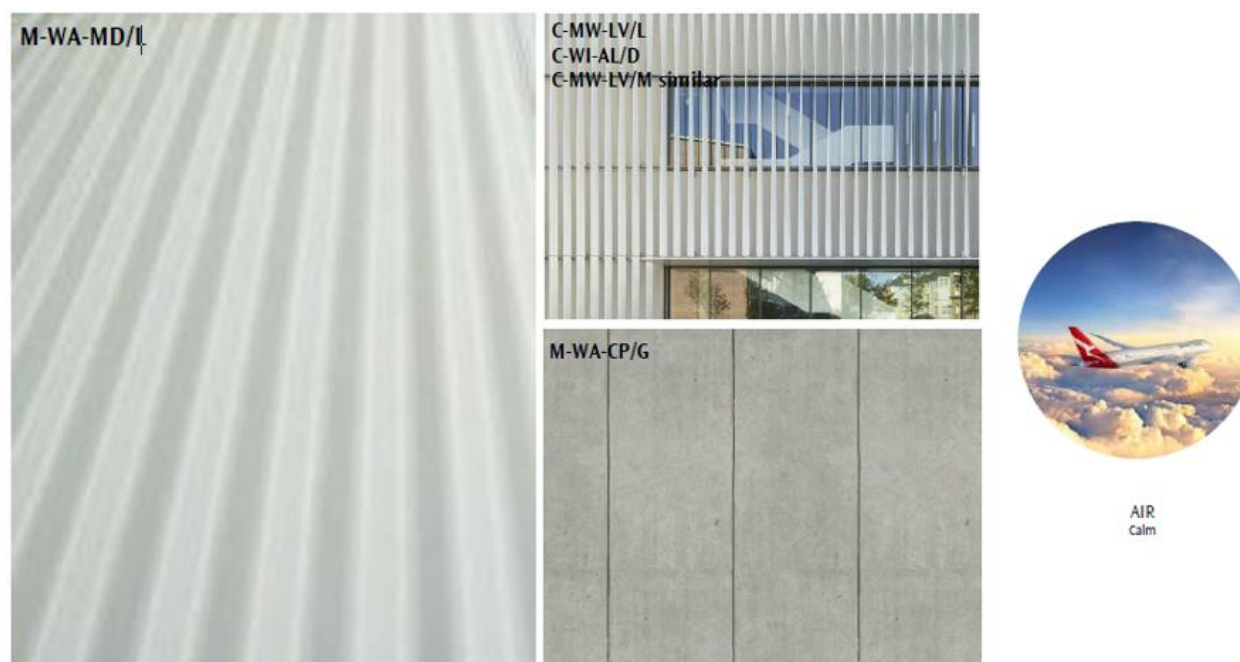
Figure 28 – Emergency Procedures Hall Primary Materials and Finishes



Source: Noxon Giffen

The Flight Simulator Wing is more ephemeral with a layered and articulated singular form. The Sinusoidal colorbond ‘wrap’ has an enlarged profile to accentuate depth and shadow across the facade and is Surf Mist in colour to blend into the sky and clouds and reduce apparent bulk (see **Figure 29**). The building has a secure protective base of self-finished concrete whilst the upper level staff offices are enveloped in a perimeter ribbon of glazing emphasising the horizontality of the building and articulating the building ‘top’. The perimeter glazing to the optimises user amenity and animates the building, whilst vertical glazing slots punctuate the perimeter and allow natural light into the simulator bays without compromising security.

Figure 29 – Flight Simulator Wing Primary Materials and Finishes



Source: Noxon Giffen

The Car Park’s industrial context and functional requirements of the carpark have produced an architectural response that provides a clear expression of the concrete structure and floor plates, broken by vertical concrete lift cores to the East and West facades (see **Figure 30**). The façade consists of a panelised open weave galvanised chain mesh contained within a galvanised tubular steel frame with diagonal bracing. The panel system envelopes the façade, optimising natural ventilation and daylight whilst providing user safety from

within. The open mesh provides visual transparency and 'lightness' whilst the diagonal bracing is rotated thereby creating a dynamic facade pattern and texture.

A layer of Colorbond metal discs are fixed to a portion of the steel chain wire mesh panels in a triangulated pattern to articulate movement in the facade. In reviewing the disk colour options, Option 05.03 Colorbond Surfmist has been adopted to reflect the Qantas 'air' element in parallel to the Flight Training Centre. The Surfmist 'disks' will create a visual connection with the sky and clouds, thereby minimising the visual bulk and mass of the carpark.

The disc panels form a diagonal pattern across the facades and are applied in an open 'hit and miss' pattern, thereby allowing permeability of natural ventilation and daylight. The triangular panels are an abstract reference to the tail of an aircraft, whilst the diagonal pattern across the façades evoke movement and flight. The combination of mesh, bracing and metal 'disks' provides permeability and lightness whilst providing an animated facade which reduces building bulk and mass.

The open weave mesh achieves a minimum 50% permeability thereby avoiding the need for mechanical ventilation to the carpark. The open and light façade reduces apparent building bulk and mass. Anti-graffiti treatment is provided to approximately 3m height on all concrete facades.

Figure 30 – Car Park Primary Materials and Finishes






Source: Noxon Giffen Noxon Giffen




Refer to **Figure 15**, **Figure 16** and **Figure 17** for renders of the Project demonstrating its materiality and built form.

7.2.3. Options Analysis

The design phases of the car park involved eight options exploring different articulation possibilities through the choice of material, colour and design variations. As a base, all options maintain the industrial exposed concrete structure. In all options the environmental strategy is proposed to be naturally ventilated. The proposed design options were discussed during consultation with local stakeholders, as discussed in **Section 6.2.3**. The relative merits of the options are discussed and shown on the following pages.

Table 14 – Car Park Façade Options Study

Option 01	Option 02	Option 03
<p>The first design option embodies an exposed industrial design with minimal façade treatment. The design strategy includes an exposed structural concrete frame and exposed stair and lift cores. The façade includes low level pre-cast concrete panels with integrated crash rail to 1300mm high. The roof includes a structural galvanised steel pergola with perimeter landscaping and landscaping at the ground plane.</p>	<p>The second design option builds on option one and embodies the same design principles of an exposed structural concrete frame, a structural galvanised steel pergola roof with perimeter landscaping and ground plane landscaping.</p> <p>The change in this design option is the façade treatment which proposes a low level proprietary perforated metal balustrade with an integrated crash rail system to nominal 1300mm high.</p>	<p>The third design option is similar to Option 02 however proposes a perforated mesh with balustrade panels with a circular pattern. This option retains the industrial exposed structural concrete frame, stairs and lift cores and the perimeter and ground floor landscaping.</p>
		

Option 04	Option 05	<i>Option 05.01</i>
<p>The fourth design option retains the industrial exposed concrete structure, however wrapped with perforated metal infill panels floor to floor. This is different to Option 03 which presents a break in the infill panels. Option 04 therefore has a heavier appearance as the metal panels are wrapped in entirety around the building. This design feature also has the potential to reduce ventilation.</p>	<p>The fifth option is similar to Option 04, however replaces the perforated metal infill panels with galvanised steel wire frame from floor to floor. The change in the façade material results in a light and open design in comparison to the heavy appearance of the metal panels in Option 04.</p> <p>The galvanised steel wire frame is a preferred option for the façade and three design variations using this material are explored and discussed below.</p>	<p>This design option proposes galvanised metal ‘disks’ that are fixed to the chain wire mesh in a “hit and miss” diamond pattern across the façade. This optimises natural ventilation and daylight opportunities.</p>
		

Option 05.02

This design option explores the same metal 'disks' as proposed in Option 05.01, however in a red colour. This option retains the "hit and miss" diamond pattern across the façade.



Option 05.03

This design option proposes the same metal "disk" as Options 05.01 and 05.02, however replaces the red colour with a colorbond 'surfmist' colour. Again, this option retains the "hit and miss" diamond pattern across the façade.



Preferred option – Option 05.03

This option is the preferred option as it presents the car park building as a dynamic yet utilitarian facility within the industrial setting of the site. The open façade design also achieves the required minimum of 50% free area and ensures the building does not require any mechanical ventilation or the need for fire sprinklers.

The open mesh also provides visual transparency and a lightness to the design that is not as well articulated by using the concrete or metal panels, proposed in Options 01, 02, 03 and 04. The open mesh will also allow for natural ventilation and daylight into the car park.

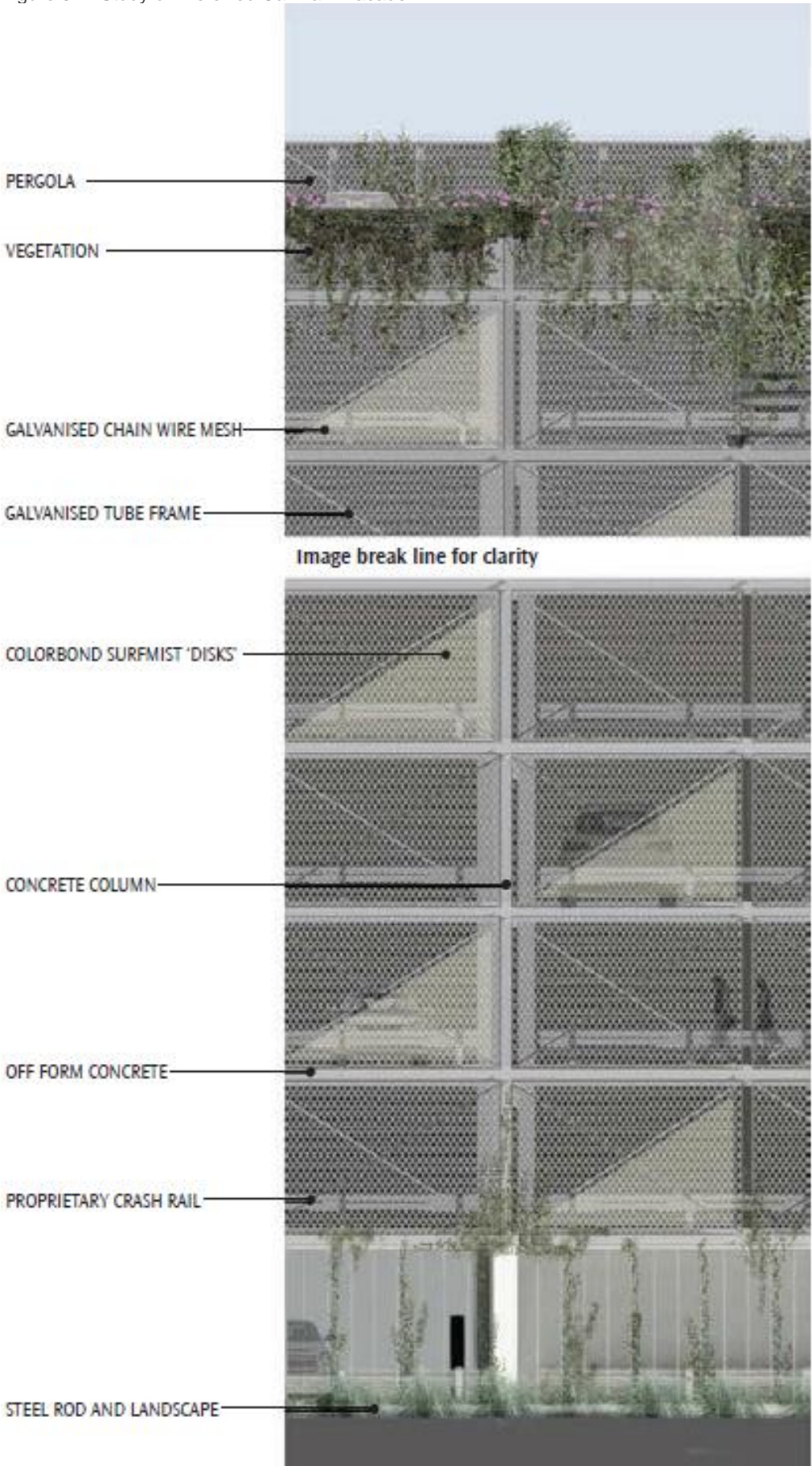
The colorbond 'surfmist' chosen also reflects the Qantas 'air' element of the Flight Training Centre. This colour is envisioned to create a visual connection with the sky and clouds and reduce the overall visual bulk and mass of the car park building, as shown in **Figure 31** and **Figure 32**.

Figure 31 – Visualisation of Preferred Car Park Facade



Source: Noxon Giffen

Figure 32 - Study of Preferred Car Park Facade



Source: Noxon Giffen

7.2.4. Design Excellence

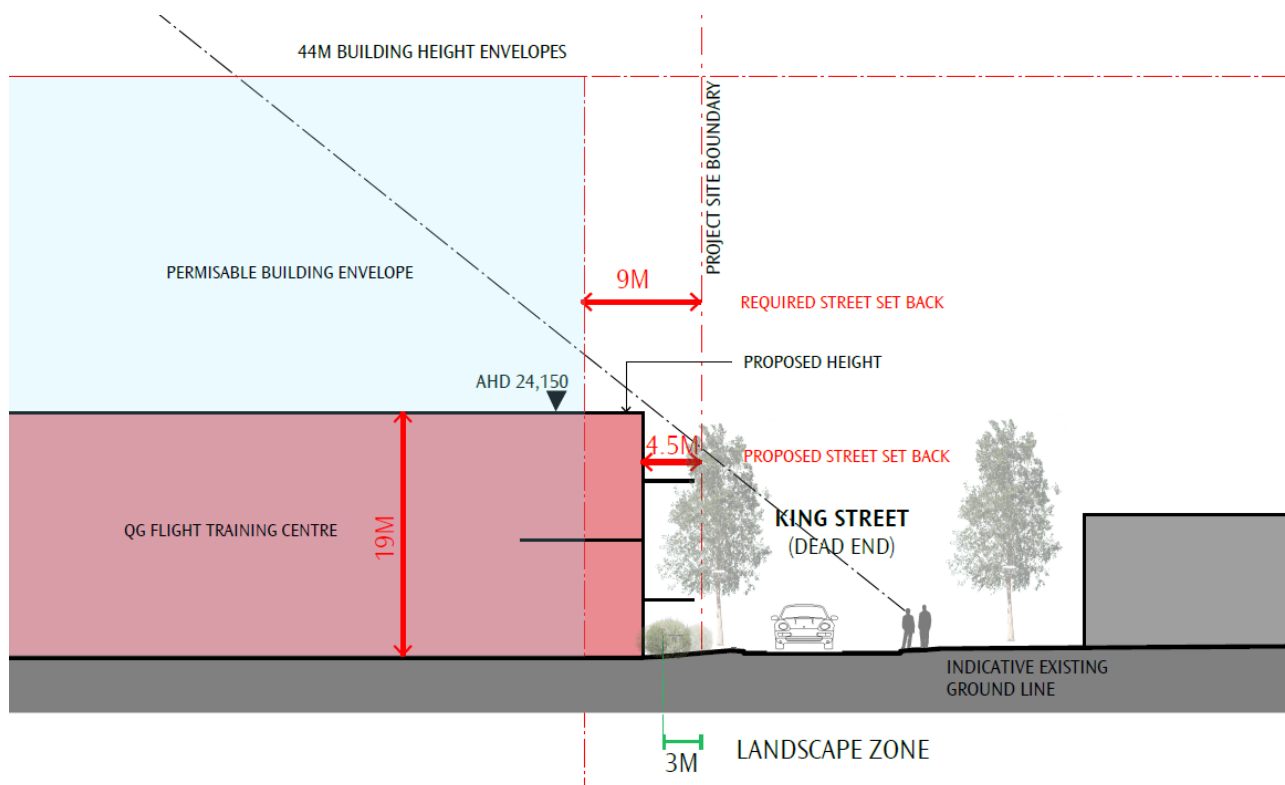
The proposed Qantas flight training centre and carpark offer a clear, pragmatic and informed response to the site, the industrial context and a unique set of functional operational requirements. The flight training centre is defined by two related but distinct forms reflecting the differing functional requirements within the building.

An Architectural Design Report has been prepared by Noxon Giffen that demonstrates how the development exhibits design excellence, refer to **Appendix D**. Compliance with cl6.16 Design Excellence of the BBLEP 2013 is addressed in **Section 4.7.5**.

7.2.5. Public Domain

The building mass of the carpark and flight training centre steps back from King Street to minimise public domain impacts. The relatively low scale flight training centre is well below the permissible building envelope thereby minimising the impact on King Street and the public domain. Operational requirements of the Flight Simulator Wing necessitate a reduced set back to King Street of 4.5m; however this is offset by the significantly reduced building height, as demonstrated in **Figure 33**.

Figure 33 – Proposed Set Back to King Street



Source: Noxon Giffen

7.2.6. Landscaping

The landscaping strategy for the site seeks to incorporate landscaping where possible and enhance the amenity for users and visitors. This is shown through new plantings along the King Street frontage to enhance the tree canopy over the public domain, as well as throughout the site. Native landscaping has been incorporated where possible to enhance the environmental value of the local area.

Canopy cover is an integral component of the landscape strategy. To complement the existing trees to be retained on site, the additional planting of canopy will result at maturity in a future canopy cover of 9,831sqm which is an increase from the existing canopy area of 9,062sqm.

The BBDCP 2013 requires 10% of a site to be landscaped area. Generally, the landscaped area has been maximised where possible with consideration of access, servicing and maintenance access. It is also noted that the replacement of simulators requires a significant amount of hard stand area, and a large portion of the site is the Catering Facility building. Nonetheless, the soft landscaped area for the site is 9% or 4,722sqm which is considered contextually appropriate for the industrial nature of the site and surrounds.

A Public Domain and Landscape Report has been prepared by Scott Carver that provides further detail on how the site incorporates landscaping, refer to **Appendix E**.

7.2.7. View Impact

A Landscape and Visual Impact Assessment (LVIA) has been conducted by Scott Carver and is enclosed at **Appendix M**. The assessment includes a comprehensive evaluation and assessment of any potential impacts on views enjoyed by surrounding residents, due to the design of the development.

Existing environment

Currently the site does not comprise any built form, with the exception of the industrial shed and guardhouse and therefore there will be a change in view impacts from surrounding properties, as discussed below.

Methodology

The LVIA has considered the potential visual effects and impacts on neighbouring properties and streetscapes. To the east of the development are commercial uses, including the Travelodge which includes a commercial carpark (Wilson carpark) and Pullman Sydney Airport. These commercial uses are closest to the site and potentially most affected by potential visual effects and impacts of the proposed built forms. Accurate photos and data points were taken from the Travelodge and Wilson Carpark looking north-west. View modelling for the Pullman Hotel has been taken from the top habitable floor for maximum view, looking West.

The assessment of eleven key viewpoints has been made to represent a wide range of visual receptors. The visual impacts have been assessed from early works to complete built operational range, with the vast majority of the effects at negligible to moderate adverse or neutral once built.

Assessment

The construction phase is considered to have the most significant visually prominent activities to the Travelodge which includes visual impacts related to temporary fencing, lighting, tall construction cranes and façade treatment works. The car park construction will have the most visual impact from all views, with the exception of the King Street viewpoint.

The LVIA shows that once operational, the visual effect generally reduces for all receptors as the machinery and equipment related to construction works will be removed. The buildings are contextually appropriate with the urban setting of the surrounding area and it is therefore considered that the effect is neutral in the majority of the views. An exception to this is potential views from the highly sensitive residential properties to be constructed approximately 300m to the north west of the site, specifically the East Square Apartments. The view analysis identifies that views from the apartments are more long-ranging and face towards the car park development.

SPECIFIC MITIGATION MEASURES

The LVIA provides the following mitigation measures to consider at detailed design stage:

- Consider the use of lower, more frequent light poles where possible to mitigate light spill effects and ambient light impacts.
- Integration of car parking, planting and signage to present as one cohesive address.
- Placement of lighting columns and the specification of suitable lighting levels that would ensure minimal light spillage to surrounding areas and for high-rise apartment views.
- Muted colours for finishes and materials.
- On site planting of suitable vegetation species at a range of heights.
- It is not recommended to provide mitigation in the way of screening vegetation off site.

7.2.8. Visual Privacy

The proposal has been appropriately designed to prevent adverse privacy impacts on surrounding neighbours, and future staff as:

- The Project has been designed to be inwardly focused with no significant views into adjoining properties from the flight training centre;
- Landscaping is proposed along the boundaries for screening.

Accordingly, the proposal is appropriate in terms of visual privacy and no mitigation measures are required.

7.2.9. Solar Access and Overshadowing

The shadow analysis prepared by Noxon Giffen shows shadow impacts for Stage 1 and Stage 2 construction of the car parking facility and is provided at **Appendix C**.

Existing environment

Current shadow analysis shows that there is some existing overshadowing over the site and King Street road reserve as a result of the existing buildings located at the eastern boundary of the site, as well as the existing Qantas Catering Building at midwinter.

Methodology

Shadow diagrams were prepared to show the existing shadows and proposed shadows for the Stage 1 and Stage 2 car park construction.

Assessment

The erection of a 14 storey car park at the north of the site will generate overshadowing impacts to the land to the south where the flight training facility is proposed.

The shadow analysis demonstrates that the Stage 1 construction of the car park will generate additional shadowing impacts to the west over the Botany Rail Line and the flight training centre at midwinter. The Stage 2 construction of the car park will generate additional overshadowing (from the Stage 1 construction) to the north of the flight training centre and to commercial properties (including Qantas Building and Corporate Connect) and Wilson carpark to the east of the site at midwinter.

The proposed flight training centre will result in some additional overshadowing of the King Street public domain throughout the day at mid-winter.

Predominately, overshadowing impacts will occur over the site itself, the King Street road reserve and the Botany Rail Line. The overshadowing impacts on commercial properties as a result of the multi-storey car park are considered of most significance as they will be cast in full shadow at mid-winter. However, it is noted that the extent of the increased overshadowing arising from the scale and built form of the development permissible under the planning controls is an inevitable consequence of the project.

7.2.10. Wind Impacts

Windtech prepared a desktop Pedestrian Wind Environment Statement (**Appendix J**) in order to investigate and assess the likely impact of the proposed design on the local wind environment on the critical outdoor areas within and around the subject development. Their report concludes that *'it is not anticipated that there will be adverse wind conditions in any of the adjacent public footpaths or outdoor trafficable areas within the development.'*

SPECIFIC MITIGATION MEASURES

Given the that it is not anticipated that the Project will generate any adverse wind conditions in any of the adjacent public footpaths or outdoor trafficable areas within the development, the following mitigation measures have been identified by Windtech:

- Retention of the awning over the loading dock.
- Retention of the airlock entry. It is further recommended that the airlock have at least 7m between the two sets of doors.
- Retention of the blade walls at the north east and north west corners of the Emergency Procedures Training Facility.
- Retention of all existing planting along the northern, southern and western boundaries of the site.
- Inclusion of localised screening next to the staff outdoor area to the north of the Emergency Procedures Hall.

7.2.11. Cut and Fill

The proposal will generate some excavation works as shown in **Table 15** and **Figure 34**. The excavation volume and fill for both the car park and the Flight Training Centre will result in a net cut of 43.069 cubic metres. The project has sought to minimise the need for cut and fill by not excavating for subterranean car parking or facilities. **Figure 34** outlines that the main locations for cut are for the excavation for the ditching

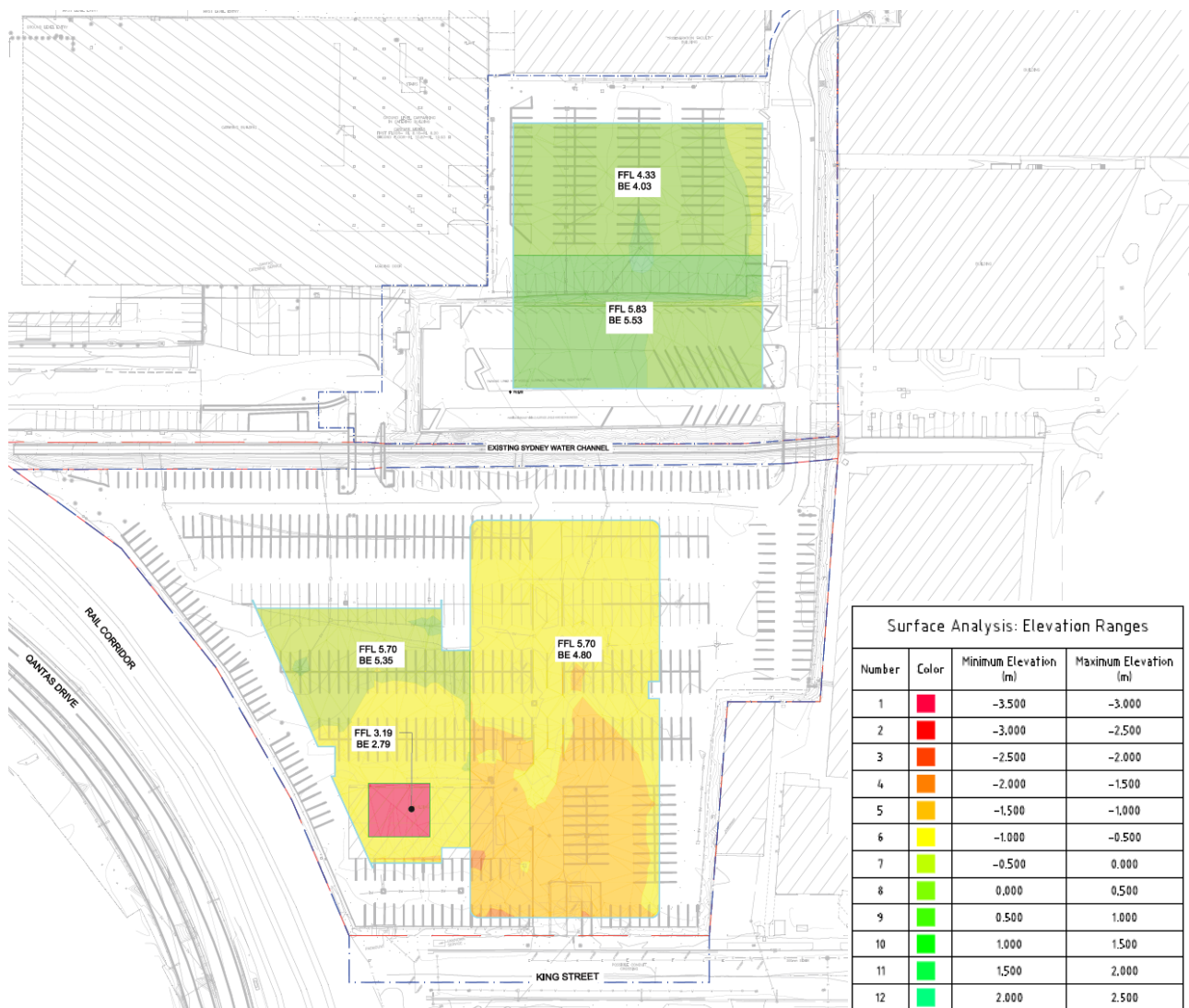
pool and minor cut for the flight training centre, and the majority of fill works occurring in the location of the multi-deck carpark. For more detail refer to the Civil Engineering Drawings at **Appendix Z**.

Table 15 – Cut/Fill Summary

	Cut	Fill	Net
Bulk Excavation Volume Carpark	12.292 Cu.M	2452.752 Cu. M	2440. 460 Cu.M <Fill>
Bulk Excavation Volume Training Centre	2833.473 Cu. M	349.945 Cu. M	2483.528 Cu. M <Cut>
Totals	2845.765 Cu. M	2802. 697 Cu. M	43. 069 Cu. M. <Cut>

Source: Enstruct

Figure 34 – Excavation works



Source: Enstruct

7.3. NOISE AND VIBRATION

A The Noise and Vibrations Impact Assessment (NVIA) was undertaken by Norman Disney & Young (NDY) in order to assess the likely acoustic impacts of the project and is included at **Appendix X**. The NVIA has been prepared in response to SEARs Key Issue: Noise and Vibration, requiring:

- a description of all potential noise and vibration sources during the construction and operational phases of the development, including on and off-site traffic noise;

- a noise impact assessment, including a cumulative noise impact assessment in accordance with relevant Environment Protection Authority guidelines;
- a detailed construction programme considering sensitive receivers and other nearby construction activities, with justification for any requested extended construction hours;
- consideration of the operational requirements of the development in relation to surrounding noise sources such as the proposed Sydney Gateway Project and the Botany Rail Duplication Project; and
- details of noise mitigation, management and monitoring measures.

The report makes an assessment of operational and construction acoustic impacts and considers the potential for extended construction hours and considers the operational requirements of the flight training centre in relation to surrounding noise sources including the proposed Sydney Gateway Project and the Botany Rail Duplication Project. For clarity this assessment has been split in to two parts:

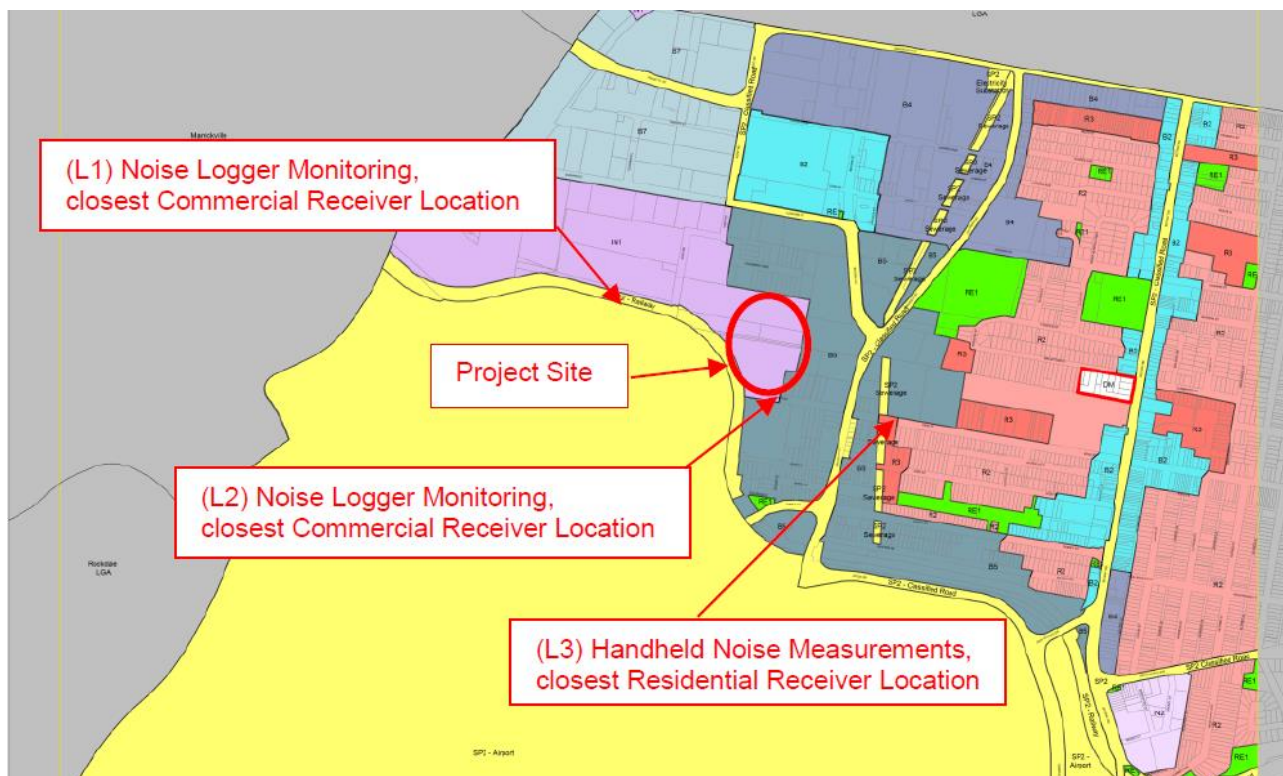
- **Section 7.3.1** establishes the existing acoustic environment;
- **Section 7.3.2** makes an assessment of the expected construction acoustic impacts of the project on surrounding receivers and considers the potential for extended construction hours and what additional impact they would represent;
- **Section 7.3.3** makes an assessment of the expected operational acoustic impacts of the project on surrounding receivers; and
- **Section 7.3.4** specifically addresses the impact of external noise sources to the project including from the proposed Sydney Gateway Project and the Botany Rail Duplication Project with regard to the specific operational requirements of the project.

7.3.1. Acoustic Survey of the Existing Environment

Methodology

Unattended noise and vibration measurements were conducted to determine the existing ambient noise and vibration levels of the site and surrounding area. Three locations were determined to be representative of surrounding context and sensitive receivers, the locations of which are shown in **Figure 35**.

Figure 35 – Location of Noise Logger Measurement Locations



Source: Norman Disney & Young

The noise survey at a representative location for receivers in the Infrastructure zone to the West of the site at Qantas Jetbase (L1) was carried out between the 15th and 21st of May 2018.

The noise survey at the Eastern site boundary at 295 King Street (L2) was carried out between the 5th and 14th December 2018 and due to unfavourable weather conditions during the initial assessment period, additional measurements were carried out between the 9th and 12th of April 2019. It should be noted that L2 is considered to be the most important location as it is representative of noise levels experienced at Travelodge, Goodman and AMP.

Handheld noise logging was carried out on 6th of February 2019 at the intersection of O'Riordan Street and King Street as well as on the 9th and 12th of April at 316 King Street at the nearest Residential receiver boundary (L3).

In order to verify that the noise data was obtained during suitable meteorological conditions, weather data such as rain and wind speed was obtained from the Australian Bureau of Meteorology, Sydney Airport weather station and Kingsford Smith International weather station as representative sites. Noise data was excluded (as per the NSW NPfI methodology) from the results if: rain was observed during any 15 minute noise measurement period and/or wind speeds exceeded 5 m/s during any 15 minute noise measuring period.

Existing Ambient Noise Levels

For the purposes of assessment, the measured noise data was processed into the following time periods:

- **Daytime:** 0700 to 1800 hrs;
- **Evening:** 1800 to 2200 hrs;
- **Night-time:** 2200 to 0700 hrs.

The measured background (LA90) and equivalent continuous (LAeq) noise levels during these defined time periods for each location are presented in **Table 16**. The LA90 noise levels presented are Rating Background Levels (RBLs), being the median of the background LA90 (i.e. of the lowest 10th percentile of samples) in each daytime, evening and night-time measurement period, for each 24 hour period during the noise survey. The LAeq noise levels presented are the logarithmic average of all the LAeq samples taken in each of the daytime, evening and night-time periods.

Table 16 – Existing Ambient Noise Levels as measured by NDY

Location	Noise Index	Noise Level, dB re 20 µPa		
		Daytime 07:00 to 18:00	Evening 18:00 to 22:00	Night-time 22:00 to 07:00
L1 Western Receiver (Qantas Jetbase)	LA90 (RBL)	63	58	50
	LAeq,period	71	71	68
L2 Eastern Site Boundary (295 King Street)	LA90 (RBL)	50	49	45
	LAeq,period	65	63	57
L3 Residential receiver (314 King Street)*	LA90 (RBL)	50	45	40
	LAeq,period	65	60	55
<p>* RBLs and Period Noise Levels have been estimated based on handheld measurements and under consideration of estimated average background a-weighted sound pressure levels for different residences in Australia as per Appendix A in AS 1055:2-1997 for Noise Area R4 (Areas with dense transportation or some commerce or industry). We have elected to use background noise levels for noise area R4 which are higher than the levels for the R3 zoning as the handheld measurement results confirm significantly higher background noise levels than typically experienced in R2 zoned areas due to the close proximity to O'Riordan Street with high traffic volumes.</p>				
Source: Norman Disney & Young				

Project Intrusiveness and Amenity Criteria

Based on the unattended noise survey summarised in **Table 16**, NDY was then able to determine the external noise level criteria for the receiver locations in accordance with the *NSW Noise Policy for Industry (NPfI)*. The NPfI provides assessment methodologies, criteria and detailed information on the assessment of environmental noise emissions in NSW.

The NPfI criteria for noise sources consider two (2) components:

- **Controlling intrusive noise** impacts for residential receivers. Assessing intrusiveness generally requires noise measurements to quantify background (LA90) noise levels at a location considered representative of the most potentially affected residential receiver(s). The intrusiveness criterion essentially means that the equivalent continuous noise level (LAeq) of the source(s) under consideration should be controlled to not exceed background noise levels by more than 5dB.
- **Maintaining noise amenity** for various categories of land use (including residential receivers and other sensitive receivers). The amenity criterion is based on the sensitivity of a particular land use to industrial-type noise. The recommended amenity noise levels detailed in NPfI represent the objective for total industrial noise at a receiver location, whereas the project amenity noise level represents the objective for noise from a single industrial development at a receiver location. This is to ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area.

The noise sensitive receivers in the Business Development zones to the North and East have been assessed against criteria for commercial receivers outlined in the NPfI.

Occupational noise emissions to the receivers in the Infrastructure zone to the West have been assessed against criteria for industrial receivers outlined in the NPfI. Construction noise emissions have not been assessed to the Western boundary as the land is currently leased by Qantas and will be leased and occupied by Qantas during construction.

The closest residential receivers are located at 316 King Street approx. 260m from the proposed development which have been assessed against the Urban residential criteria outlined in the NPfI.

The NPfI notes *“Intrusive noise levels are only applied to residential receivers (residences). For other receiver types identified in Table 2.2, only the amenity levels apply.”* The project amenity and intrusive noise levels are listed in **Table 17**.

Table 17 – NPfI Project Intrusiveness and Amenity Noise Criteria

Type of Receiver	Noise Level Leq,15min [dBA]		
	Daytime 07:00 to 18:00	Evening 18:00 to 22:00	Night-time 22:00 to 07:00
Industrial (West)	Project Amenity Assessment		
	68	68	68
Commercial (North/East/South)	Project Amenity Assessment		
	63	63	63
Urban Residential (316 King Street)	Project Intrusiveness Assessment*		
	55	50	45
	Project Amenity Assessment		
	58	50	45
* Project Intrusiveness Noise Levels are based on the conservative estimates.			
Source: Norman Disney & Young			

Assessment

Table 16 demonstrates that the existing ambient noise levels surrounding the site are reflective of their locations within a busy industrial precinct adjacent to an airport and directly under a flight path within the 25-30 ANEF contour.

Furthermore, in **Table 17** the Project Amenity Assessment for the Commercial properties to the North/East/South, including Travelodge, Goodman and AMP is 63dBA which is equal to the existing evening average at L2 on the Eastern Site Boundary (the same location) in **Table 16** which further reinforces that the existing ambient noise levels surrounding the project are high due to the location and surrounding uses.

7.3.2. Construction Acoustic Impacts

Methodology

The *Interim Construction Noise Guideline 2009 (ICNG)* presents two ways of assessing construction noise impacts – the quantitative method, which is generally suited to longer term construction works and the qualitative method, which is generally suited to short term works (usually not more than 3 weeks) such as infrastructure maintenance. As the length of the construction works associated with the development is more than 3 weeks a quantitative method has been used for the assessment.

Table 18 outlines standard construction hours as recommended by the ICNG and lists proposed standard and extended construction hours to be adopted for the Qantas site. The proposed standard hours for the Qantas site are based on the assumption that Monday to Friday operation is no different to Saturday, Sunday and Public Holiday operation for the Travelodge Hotel which is the most affected neighbouring site.

Table 18 – ICNG Construction Hours

Period	Hours as per NSW ICNG	Hours Proposed for Project
Standard Hours	Monday – Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or Public Holidays	Monday – Sunday 07:00 – 20:00
Outside Standard Hours (i.e. extended hours)	Any time other than the recommended standard hours	Monday – Sunday 20:00 – 07:00

Source: Norman Disney & Young

Table 19 and **Table 20** set out the management levels for noise at residences and industrial and commercial land uses, respectively. Restrictions to the hours of construction may apply to activities that generate noise at residences above the 'highly noise affected management level'.

Table 19 – Noise Management Levels at Residence using Quantitative Assessment

Period	Hours Proposed for Project	External Management Level Leq,15min [dBA] (as per ICNG)
Standard Hours	Monday – Sunday 07:00 – 20:00	Noise Affected RBL + 10 Highly noise affected 75
Outside Standard Hours (i.e. extended hours)	Monday – Sunday 20:00 – 07:00	Noise Affected RBL + 5

Note: Noise Levels apply at the boundary that is most exposed to construction noise and at a height of 1.5m above ground level.

Source: Norman Disney & Young

Table 20 – Noise Management Levels at Industrial and Commercial Premises (as per NSW ICNG)

Land Use	External Management Level, Leq,15min [dBA] (applies when properties are being used)
Industrial premises	75
Offices, retail outlets	70

Source: Norman Disney & Young

Criteria for construction noise to the Travelodge receiver East of the site have been established based on the residential receiver criteria range considering the relative sensitivity of the receiver as per **Table 19**. The Travelodge however is located on B5 Business Development zoned land and the boundary noise criteria to control operational noise emissions for commercial zones is 63dBA at all times (as per **Table 17**). It should also be considered that the building façade of the Travelodge hotel has been designed to attenuate noise from planes flying over the site to appropriate internal noise levels due to the close proximity to the airport, being within the 25-30 ANEF contour and that the hotel has no balconies.

As such, NDY has proposed that the External Noise Management Levels associated with the construction works are adjusted as outlined in **Table 21**. While the ICNG notes there may be some community reaction to noise when noise affected management levels are exceeded it is NDY's position that the higher management levels may be acceptable due to the location of the project and in order to aid with reducing the overall construction period.

Table 21 – Construction Noise Management Levels – Proposed for Construction Works on the Qantas Site

Receivers	Recommended Hours	RBL Leq, 15mins [dBA]	External Noise Management Level Leq,15mins [dBA] (as per ICNG)	Adjusted External Noise Management Levels proposed to be adopted for the Development Leq, 15mins [dBA]
Industrial (West, Drilling-East)	All Hours (Standard Hours + Outside Standard Hours)	n/a	75	75
Commercial (North/East/South)	All Hours (Standard Hours + Outside Standard Hours)	n/a	70	70
Residential (Travelodge-East located in Business Development Zone)	Standard Hours (Monday – Sunday 07:00 – 20:00)	50	60 – 75 (noise affected to highly noise affected range)	63 ¹ – 75 (noise affected to highly noise affected range)
	Outside Standard Hours (Monday – Sunday 07:00 – 20:00)	50	55	63 ¹
		49	54	63 ¹
		45	50	63 ¹
Residential ² (316 King Street)	Standard Hours (Monday – Sunday 07:00 – 20:00)	50	60 – 75 (noise affected to highly noise affected range)	60 – 75 (noise affected to highly noise affected range)
	Outside Standard Hours (Monday – Sunday 07:00 – 20:00)	50	55	55
		45	50	50
		40	45	45

1) As per criteria for operational noise emissions outlined in Section 7.1.1.4 of **Appendix X**.

2) Management Noise Levels are based on the RBL estimates as per **Table 16**.

Source: Norman Disney & Young

The construction noise impact has been assessed based on the proposed construction hours of 6am to 8pm Monday to Friday and 24 hour construction works once the building is enclosed, due to the critical nature of the project.

The assessment makes an assumption in regards to noise/vibration intense equipment/activities:

- Piles to be bored.
- Ground rock breaking activities are not expected to be required due to ground conditions of sand and clay.
- Drum roller are expected to be non-vibratory.
- Excavations on the site are expected to be minimal, any excavation is expected to be within filling and sandy soils and should be readily achievable using conventional earthmoving equipment such as a hydraulic excavator with bucket attachment.

The initial construction noise impact assessment expects that vibration intensive activities and equipment will be limited, based on the assumptions provided above.

Management measures for the typical demolition and construction activities selected for the initial assessment are expected to meet the highly affected noise limits (as per **Table 19**) when carried out in close proximity to the Travelodge boundary during standard construction hours. Specific details of expected activities and machinery, and the associated management measures for works carried out adjacent to Travelodge are outlined in Table 26 of **Appendix X**.

During extended construction hours (outside of ICNG standard construction hours) it is recommended that noisy activities are carried out away from sensitive receivers and/or less intrusive activities are scheduled during these times to meet the management levels outside of standard construction hours outlined in **Table 19**. An extension of construction hours as requested will minimize the overall exposure period.

Noise emissions to the Residential Boundary on 316 King Street are expected to readily comply with the management levels if compliance at the Travelodge receiver is achieved.

Management measures for noisy activities carried out in close proximity to the other site boundaries will be less stringent due to sensitive receivers being located further from the site and the nature of their land uses.

Once the building is enclosed large attenuation will be provided by the building façade as result of the noise sources being located within an enclosed room and compliance during standard hours and outside of standard hours is expected based on typical fitout activities.

Assessment

Extended hours of 6am to 8pm Mon-Sun are proposed for outdoor construction works. The acoustic implications of this include:

- Extended construction hours can be preferred by commercial receivers, as the extended hours ensure that more of the work is undertaken outside of commercial operating hours
- Extended construction hours also minimise the total duration of construction noise impacts, as construction can be completed quicker
- The proposed extended hours do not include outdoor construction work during critical sleeping hours of 10pm to 6am.
- Construction activities between 6am and 7am should be limited to setting-up or quieter activities, or locations distant from the Travelodge to minimise any construction noise impact before 7am.

NDY have calculated the expected noise levels at each boundary for each phase of construction, based on assumed construction equipment and activities per phase, and permissible running times. The calculations assume that all activities listed as operating for a particular construction phase are operating simultaneously.

Tables 22, 23, 24 and 25 detail the construction noise limits applicable to each receiver; the benchmark noise levels applicable to each receiver (to allow comparison of construction noise impacts compared to the existing noise environment) and demonstrate the expected noise level at each boundary through each phase of development.

The tables also incorporate specific noise mitigation measures to be implemented for various activities, including: installation of general or localised barriers to screen construction activities from the receiver (noted with the word Screen) and time management of activities to reduce the noise impact.

Table 22 – Construction noise per phase at Commercial Receiver / South

Expected equipment list per phase	Demolition Running Time (%)	Earthworks Running Time (%)	Piling Running Time (%)	Construction Running Time (%)
Backhoe Mounted Hydraulic Breaker, breaking road surface (67kW)	17% / Screen			
Wheeled Excavator, removing broken road surface (112kW, 17t)	67% / Screen	58%		
Tracked Excavator (Loading Dump Truck)	67% / Screen	17%	8%	
Tracked loader, clearing site, idling	67% / Screen			
Bored Piling, clay, 100% on-time			25%	
Electric tower crane, lifting (88kW, 22t)				33%
Electric Circular Saw, 225mm blade				33%
Generator, Power for Site Cabins (3kW)				33%
Vibratory Roller, rolling and compacting (29kW, 4t)				33%
Existing Ambient Noise levels Leq	L2 closest commercial receiver 295 King street (South and East Boundaries) 63 – 65 dBA Daytime and evening time, 57 dBA night time			
Boundary Noise Limits	70 dBA			
Expected Noise at Boundary	69 dBA	70 dBA	70 dBA	70 dBA
<i>Source: Norman Disney & Young</i>				

Table 23 – Construction noise per phase at Commercial Receiver / North

Expected equipment list per phase	Demolition Running Time (%)	Earthworks Running Time (%)	Piling Running Time (%)	Construction Running Time (%)
Backhoe Mounted Hydraulic Breaker, breaking road surface (67kW)	17% / Screen			
Wheeled Excavator, removing broken road surface (112kW, 17t)	67% / Screen	100%		
Tracked Excavator (Loading Dump Truck)	67% / Screen	17%	17%	
Tracked loader, clearing site, idling	67% / Screen			
Bored Piling, clay, 100% on-time			33%	
Electric tower crane, lifting (88kW, 22t)				42%
Electric Circular Saw, 225mm blade				42%
Generator, Power for Site Cabins (3kW)				42%
Vibratory Roller, rolling and compacting (29kW, 4t)				42%
Existing Ambient Noise levels Leq	L2 closest commercial receiver 295 King street (South and East Boundaries) 63 – 65 dBA daytime and evening time, 57 dBA night time			
Boundary Noise Limits	70 dBA			
Expected Noise at Boundary	68 dBA	69 dBA	70 dBA	69 dBA
<i>Source: Norman Disney & Young</i>				

Table 24 – Construction noise per phase at Hotel Receiver / East (Travelodge)

Expected equipment list per phase	Demolition Running Time (%)	Earthworks Running Time (%)	Piling Running Time (%)	Construction Running Time (%)
Backhoe Mounted Hydraulic Breaker, breaking road surface (67kW)	17% / Screen			
Wheeled Excavator, removing broken road surface (112kW, 17t)	67% / Screen	67% / Screen		
Tracked Excavator (Loading Dump Truck)	42% / Screen	42% / Screen	17%	
Tracked loader, clearing site, idling	67% / Screen			
Bored Piling, clay, 100% on-time			17% / Screen	
Electric tower crane, lifting (88kW, 22t)				25%
Electric Circular Saw, 225mm blade				25% / Screen
Generator, Power for Site Cabins (3kW)				25%
Vibratory Roller, rolling and compacting (29kW, 4t)				25%
Existing Ambient Noise levels Leq	L2 closest commercial receiver 295 King street (South and East Boundaries) 63 – 65 dBA daytime and evening time, 57 dBA night time			
Boundary Noise Limits	63 dBA			
Expected Noise at Boundary	63 dBA	60 dBA	63 dBA	63 dBA
<i>Source: Norman Disney & Young</i>				

Table 25 – Construction noise per phase at Industrial Receiver / West

Expected equipment list per phase	Demolition Running Time (%)	Earthworks Running Time (%)	Piling Running Time (%)	Construction Running Time (%)
Backhoe Mounted Hydraulic Breaker, breaking road surface (67kW)	17% / Screen			
Wheeled Excavator, removing broken road surface (112kW, 17t)	67%	75%		
Tracked Excavator (Loading Dump Truck)	42%	42%	42%	
Tracked loader, clearing site, idling	67%			
Bored Piling, clay, 100% on-time			42%	
Electric tower crane, lifting (88kW, 22t)				42%
Electric Circular Saw, 225mm blade				42%
Generator, Power for Site Cabins (3kW)				42%
Vibratory Roller, rolling and compacting (29kW, 4t)				42%
Existing Ambient Noise levels Leq	L1 closest commercial receiver (West Boundary) 71 dBA daytime and evening time, 50 dBA night time			
Boundary Noise Limits	75 dBA			
Expected Noise at Boundary	75 dBA	75 dBA	75 dBA	75 dBA
<i>Source: Norman Disney & Young</i>				

Tables 22 – 25 demonstrate that the most likely construction activities during each phase will be compliant with the relevant noise limits at each receiver, with basic mitigation techniques such as screening and time management. We note that many construction activities are naturally stop-start in nature, so a degree of time management is automatically achieved.

In addition to strict compliance with construction noise limits, it is noted that the existing noise environment is relatively noisy compared to the construction noise, and there is therefore limited additional noise predicted from construction compared to the benchmark levels. Noise sensitive receivers in the area are already exposed to a combination of aircraft, traffic, rail, and commercial noise.

Taking the most noise sensitive receiver (Travelodge Hotel) as per **Table 24** the construction noise is predicted to be no higher than 63 dBA (the limit for a noise sensitive receiver). The existing background noise levels near this location have been benchmarked at 63-65dBA during the daytime and evening hours. This demonstrates that the existing environment is louder already than the predicted construction noise.

The area is also within the 25-30 ANEF contour due to its exposure to aircraft noise. Australian Standards and planning regulations recommend that noise sensitive buildings within this contour are designed with appropriately upgraded facades so as to protect building occupants from the loud environmental conditions. The same building construction measures implemented due to the ANEF contours will reduce the sensitivity of the buildings to construction noise, when compared to buildings in quieter areas with low-performance facades.

For these reasons, it is expected that the construction noise impacts from the project to the Travelodge will be relatively low, both because of the compliance with relevant noise limits, and the loud existing environment which in many cases is as loud or louder than the proposed construction activities.

NDY will update their assessment when the contractor is engaged to ensure that final construction equipment and methodologies maintain compliance with the noise limits.

SPECIFIC MITIGATION MEASURES

General recommendations to manage construction noise and vibration are provided in the section below based on typical worst case demolition and construction activities. A detailed construction noise and vibration management plan and a quantitative construction noise assessment will need to be developed in the later stages of the project with the consultant team and contractor when construction equipment and methodologies are confirmed prior to issuing a construction certificate.

As the construction methodology has not been finalised, the report provides recommendations for managing noise during construction, provided below. These recommendations will suitably manage the noise and vibration impacts associated with construction experienced by neighbours.

General/site management

- All employees, contractors and subcontractors are to receive an environmental induction and should instruct all persons at the site with regard to all relevant project specific and standard noise measures.
- A dedicated person will form a point of contact for dissemination of general information regarding site operations.

Consultation

- A letter should be distributed to neighbouring sites/residents in advance of the works to notify them of the nature and estimated timescale for completion of the proposed works.
- A 24 hour contact point shall be provided for any complaints regarding the construction works and a project representative shall respond to all complaints as soon as possible.

Complaints Management

- Visible signage specifying security measures and key contact details on the perimeter of the building site. Signage will also provide a 24-hour contact name, phone number and email address to receive any complaints.

Noise and Vibration Monitoring

- Where required, the developer will engage a qualified Acoustical Consultant to assess noise and ground borne vibration levels at agreed sensitive locations at agreed intervals.
- The Acoustical Consultant should also prepare monitoring reports summarising the construction noise and vibration results over the subject period. The reports should be made available to Council as required.

General Noise Management

The following general noise source control measures should be reviewed and implemented where required:

- Site access for construction vehicles to be set up away from the Eastern boundary line.
- During extended construction hours less intrusive works will be scheduled to be carried out and/or works will be carried out away from sensitive receivers.
- Activities that approach the highly noise affected criteria for the residential receivers to be carried out during times where receivers are less sensitive to noise. The receivers will be consulted.
- Avoid unnecessary revving of engines and turn off plant that is not being used/required;
- Where possible organise the site so that delivery trucks and haulage trucks only drive forward to avoid the use of reversing alarms;
- Where possible, avoid using tonal reverse alarm outside standard construction hours;
- Organise and schedule the equipment operations to limit the noisiest machines operating simultaneously;

- Site set up/ movement of plant / delivery of material/ waste removal to site should generally be restricted to day time period;
- Truck drivers are to be informed of site access routes, acceptable delivery hours and must minimise extended periods of engine idling;
- Ensure there is no unnecessary shouting or loud stereo/radios on site. There must be no dropping of metal from heights, throwing of metal items or slamming of doors;
- Use less noise intensive equipment where reasonable and feasible.
- Where practical fixed plant should be positioned as far as possible from the sensitive receivers;
- Use temporary site buildings and material stockpile as noise barrier;
- Employ the use of solid barrier plywood hoardings if required; and
- Where practical, a partial enclosure shall be used to minimise noise levels.

7.3.3. Operational Acoustic Impacts

Assessment

An assessment of the likely acoustic impacts of the proposal was undertaken by Norman Disney & Young (NDY). The Noise and Vibrations Impact Assessment (NVIA) is included at **Appendix X**.

Unattended noise and vibration measurements were conducted to determine the existing ambient noise and vibration levels of the site and surrounding area and are outlined in **Table 16**. A summary of the key operational noise generating sources is provided below.

Changes to Traffic surrounding Public Roads

The assessment of traffic noise impact associated with the additional traffic generated by the proposed development on the public road networks surrounding has been carried out based on the peak hour traffic information including existing traffic volumes, additional traffic volumes and traffic distribution.

An assessment of existing and predicted traffic volumes is made for Qantas Drive, Joyce Drive, Seventh Street, Robey Street, O'Riordan Street, King Street, Bourke Street, Kent Road and Coward Street. The expected changes in noise levels between the existing and future traffic during the morning and afternoon peak traffic hour are less than 0.5 dBA with the exception of receivers along King Street and Kent Street. However, it is noted that all predicted results are compliant with the maximum allowable increase as per the NSW DNP which is considered barely perceptible to the average person.

Service Vehicles and Car Activities on the Site.

It has been assumed that a maximum of two truck movements per 15 minute period during all hours of the day and the unloading/loading of one truck per 15 minute period during all hours of the day. In regards to car movements, it has been assumed for a 15 minute period a total of 113 vehicle movement through King Street, 99 vehicles through the Qantas Drive entrance and 73 vehicles through the Kent Street entrance during all hours of the day. It is noted that this is a conservative approach.

The assessment found that the predicted noise level associated with the service vehicles and car movements on site are expected to comply with the noise criteria of the nearest industrial receivers in all cases and boundary noise criteria.

Car Park Noise

The assessment of the car park noise emissions has been based on the parameters that the car parking levels are connected via internal ramps and the carparking levels have an open façade design. It has also been assumed that there will be a peak hour movement of a total 283 vehicles associated with the carpark for a 15 minute period during all hours of the day, resulting in 1133 per hour. Assumptions have also been made that cars are evenly distributed across the levels and the road surface of the car park is concrete.

The predicted noise levels associated with noise generated from the car park are expected to comply with the boundary noise criteria and the nearest affected industrial receivers in all cases.

Bus Movements on Site

The proposal will result in changes to the bus routes on site, however will not impact on the number of bus movements on site. Therefore, the expectation is that there will be no change to the currently existing noise levels.

Building Services Plant Noise

No new generators are proposed on site as all electrical services will be connected to the existing Tri-gen located to the north of the car park. Mechanical service equipment will comprise of air handling units (**AHUs**), fan coil units (**FCUs**) and fans. Noise emissions have not been assessed in the report and it has been recommended that a suitably qualified acoustic consultant undertakes this review.

Operational Vibration Impact

It is considered that all operational activities expected to occur on site are likely to have very little impact on the surrounding buildings on a vibration basis and will readily comply with vibration limits.

Summary

Throughout their assessment of all operational noise impacts NDY determined that all operational noise activities (including traffic on the site and on surrounding streets, service vehicles, building services, operational activities) are predicted to comply with regulated noise limits at all surrounding receivers.

The existing environment is relatively loud due to the proximity to aircraft movements, rail, and major roads. In general, the Leq operating noise from this project is predicted to be within benchmark Leq measurements of the existing environment. This will minimise the impact to surrounding existing buildings.

Additionally, all operational activities expected to occur on this site are likely to have very little impact on the surrounding buildings on a vibration basis and will readily comply with the vibration limits.

SPECIFIC MITIGATION MEASURES

No mitigation measures are provided in relation to the operational acoustic impacts of the proposal.

7.3.4. External Noises Sources to The Development

An assessment of the potential impact from external sources on the flight training centre from external sources was also provided in the NVIA prepared by NDY.

Botany Rail Line

Consideration has been given to the potential growth in train numbers as a result of the Botany Rail Duplication Project. ARTC has provided information that there are currently 357 trains arriving and departing Botany in November 2018 which averages at nearly 12 freight trains per day. ARTC forecasts that there will be significant growth in train numbers once the Botany Rail Duplication Project is completed in early 2020s. The forecast growth is expected to be 32 trains by 2022, 42 trains by 2025 and 55 trains by 2030. There is currently no information about the proposed rail construction works available, however based on consultation with ARTC the following it is understood:

- Rail construction is currently planned for December 2020 – December 2023.
- Construction works will be taking place within the existing rail corridor. Centre of track to be minimum 3.5m from fence line.
- Construction works associated with the Botany Rail Line Duplication Project are similar to that of maintenance works.

Road

As a result of the Sydney Gateway Project, future increased in road traffic volume are expected when the road widening works are completed, however there is currently no information available about the specific predicted number. NDY have based their assumption on the draft construction plant and methods for *Sydney Gateway Stage 3 – Qantas Drive (Rev 2, dated 26-6-18)* provided by RMS.

Travelodge

It is understood that Travelodge are proposing to undertake construction works on their car park in the future. NDY have considered typical noise levels from construction works for the purposes of the assessment.

Methodology

In order to forecast the typical noise levels of demolition and construction activities related to road and rail NDY conducted a preliminary assessment based on typical best practice plant noise and activity from published sources. For the assessment reference sound levels for representative equipment was taken from the DEFRA, AS2436:2010 and NZS 6803:1999 databases. The documents include extensive databases of sound data covering trucks, excavators, hand tools and all manner of other construction equipment and activities. The ratings listed are for individual pieces of equipment at constant operation.

Generally only typical worst case plant items that are likely to result in excessive noise levels have been included for the assessment as shown in **Table 26**.

Table 26 – Typical external noise levels of demolition and construction machinery/activity taken from DEFRA, AS2436:2010 and NZS 6803:1999 databases.

Item #	Activity /Machinery	Source	Leq Sound Pressure Level at 10m (dBA)	RMS Reference	Comment
1	Hydraulic hammer rig, pre-cast concrete piling (145kW, 5t hammer)	DEFRA, Table 3 #1	89	hydraulic hammer	not expected to be required for rail works
2a	Breaker mounted on wheeled backhoe, breaking up concrete (59kW, 7.4t)	DEFRA, Table 1 # 1	92	rock breaker	not expected to be required for rail works
2b	Tracked excavator, breaking up brick foundation (121kW, 15t)	DEFRA, Table 1 # 9	90	rock breaker	not expected to be required for rail works
3	Pulverizer Mounted on Excavator, 147kW, 30t	DEFRA, Table 1 #4	76	equipment with concrete shear/pulveriser attachments	not expected to be required for rail works
4	Hand-held Circular Saw (Petrol - Cutting Concrete Blocks), 3kW, 9kg	DEFRA, Table 4 #72	79	Saw cut barriers	not expected to be required for rail works
5a	Jack hammers	AS2436-2010, Table 1	93	rock hammer	not expected to be required for rail works
5b	Hand-held hydraulic breaker 20kg / 69bar	DEFRA, Table 1 #7	93	rock hammer	not expected to be required for rail works
6	Nibbler	No data for Nibbler available in the above referenced data bases	Online reference literature notes 76dBA at 7m	Nibbler	not expected to be required for rail works
7	Tracked excavator, trenching, 107kW, 22t	DEFRA, Table 4 # 64	75	trench excavation	-
8a	Tracked excavator, loading dump truck	DEFRA, Table 1 #10	85	trench excavation, general site activity	-
8b	Tracked loader, clearing site, idling	NZS 6803:1999, Table 2 #6	73	trench excavation, general site activity	-

Item #	Activity /Machinery	Source	Leq Sound Pressure Level at 10m (dBA)	RMS Reference	Comment
8c	Truck (>20 tonne)	AS2436-2010, Table 1	79	trench excavation, general site activity	-
9	Hydraulic Vibratory Compactor (Tracked Excavator) rolling and compacting, 225kg, 193 bar, 17500N	DEFRA, Table 2 #42	78	Man held or excavator boom mounted compactor	-
10	Vibratory roller, rolling and compacting (29kW, 4t)	DEFRA, Table 2 #39	74	Vibrating flat drum roller	-
12	Backhoe mounted hydraulic breaker, breaking road surface (67kW)	DEFRA, Table 5 # 1	88	n/a	not expected to be required for rail works
13	Grader, 150kW	NZS 6803:1999, Table C.9 #45	83	n/a	-
14	Scraper, 475kW, laden	NZS 6803:1999, Table C.9 #14	95	n/a	-
Source: Norman Disney & Young					

In order to assess the construction noise impact (from rail, road and Travelodge carpark) NDY used the maximum values in each frequency band for the activities outlined in **Table 26**. The worst case frequency spectrum was then adjusted to 5dBF above the external construction noise level criteria from the NSW ICNG to allow for short exceedances of the management levels as the criteria are non-mandatory. However it is expected RMS and ARTC comply with their obligation to meet the external noise management levels as per NSW ICNG.

Assessment

The layout of the facilities has been designed so spaces that are more sensitive to noise and vibration such as simulators, training rooms and admin areas are located away from the rail and road side and are shielded by the EP Hall. Based on the noise impact data as per **Table 26** NDY provided recommendations for the façade and roof design which have been integrated into the design.

The impact from current noise sources on the site has been assessed and an allowance for an increase from Gateway and Rail Duplication as well as construction noise impact from works adjacent the site has been made in the design. The building envelope has been designed to mitigate external noise levels to compliance with internal noise criteria.

The impact from current vibration sources on the site has been assessed and an allowance for the impact from Gateway and Rail Duplication has been considered.

Based on the attended and unattended vibration measurement results, the road and train operational vibration is not expected to impact the human comfort, equipment integrity and structural integrity of the facilities.

The potential impact from vibration due to construction adjacent the site has been assessed. Options to mitigate potential vibration impacts have been reviewed. The mitigation measures will need to be further developed and refined as the project progresses and construction methodologies for Gateway and the Rail Duplication are confirmed.

SPECIFIC MITIGATION MEASURES

Noise impact on rail and road

Based on NDY's assessment maximum noise levels are not expected to be affected by an increase in rail and road noise traffic, only the frequency of maximum noise levels is expected to increase. The building has been designed to mitigate external noise levels to compliance with internal noise criteria. No additional mitigation measures are proposed.

Noise impact from construction

NDY have made an assessment of potential construction noise impacts from rail, road and potential future works on the Travelodge car park. It is expected that RMS and ARTC comply with their obligation to meet the external noise management levels as per the NSW International Construction Noise Guideline (ICNG). The building has been designed to mitigate external noise levels to compliance with internal noise criteria. No additional mitigation measures are proposed.

Vibration impact

NDY have assessed the impact from current vibration sources on the site from Gateway and the Botany Rail Duplication Project. Based on the attended and unattended vibration measurement results, the road and train operational vibration is not expected to impact the human comfort, equipment integrity and structural integrity of the facilities. No additional mitigation measures are proposed.

7.4. BIODIVERSITY

A Biodiversity Assessment Report (**BDAR**) has been prepared by WSP and is enclosed at **Appendix R**. The BDAR has been prepared in response to SEARs Key Issue: Biodiversity, requiring:

- *an assessment of the proposal's biodiversity impacts in accordance with the Biodiversity Conservation Act 2016, including the preparation of a Biodiversity Development Assessment Report (BDAR) where required under the Act, except where a waiver for preparation of a BDAR has been granted.*

Methodology

The BDAR is comprised of background desktop research, native vegetation and threatened flora surveys, threatened fauna surveys, diurnal bird surveys and a biodiversity assessment. The BDAR has been prepared in accordance with the *Biodiversity Conservation Act 2016 (BC Act)* and the *Biodiversity Assessment Method (BAM)* established by the OEH as a standard method to implement the aims of the *Biodiversity Offsets Scheme (BOS)* and to address the loss of biodiversity and threatened species.

The BDAR has also assessed the proposal in accordance with the following legislative context:

- *Fisheries Management Act 1994 (FM Act)*
- *Biosecurity Act 2015*
- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*
- *Secretary's Environmental Assessment Requirements (SEARs)*

Native vegetation and threatened flora surveys were undertaken on the 6 February 2019. Surveys focused on the mapping of any native and non-native vegetation types and involved a combination of vegetation integrity plots, random meanders and parallel field transverses.

Existing environment

Landscape features

The site is located in the Sydney Basin IBRA bioregion and occurs within the SYB07 Pittwater IBRA subregion. Landscaped features associated with the site are summarised in **Table 27** below.

Table 27 – Landscape features associated with the site

Landscape Feature	The Site
IBRA bioregions and subregions	Sydney Basin Bioregion / SYB07 Pittwater subregion
NSW landscape regions (Mitchell landscapes)	Sydney – Newcastle Barriers and Beaches

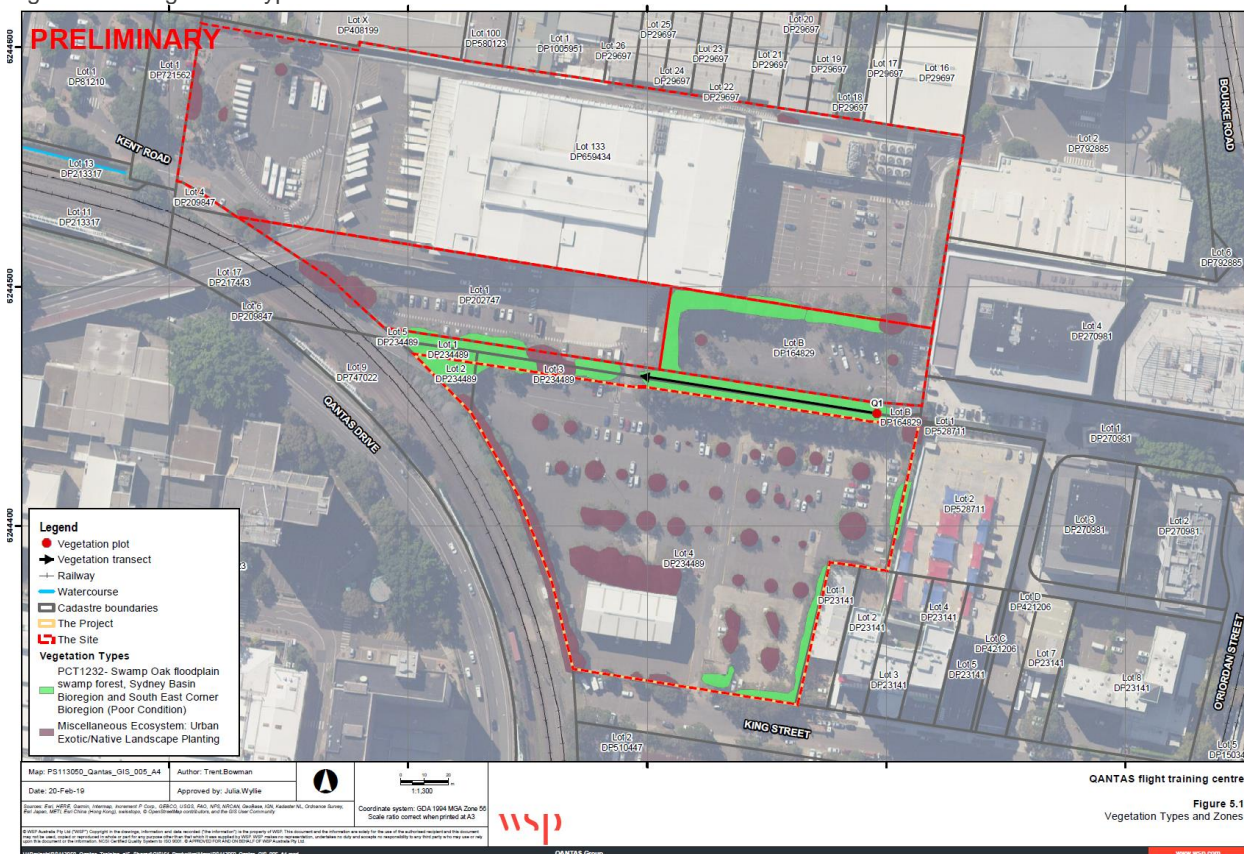
Landscape Feature	The Site
Local Government Area (LGA)	Bayside
Rivers and streams	No river or streams occur within the site or the project. Springvale drain (constructed) occurs to the west of Nant Street that runs adjacent to the site.
Important and local wetlands	Important wetland – Towra Point Wetland (-5km to the south)
Connectivity features	The site is isolated from any surrounding areas of biodiversity value
Areas of geological significance and soil hazard features	The site does not contain any areas of geological significance. The site has been subject to contamination of both land and groundwater. Site remediation has occurred between 2014 – 2016 and is ongoing with respect to groundwater as part of the broader Botany Groundwater Clean-up Project.
Areas of outstanding biodiversity value	No declared areas of outstanding biodiversity value occur in or near the site.

Source: WSP

In accordance with Subsection 4.2.1.2 of the BAM the native vegetation cover within the site and a 1500-metre buffer area surrounding the outside edge of the boundary of the development site was determined. This correlates to a total assessment area of 862.07 ha, 47.00 ha of which is native vegetative cover. This results in a native percentage cover of 0-10%. **Figure 41** below shows the location of vegetation types and zones located within and at the periphery of the site.

Determining patch size is also required under the BAM. As the site is highly disturbed and has a fragmented landscape, patch size for each native vegetation zone has been determined to be <5 ha.

Figure 36 – Vegetation types and zones



Source: WSP

Assessment

Native vegetation and threatened flora

One candidate threatened ecological community listed under the BC Act was considered based on the occurrence of PCT 1232, being Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. This vegetation provides marginal habitat for a small number of highly mobile common fauna species. However, based on landform, altitudinal range, soils, geology and vegetation structure the recorded patches of PCT 1232 are not considered to meet the BC Act listing for this threatened ecological community. One non-native vegetation type has been recorded within the project impact area, however, has been assessed as providing limited to no habitat for any threatened species listed under the BC Act. The development footprint impact on this non-native vegetation type is summarised in **Table 28** below. The extent of this impacts is shown in **Figure 37**.

Table 28 – Development footprint impacts on native vegetation types

Non-native vegetation type	The Site (HA)	The Project (HA)
PCT 1232 Swamp Oak floodplain swamp forest, Sydney Basin bioregion and South East Corner Bioregion	0.16	0.07
Total	0.16	0.07

Source: WSP

Most of the vegetation required for removal to accommodate the project is not native vegetation and comprises exotic plants or planted, often non-indigenous, native species on fill material. Native vegetation is generally considered to be in low condition and features impacts from existing development, edge effects, weed infestation and exotic pests.

No threatened flora species or their habitat, listed under the BC Act, have been determined to be affected by the project.

Threatened fauna

Fauna habitat assessments were undertaken and the primary tool to assess the likelihood of threatened animal species on the site. Opportunistic sightings of animals were also conducted during field surveys and formal diurnal bird surveys were completed within the site.

The investigations identified 38 threatened fauna species as having been previously recorded or predicted to occur in the locality. Based on the poor condition of the PCT 1232, the predicted threatened fauna species are considered to have a low likelihood of occurrence within the site and are only likely to periodically fly over the site or occasionally utilise limited foraging resources available.

Therefore, the project is considered unlikely to impact on threatened fauna species or their habitats and no such species are considered affected by the impacts of the proposal.

Prescribed biodiversity impacts

Prescribed impacts are outlined under section 9.2 of the BAM and are summarised below:

- No areas of geological significance are present.
- No human made structures have been identified within the site that would provide a suitable habitat for any threatened species.
- One non-native vegetation types has been recorded within the project impact area. This non-native vegetation types and extent within the site and the project impact area is shown in **Table 29**.

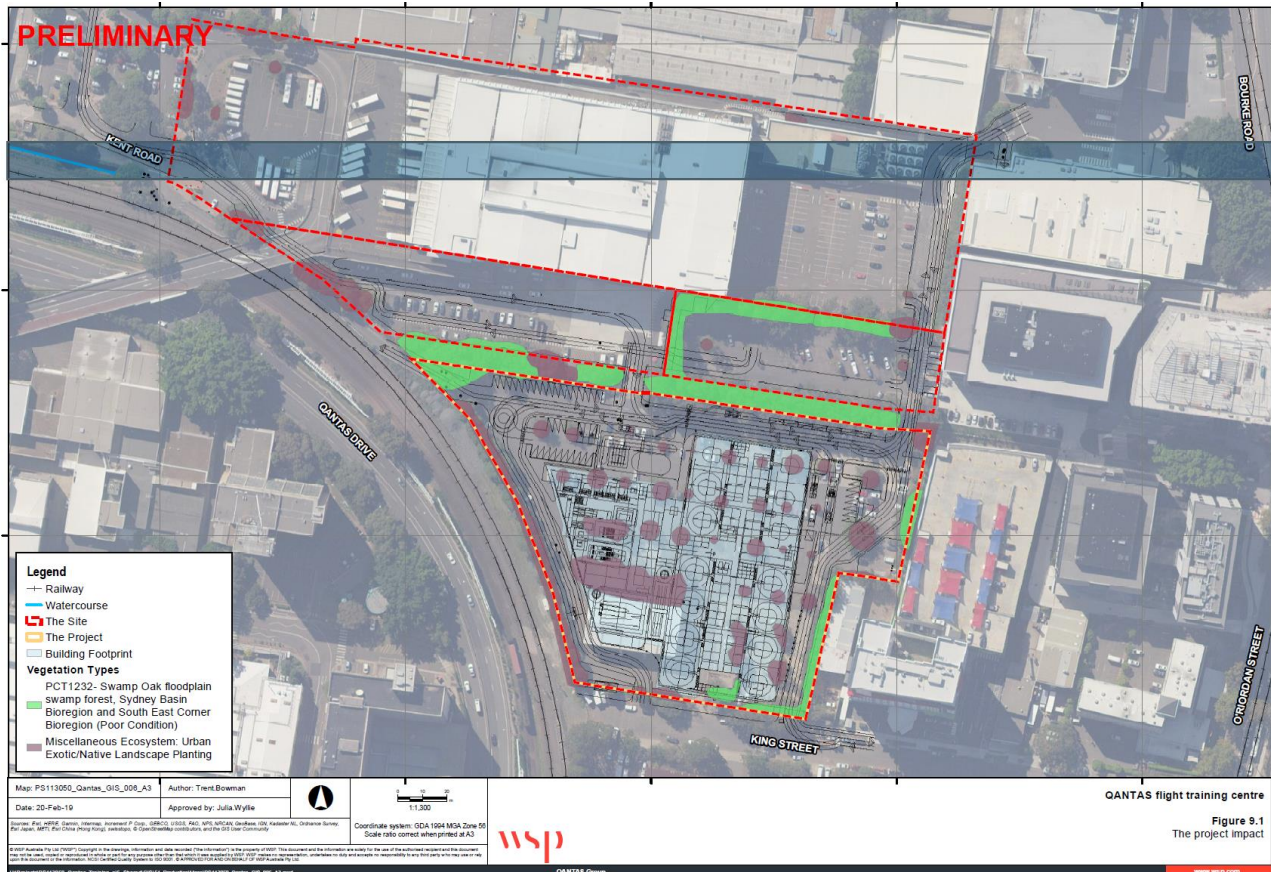
Table 29 – Development footprints impacts on non-native vegetation types

Non-native Vegetation Type	The Site (HA)	The Project (HA)
Miscellaneous ecosystem – urban exotic / native landscape plantings	0.29	0.23
Total	0.29	0.23

Source: WSP

- The site is isolated from any large patches of native remnant vegetation and therefore the project is not considered likely to adversely impact wildlife connectivity or movement in the locality.
- The project will not result in any adverse changes to the local hydrology and the project has been designed to maintain existing compensatory flood storage levels.
- The risk of vehicle strike is unlikely to have a substantial impact on any local populations of fauna species.

Figure 37 – The project impact on vegetation types



Source: WSP

The BDAR makes an assessment of biodiversity offset requirements in accordance with the BC Act, FM Act and EPBC Act. No biodiversity offset obligation has been deemed necessary for the project.

Overall, the BDAR concludes:

"It is considered that the level of risk to biodiversity is considered generally low and with the mitigation measures required, the impacts resulting from the proposal will be acceptable."

SPECIFIC MITIGATION MEASURES

The BDAR makes the following mitigation measures to address any potential biodiversity impacts:

- *Replanting of landscaped areas to incorporate native species.*
- *Best practice erosion and sedimentation controls in accordance with approved Construction Environmental Management Plan.*

7.5. REMOVAL OF TREES

An Arboricultural Impact Statement (AIS) was undertaken by The Ents Tree Consultancy as is enclosed at **Appendix P**. The report assesses the nominated trees that are on and adjoining the site which may be

impacted by the proposed works or associated activities. The report details the condition of these nominated trees and makes recommendations for removal or retention based on the proposed works. Of the trees nominated for retention, the report also assesses any potential impacts and mitigation measures to minimise or remove these impacts.

Methodology

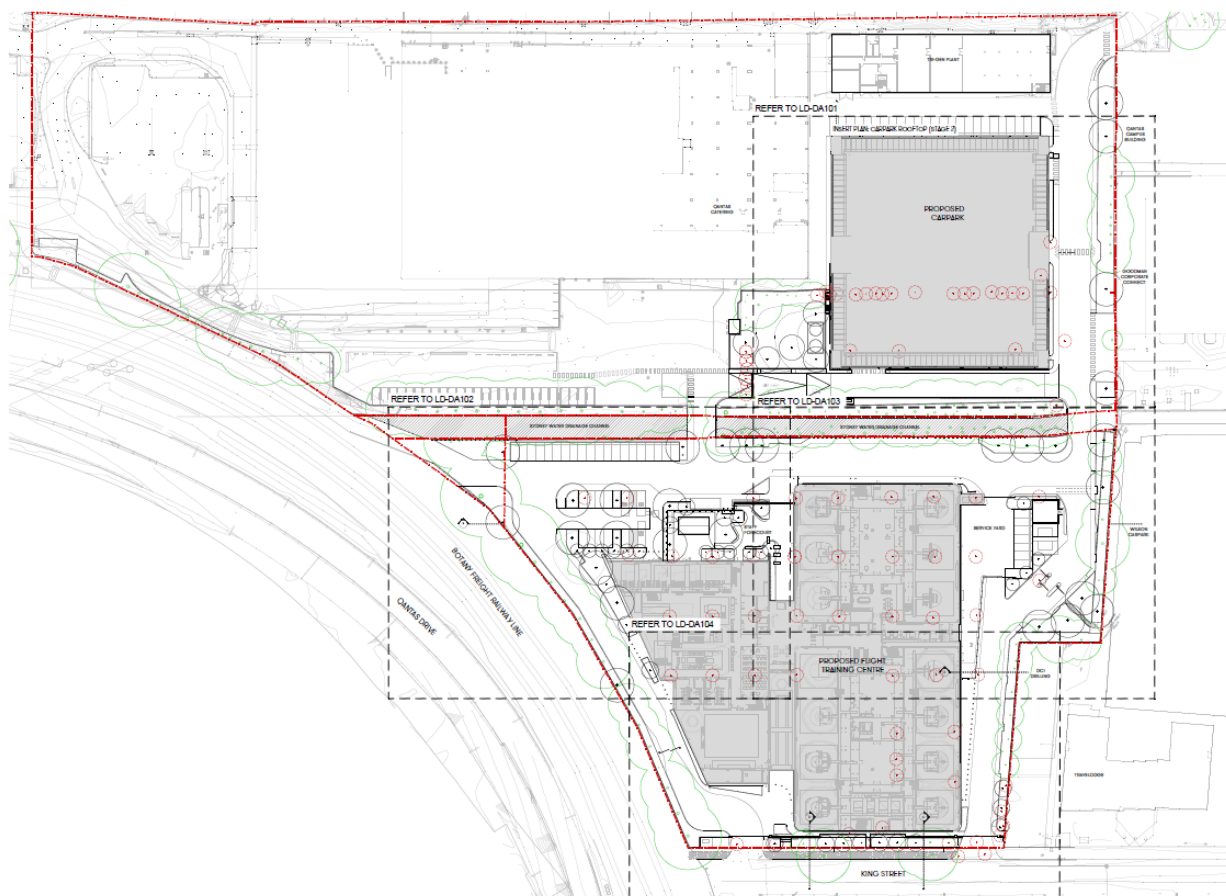
To make an assessment of the existing condition of the trees on and adjoining the site, The Ents Tree Consultancy undertook the following tasks:

- Trees were assessed from the ground using the standard Visual Tree Assessment technique (VTA).
- A Lukfin 6.5m diameter tape was used to obtain the Diameter at breast height (DBH) as recommended at 1.4 metres unless otherwise stated due to variations in the trees form.
- The height of the trees was estimated, and the spread of the trees canopy was paced out.
- A Canon 5D Digital camera with a 24-105mm lens was used to take all photographs in the report.
- The ULE rating system was used to guide and determine the Useful Life Expectancy ratings provided to all trees surveyed.

Existing environment

A total of 109 trees have and seven tree groups were surveyed and assessed. The location of the existing trees on site is shown in **Figure 38**. The assessment of the tree and tree groups indicate that majority have poor, below average or average health and structure values. None of the trees or tree groups were assessed as having good health or structure values.

Figure 38 – Location of existing trees



Source: Scott Carver

Assessment

The proposed development will require the removal of eighty-five (85) trees, majority of which are located in the existing car park area and are not recognised as having good health, as summarised below:

- Trees 6 to 51 are predominately *Platanus orientalis* or *Platanus x hybrida*, Plane Trees. The majority of the trees have poor health and or poor form with insect and pest infestation such as Sycamore Lace Bug, Powdery Mildew and Anthracnose.
- Trees 75 to 81 and trees 94 to 110 are predominately *Casuarina cunninghamiana* (River She Oak), *Casuarina glauca* (Grey She Oak) and *Corymbia maculate* (Spotted Gums). The majority of the Spotted Gums have poor health and the River She Oaks are beginning to develop extensive root systems that are damaging hardscapes. One River She Oak tree is also dead.

The trees are identified for removal as they are in the position of the new proposed building, new entry paths, the proposed carpark building or new access roads. An attempt will be made to replace as many of these trees as possible in the new landscape strategy.

In order to allow new entry to the site on King Street, two council street trees are required to be removed. These trees have been identified as having average health and a high or medium life expectancy. The removal of these trees is required to accommodate the proposed development.

The remaining trees will be retained and protected during the duration of construction works and associated activities. The report outlines specific tree protection measures to assist with reducing disturbances to the retained trees. Tree protection measures are provided below.

Figure 39 – Proposed tree protection plan



Source: Scott Carver; The Ents Tree Consultancy

SPECIFIC MITIGATION MEASURES

Specific mitigation measures to protect the retained trees are summarised below.

- **Tree Protection for Trees 1, 2 & 3:** A 1.8m chain mesh tree protection fence will need to be installed at the end of the existing gutter and the boundary of the client's property.
- **Tree protection for Tree Group 52, 53, 54:** A 1.8m chain mesh tree protection fence will need to be installed at the 0.5m off the edge of the proposed works covering the trees projected tree protection zone to the north and south zone on site, stopping at the client's boundary. The fence can be moved to the edge of the new garden ben once the demolition of the car park is removed.

- *Tree protection for Trees 55 to 69:* A 1.8m chain mesh tree protection fence will need to be installed along the edge of the proposed garden edge and cover the tree protection zone on the client's site to the north and south, separating the trees from works.
- *Tree protection for Tree Group 70:* A 1.8m chain mesh tree protection fence will need to be installed at the 0.5m off the edge of the existing carpark edge extending to the east and west on site and stopping at the end of the tree protection zone or linking with the fence of tree group 71.
- *Tree protection for Tree Group 71:* A 1.8m chain mesh tree protection fence will need to be installed at the 0.5m off the edge of the existing car park edge extending to the east and west on site, stopping at the end of the tree protection zone or linking with the fence of tree group 70.
- *Tree protection for Tree Group 72:* A 1.8m chain mesh tree protection fence will need to be installed at the 0.5m off the edge of the existing carpark gutter extending to the east and west on site, stopping at the end of the tree protection zone or linking with the fence of tree group 73.
- *Tree protection for Tree Group 73:* A 1.8m chain mesh tree protection fence will need to be installed at the 0.5m off the edge of the existing carpark gutter extending to the east and west on site, stopping at the end of the tree protection zone or linking with the fence of tree group 72.
- *Tree protection for Tree 74:* A 1.8m chain mesh tree protection fence will need to be installed at the edge of the existing gutter and the boundary of the client's property. The fence will cover the area of the tree protection zone to the east and west.
- *Tree protection for Trees 82-91:* A 1.8m chain mesh tree protection fence will need to be installed at the edge of the proposed garden edge and cover the tree protection zone on the client's site to the north of and south separating the trees from the works.
- *Tree protection for Tree 117:* A 1.8m chain mesh tree protection fence will need to be installed at the edge of the existing garden bed and will need to be 0.5m off the proposed works.
- *Tree protection for Tree 119:* A 1.8m chain mesh tree protection fence will need to be installed at the edge of the existing gutter and the boundary of the client's property.
- *Tree protection for Tree 120:* A 1.8m chain mesh tree protection fence will need to be installed at the edge of the existing gutter and the boundary of the client's property.

In addition, the following mitigation measures are recommended:

- All works within or at the edge of any structural root zone of any tree will need to be supervised and recorded by the AQF level 5 site Arborist.
- Monthly inspections and reporting to ensure the trees are being protected during construction activities.
- Construction should proceed using the *Australian Standard AS4970 200 for the Protection of Trees on Development Sites*.
- Furthermore, The Landscape Design (refer to **Appendix E**) will mitigate tree loss through the planting of 68 new trees as well as the provision of the two shelters, the bus stop and the staff amenity shelter to include low profile green roofs

7.6. SOCIAL IMPACTS

The Social Impact Assessment (SIA) was prepared by Urbis in response to SEARs Key Issue: Social and Economic, requiring:

- *Identification and analysis of the potential social impacts of the development from the point of view of the affected community and other relevant stakeholders;*
- *assessment of the significance of positive, negative and cumulative social impacts; and*
- *mitigation measures and monitoring of likely negative social impacts.*

Methodology

The methodology used to prepare the SIA included a background review of the site and surrounding land uses, relevant policy documents and the architectural plans, preparation of a community profile based on

demographic data and an identification of potentially impacted communities. Relevant technical studies were also reviewed as part of the impact scoping and to inform the assessment of social impacts prior to and after management measures.

Existing environment

The existing site is dominated by an at grade carpark that contains informal landscaping, with some evidence of rubbish dumping and some disrepair. The analysis of crime data indicates that Mascot has higher rates of 'steal from motor vehicle' and 'motor vehicle theft' compared with Bayside LGA. Crime data also indicates that the area is a hotspot for 'break and enter non-dwelling'.

Mascot suburb's current population is characterised by the following:

- Young to middle aged adults
- Local workers who reside in Bayside LGA
- Residents in professional occupations
- Culturally diverse.
- Relatively advantaged with a high level of education.

Botany Bay is expected to grow by 50.1% between 2016 and 2036 and the 40 to 44 and 45 to 49 age group will experience the highest growth.

Assessment

The potential stakeholder groups identified as potentially being impacted by the proposal include:

- Local community
- Neighbouring business
- Air services
- Government.

The SIA found that the proposal will have an overall long-term positive social impact for the local area, NSW and Australia. Impacts generated by the proposal vary, however ultimately the proposal will allow Qantas to continue to operate which has a significant economic contribution to the economy through direct and indirect employment and tourism. Impacts generated can be managed or mitigated if the recommendations made in the SIA are incorporated as part of the proposal.

A summary of the positive and negative social impacts associated with the development are outlined below:

Positive

- **Facilitating Sydney Gateway Project:** Overall the facilitation of the Sydney Gateway Project is likely to have a high positive impact. The relocation of the existing flight training centre will facilitate the construction of Gateway which has been identified by the State Government as being critical infrastructure to support the Sydney Airport and Port Botany regions as the tourism and freight gateways to Sydney.

Gateway will support future growth and will have significant benefits for freight networks and transport in the local area. The relocation of the existing flight training centre to a new location will facilitate positive infrastructure improvements for New South Wales.

- **Continued economic and employment benefit:** The flight training centre is critical infrastructure for Qantas to enable pilots and cabin staff to maintain the legislated level of training required by CASA. Qantas also makes a significant contribution to the NSW economy and is responsible for direct and indirect employment of approximately 23,000 people. The proposal will likely have a high positive impact by allowing Qantas to continue to maintain their business operations and benefit employees and the State economy.
- **Improved visual amenity:** The proposal will improve the visual amenity of the streetscape and will likely result in a high positive impact. The proposal will replace an at-grade car park that is unmaintained and,

in some disrepair, and proposes a design that is appropriate to the streetscape. The car park is setback from King Street and located within the site to reduce its impact on the public domain.

Identified planned management measures for improved visual amenity include implementation of recommendations contained in the CPTED Assessment for ongoing management of landscaping and lighting.

- **Safer pedestrian movements and car parking:** The proposal will improve the current condition of the site and will have a high positive impact for pedestrians and users of the site. The design incorporates landscaping elements throughout the site that will increase perimeter activation and casual surveillance resulting in improved safety for users.

Neutral

- **Increased traffic and parking:** The proposal will replace the loss of car parking at the existing site and other future car parking loss at other car parks within Qantas' freehold land, resulting in a minor net increase of 8 car parking spaces. Overall, the assessment has found that while the proposal consolidates car parking to a central location, the proposal will have a neutral impact on the local road network.

Negative

- **Reduced amenity during construction:** Overall, the reduced amenity during construction is expected to be a low, short-term negative impact limited to the period of construction. The large footprint of the site is expected to mitigate impacts as material loading and unloading will occur within on-street construction zones.

The implementation of management measures outlined in the CMP and CTMP will likely result in an overall neutral negative impact.

- **Removal of significant trees:** Overall, the removal of significant trees is expected to have a low negative impact. An attempt to retain as many trees on site as is practical has been made to maintain the existing vegetated landscape that is characteristic of the local area. Where trees cannot be retained as a result of the proposal or existing trees are in poor condition, it is proposed to remove and replace them with a suitable alternative.

The planned management measures outlined in the Arborist Assessment, prepared by Ent Tree Consultancy, are considered to be appropriate and will likely result in a neutral impact on the local streetscape and landscape character.

The Social Impact Assessment expects the proposal to deliver long term positive impacts for Mascot, NSW and Australia. The proposal will allow Qantas to continue to operate their business which contributes significantly to the economy through direct and indirect employment opportunities within NSW.

SPECIFIC MITIGATION MEASURES

The following management measure is provided by Urbis and is recommended to reduce any potential negative impacts related to traffic and parking and reduced amenity during construction:

- *Preparation and implementation of a Construction Management Plan (CMP) and Traffic Construction Management Plan (TCMP) to identify mitigation measures to reduce potential impact during construction.*

7.7. ECONOMIC IMPACTS

This section has been prepared in consultation with The Qantas Group (**The Group**) in response to SEARs Key Issue: Social and Economic, requiring:

- *an analysis of any potential economic impacts of the development, including a discussion of any potential economic benefits.*

Methodology

Not relevant.

Existing environment

The Group contributes more than \$11 billion to the Australian economy annually (not including facilitated tourism), with NSW receiving the largest share. The Group's contribution to the NSW economy is \$4.4 billion annually. This consists of \$2.8 billion annually in direct contribution (i.e. as a result of the Group's purchasing and spend in the State – a significant amount of which is conducted due to the operational hub of the airline being located at Mascot) and \$1.6 billion annually in indirect contribution (i.e. economic value facilitated by the Group's services).

The Group's contribution to employment in NSW is 12,983 direct FTE and 22,994 direct + indirect FTE jobs.

Assessment

The Group hopes to cement their position as a major contributor to jobs and growth in NSW by expanding the current Sydney Flight Training Centre as part of the Project. The new Sydney flight training centre it will be the largest simulator training facility in the Southern Hemisphere.

The Project will result in the creation of 380 FTE construction jobs and will facilitate the relocation and retention of an existing 149 FTE jobs.

At completion the facility will have capacity for an additional two simulators. This will allow Qantas to train more Pilots and Cabin Crew (for Emergency Procedures) from the Group, including crew from interstate bases. It will also provide the capability to on-sale training to foreign airlines and their crew, bringing additional international investment opportunities to NSW.

Sydney is the core of the Group's national and international operations. While a large amount of this is due to the size of the Sydney market (and therefore number of Group services), it is also a result of the operational hub being based at Mascot.

The Project is expected to reinforce the Group's significant contribution to the State and National economies.

SPECIFIC MITIGATION MEASURES

- None identified.

7.8. AIR QUALITY

An Air Quality Impact Assessment (**AQIA**) has been prepared by SLR Consulting Australia and is submitted at **Appendix GG**. The AQIA assess the risks associated with potential air quality impacts during construction and operation of the proposed development and has been prepared in response to SEARs Key Issue: Air Quality, requiring:

- *an assessment of the air quality impacts at private properties during construction and operation of the development, in accordance with the relevant Environment Protection Authority guidelines; and*
- *details of any mitigation, management and monitoring measures required to prevent and/or minimise emissions.*

Methodology

Wind speed and wind direction and rainfall data was obtained from the Bureau of Meteorology (BoM) Sydney Airport Automatic Weather station (AWS) located approximately 2.5 kilometres (km) southwest of the Development Site.

Air quality monitoring data from the NSW Office of Environment and Heritage (OEH) was obtained and reviewed for assessment from the Randwick Air Quality Monitoring Station (AQMS) located approximately 5.4km to the east of the Development Site.

For construction dust risk, the IAQM Guidance on the Assessment of Dust from Demolition and Construction developed in the United Kingdom by the Institute of Air Quality Management was used to provide a qualitative assessment method which uses a four-step process for assessing dust impacts from construction activities. The assessment is discussed below.

Existing environment

The existing meteorological conditions from the nearest station at Sydney Airport were examined to provide an estimate of the prevailing wind speed and direction in the local area. The review identified that annual wind roses for the years 2014 to 2018 indicate that predominant wind directions in the area are consistently from the northeast, south and northwest directions. Therefore, wind from the northwest, would blow air emissions towards the nearest sensitive receptors, including Travelodge Hotel, 8-12% of the time.

The report also analysed long term rainfall recorded at Sydney Airport. The results indicate that generally the periods of July to December have recorded the lowest monthly rainfalls compared to long term monthly average rainfall.

Assessment

The assessment identifies that the site is generally surrounded by a mix of industrial and commercial buildings, which have been classified as medium sensitivity receptors. The Travelodge Hotel is located towards the south east boundary of the site, approximately 20m from the eastern site boundary and is regarded as a high sensitivity receptor as it has potential to be adversely impacted by nuisance dust.

Overall, based on the existing site conditions, construction activities at the site have the greatest potential to impact on receptors located towards the southeast of the site during winter, based on the low rainfall and conducive predominant wind directions during this season.

Having regard to the proposed works, the assessment concludes that the risk of any exceedances of air quality criteria at nearby industrial or residential receptors due to air emissions from the site is expected to be minimal. In summary:

Construction Impacts

Potential air pollutants of interest for the construction phases, include:

- Suspended particulate matter; and
- Deposited dust.

The assessment concludes that there is a high risk of adverse dust soiling and a high risk of human health impacts occurring at the off-site sensitive receptor locations if no mitigation measures were applied to control emissions during the earthworks and construction phases. The demolition and track out phase have a medium risk of impact.

A reappraisal of the air quality impacts on sensitive receptors has been performed to demonstrate the opportunity for minimising risks associated with adoption of the mitigation measures. When applying the mitigation measures, the mitigated dust deposition and human health impacts for demolition and trackout activities are anticipated to be low risk, whereas earthworks and construction activities are anticipated to be medium risk (refer to **Figure 40**).

Figure 40 – Residual Risk of Air Quality Impacts from Construction

Impact	Sensitivity of Area	Residual Risk			
		Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	Low Risk	Medium Risk	Medium Risk	Low Risk
Human Health	High	Low Risk	Medium Risk	Medium Risk	Low Risk

Source: SLR Consulting Australia

Operational Impacts

Potential air pollutants of interest for the operational phases, include:

- Products of fuel combustion (including particulates) from the fire training cabins; and
- Products of fuel combustion and wind generated dust from vehicle movements entering and moving around the site.

A qualitative risk-based impact assessment has been undertaken of the abovementioned potential air quality impacts.

The assessment of potential impacts associated with air emissions from the fire training cabins on the local sensitive receptors is concluded to be neutral to all receptors, having regard to the following (refer to **Figure 41**):

- The nature of impact is anticipated to be neutral given the low toxicity of air emissions anticipated to be generated from the proposed use of materials (i.e. propane, water-based smoke fluid and compressed air).

- The magnitude of emissions is considered to be negligible given the minimal quantities of air pollutants anticipated to be generated from the proposed use of materials.

Figure 41 – Impact Significance – Fire Trainer Cabins

Magnitude Sensitivity	Substantial Magnitude	Moderate Magnitude	Slight Magnitude	Negligible Magnitude
Very High Sensitivity	Major Significance	Major/ Intermediate Significance	Intermediate Significance	Neutral Significance
High Sensitivity	Major/ Intermediate Significance	Intermediate Significance	Intermediate/Minor Significance	Neutral Significance
Medium Sensitivity	Intermediate Significance	Intermediate/Minor Significance	Minor Significance	Neutral Significance
Low Sensitivity	Intermediate/Minor Significance	Minor Significance	Minor/Neutral Significance	Neutral Significance

Source: SLR Consulting Australia

The assessment of potential impacts associated with air emissions from onsite vehicle movements on the local sensitive receptors is concluded to be neutral to all receptors based on the small amount of anticipated traffic movements onsite (refer to **Figure 42**).

Figure 42 – Impact Significance – Onsite Vehicle Movements

Magnitude Sensitivity	Substantial Magnitude	Moderat Magnitude	Slight Magnitude	Negligible Magnitude
Very High Sensitivity	Major Significance	Major/ Intermediate Significance	Intermediate Significance	Neutral Significance
High Sensitivity	Major/ Intermediate Significance	Intermediate Significance	Intermediate/Minor Significance	Neutral Significance
Medium Sensitivity	Intermediate Significance	Intermediate/Minor Significance	Minor Significance	Neutral Significance
Low Sensitivity	Intermediate/Minor Significance	Minor Significance	Minor/Neutral Significance	Neutral Significance

Source: SLR Consulting Australia

SPECIFIC MITIGATION MEASURES

Mitigation measures outlined in the AQIA for the site for implementation during the construction and operational phases include:

- **Construction Phase** - A range of dust mitigation measures are proposed for incorporation into the Construction Environmental Management Plan (**CEMP**). Refer to Table 8 of the AQIA for a detailed list of mitigation measures.
- **Operational Phase** - Air quality impacts can be managed by implementing the following mitigation measures:
 - Restrict the fuel type to be used in the fire cabins to “natural propane gas”.
 - Idling vehicles to be switched off while on site.

7.9. HAZARDS AND RISKS

The following sections provide an assessment in response to SEARs key issue: Hazards and Risks, requiring:

- *a preliminary risk screening completed in accordance with the State Environmental Planning Policy No. 33 – Hazardous and Offensive Development and Applying SEPP 33 (Department of Planning, 2011) with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development.*
- *a report on the consultation outcomes with all operators of high-pressure dangerous goods or gas pipelines within or in vicinity of the development with regards to requirements under Australian Standard*

7.9.1. Hazardous Materials

A Hazardous Materials Assessment (HMA) was undertaken by Presna Pty Ltd in 2014 for the Engineering Store, Guardhouse and King Street North Staff Car Parking at 297 King Street, Mascot (refer to **Appendix U**, **Appendix V** and **Appendix W**).

Methodology

The assessments carried out by Presna Pty Ltd comprised a review of available information, interviews with available site personnel and a visual inspection of reasonably accessible areas. The assessment was conducted in accordance with the relevant state Health & Safety Regulations and Codes of Practices.

Existing environment

Figure 43, **Figure 44** and **Figure 45** below provide a description of the existing site information for the Engineering Store, King Street North Car Park and Guardhouse.

Figure 43 – Site information for the Engineering Store

Site:	SYDES2 (Engineering Store), 297 King Street, Mascot NSW 2020		
Age (Circa):	1980s	External walls:	Concrete
Approximate area:	800m ²	Internal walls:	Concrete
Levels:	1	Ceiling:	N/A
Roof type:	Metal	Floor and coverings:	Concrete

Source: Presna Pty Ltd

Figure 44 – Site information for the King Street North Car Park

Site:	Staff Car Park King Street Nth (SYDPKN-P), Jet Base, Mascot NSW 2020		
Age (Circa):	1980's	External walls:	N/A
Approximate area:	18,000m ²	Internal walls:	N/A
Levels:	1	Ceiling:	N/A
Roof type:	N/A	Floor and coverings:	Bitumen

Source: Presna Pty Ltd

Figure 45 – Site information for the King Street North Guardhouse

Site:	Guardhouse King Street Nth (SYDGKN), Jet Base, Mascot NSW 2020		
Age (Circa):	1990's	External walls:	Brick
Approximate area:	20m ²	Internal walls:	Brick
Levels:	1	Ceiling:	Plasterboard
Roof type:	Metal	Floor and coverings:	Concrete and vinyl tiles

Source: Presna Pty Ltd

Assessment

The following hazardous building materials were identified in the assessments: Engineering Store and Guardhouse

Synthetic Mineral Fibre Materials (**SMF**) in the form of sarking insulation was suspected to be present throughout the roof space.

King Street North Car Park

Lead-containing paint (**LCP**) was identified in the yellow upper coloured paint system to the bollards in various areas throughout the car park during the assessment.

Based on the findings of hazardous materials (see below) a Hazardous Materials Management Plan (**HMMP**) was prepared by Edwards Blasche Group (refer to **Appendix RR**). This provides work management strategies and management and removal strategies for hazardous materials.

SPECIFIC MITIGATION MEASURES

Specific mitigation measures outlined in the HMA for the site include:

- A destructive hazardous building material survey should be carried out prior to any demolition or refurbishment works.
- During demolition/refurbishment works, if any materials that are not referenced in the report are suspected of containing asbestos are encountered, then works must cease and an asbestos hygienist should be notified to determine whether the material contains asbestos.
- SMF Materials that are likely to be disturbed during any proposed demolition/refurbishment works should be handled in accordance with the *Code of Practice for the Safe Use of Synthetic Mineral Fibres*.
- Any works that are likely to disturb LCP surfaces should be conducted in accordance with the *Guide to Lead paint Management and Part 7.2 of the NSW Work Health & Safety Regulation, 2011*.
- HMMP provides overarching recommendations for SMFs and lead-based paints at the site.

7.9.2. High Pressure Dangerous Goods or Gas Pipelines Assessment

RiskCon Engineering were engaged to prepare a Consultants Advice Notice (CAN) (refer to **Appendix XX**) to identify and assess the risks to high-pressure pipelines in the vicinity of the proposal. The Can satisfies the requirements of the SEARs Key Issue: Hazards and Risks, requiring:

- *a report on the consultation outcomes with all operators of high pressure dangerous goods or gas pipelines within or in vicinity of the development with regards to requirements under Australian Standard AS 2885 Pipelines – Gas and liquid petroleum and provide sufficient details on how these outcomes will be delivered or implemented.*

Methodology

The CAN prescribed to the following methodology in order to determine if the project has any potential or impact on high pressure dangerous goods or gas pipelines within the vicinity of the project and if so what safeguards are required in order to ensure the risks are controlled so far is reasonably practicable:

- Identify the high-pressure dangerous goods or gas pipelines on or within the vicinity of the proposed development using the “dial before you dig” organisation;
- Contact the high-pressure dangerous goods or gas pipeline operators, identified from the “Dial before you dig” inquiry, and consult on the potential impacts of the proposed Qantas flight training centre development (the Development) on the specific pipeline;
- Obtain details, from each operator, of the requirements associated with the impacts of the Development on pipeline operations and any safeguards required during the Development process; and
- Report on the findings of the assessment including recommendations from operators regarding required safeguards during the Development process.

Existing Environment

Through an inquiry with the “Dial before you dig” organisation it was determined that there are multiple high pressure dangerous goods or gas pipelines in the Mascot area, including:

- Mobil Oil Australia Pty Ltd (Mobil) [liquids pipeline] – The Mobil Terminal, located at Coal Pier Road in Banksmeadow has closed and is no longer in operation. Hence, the pipeline from the Bulk Liquids Berth

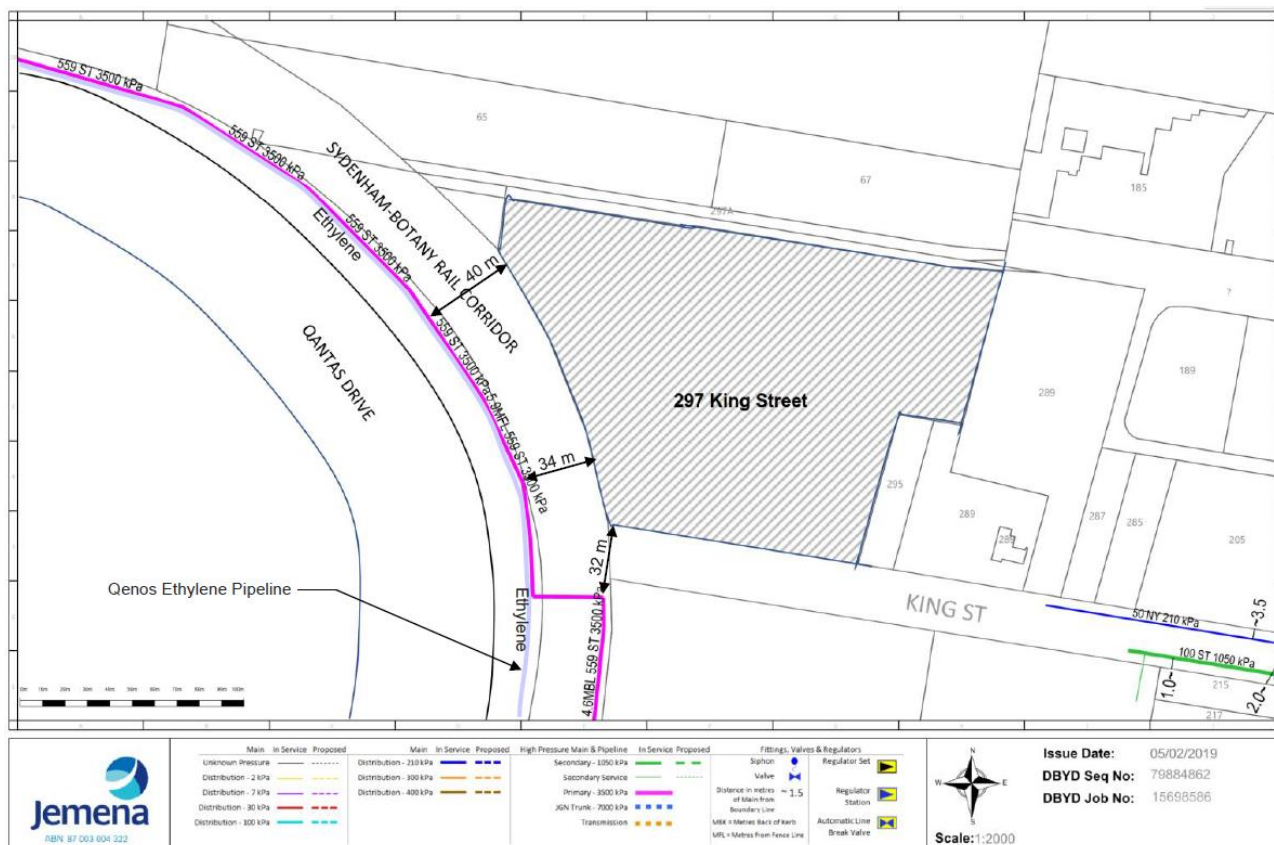
at Port Botany to the terminal is no longer operating. The Mobil Terminal was located about 4 kms from the Qantas development.

- Jemena [3500 kPa natural gas pipeline] – The Jemena high pressure gas pipeline No. 559 ST 3500 kPa was identified to be located along the eastern side of Qantas drive, between the edge of the roadway and the Sydenham to Botany Rail Corridor. The operator of the pipeline, Jemena, was contacted regarding the pipeline location in relation to the proposed Development and information regarding the risks associated with the proposed Development. The location of the pipeline relative to the project is shown in **Figure 46**.
- Qenos Pty Ltd (Qenos) [ethylene pipeline] – The Qenos ethylene pipeline was identified to be located in the same corridor as the Jemena asset along the eastern side of Qantas drive, between the edge of the roadway and the Sydenham to Botany Rail Corridor. Contact was made with the Freyssinet patrol and maintenance personnel with regards to the Qenos ethylene pipeline, who indicated that the ethylene pipeline was currently not operating and was in “maintenance” mode, meaning the pipeline may be brought on line at any time, but is not currently transporting gas. Discussion with the owner, Qenos, indicated that there were no immediate plans to bring the pipeline back to an operating state. Notwithstanding this, an assessment of the potential for the proposed Qantas development to impact the ethylene pipeline was conducted. The location of the pipeline relative to the project is shown in **Figure 46**.
- Vopak Terminals Australia Pty Ltd (Vopak) [liquids pipeline] – Vopak operates pipelines from its Botany Terminal to the Bulk Liquids Berths at Port Botany. However, these pipelines run along the shore line of Botany Bay and are not installed near the Qantas development. These pipelines are located over 5 kms from the Qantas development.
- Other Bulk Liquids Pipelines – the Sydney Ports Bulk Liquids Berth is located in the Port Botany area, however, all facilities and pipelines are located well over 4 kms from the proposed Qantas development, hence, there is no impact on these pipelines from the construction of the Flight Training Centre.

Other identified “authorities affected” include:

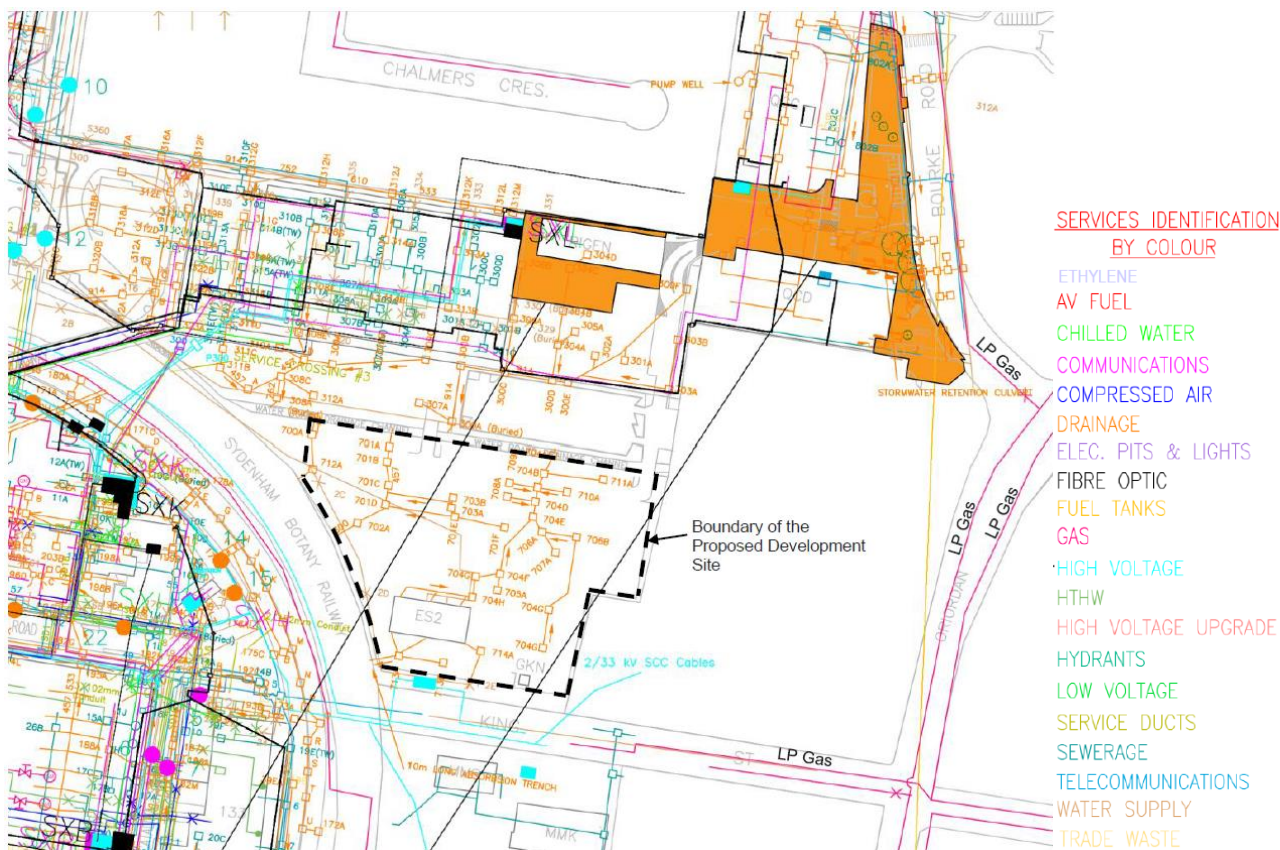
- Electricity – the operator is Ausgrid, who supply electrical services to the site. Electricity is not-classified as a high pressure dangerous good or gas pipeline, hence, there is no further assessment for this service.
- Communications – The National Broadband Network (NBN) is installed in the area where the proposed development is located. The NBN is not classified as a high pressure dangerous good or gas pipeline, hence, there is no further assessment for this service.
- Water – water services are supplied to the site and are located in the area where the proposed development is located. Water is not classified as a high pressure dangerous good or gas pipeline, hence, there is no further assessment for this service.
- Communications – Telstra telephone network is installed in the area where the proposed development is located. The telephone is not classified as a high pressure dangerous good or gas pipeline, hence, there is no further assessment for this service.
- Gas – In addition to the Jemena high pressure gas pipeline there are other lower pressure gas systems installed for supply to residential and commercial premises in the Alexandria area. These pipelines are installed under roadways and footpaths, including Bourke Road, O’Riordan Street and King Street. An underground services plan of the Bourke Road, O’Riordan Street and King Street area has been included at **Figure 47**.

Figure 46 – Location of Jemena and Qenos Pipelines relative to the Project



Source: RiskCon Engineering

Figure 47 – Location of other Gas assets relative to the Project



Source: RiskCon Engineering

Assessment

Based on the investigation into high pressure dangerous goods or gas pipelines in the area, only two high pressure dangerous goods or gas pipelines were identified as being in the immediate vicinity of the project (refer **Figure 46**) and warrant further investigation (see below for further assessment):

- High pressure (3,500 kPa) Natural Gas Pipeline operated by Jemena; and
- High Pressure (currently not operating) ethylene gas pipeline owned by Qenos.

With the other lower pressure gas systems installed for supply to residential and commercial premises in the Alexandria area identified in **Figure 47**, they terminate approximately 20m from the boundary of the site. As there is no plan to excavate in the King Street area, beyond the site boundary, there will be no impact to other pipelines in the Bourke Road, O'Riordan Street and Kings Road areas.

Due to the considerable distance of the project from the Mobil Oil Australia Pty Ltd (Mobil) [liquids pipeline] and Vopak Terminals Australia Pty Ltd (Vopak) [liquids pipeline] it was determined that development and operation of the project would have no impact on these pipelines, and no further assessment was required.

Jemena [3500 kPa natural gas pipeline]

A request for details on the Jemena 559 ST 3500 kPa pipeline (the gas pipeline) was submitted to Jemena, who provided a map of the pipeline location with regards to the proposed Development. **Figure 46** shows the location of the pipeline relative to the site, with the closest point of the pipeline to the site being 32m at the south west corner of the site. Jemena was consulted regarding the proximity of the gas pipeline and to determine whether Jemena had any issues with the proposed development and its construction operations associated with the development would impact on the gas pipeline.

Jemena replied in writing (see **Appendix XX**) stating that they had no concerns regarding the proposed development and considered the development to be sufficient distance from the pipeline not to have any impact during the development and operations period. Clearance for the Development construction has been provided by Jemena.

Notwithstanding this, RiskCon conducted an analysis of the types of incidents and events that may impact a buried gas pipeline in order to confirm such incidents and events, as a result of the proposed Development, cannot cause impact to the Jemena 559 ST 3500 kPa pipeline. A summary of this assessment is provided in **Table 30** which confirms that the proposed Development is considered to be sufficiently separated from the 559 ST 3500 kPa pipeline so as not to have any impact on the pipeline position or operation.

Qenos Pty Ltd (Qenos) [ethylene pipeline]

A request for details regarding the ethylene pipeline was submitted to Freyssinet and Qenos, who provided details of the ethylene pipeline and its location with regards to the proposed Development. **Figure 46** shows the location of the ethylene pipeline relative to the site, with the closest point of the ethylene pipeline to the site being 34m at the south west corner of the site. It should be noted that while the ethylene pipeline is currently not operating or transporting gas and is in "maintenance" mode, it may be brought on line at any time. Discussion with the owner, Qenos, indicated that there were no immediate plans to bring the pipeline back to an operating state.

Qenos and Freyssinet were consulted regarding the proximity of the ethylene pipeline and to determine whether they had any issues with the proposed development and its construction operations associated with the development would impact on the ethylene pipeline.

Both Qenos and Freyssinet replied in writing (see **Appendix XX**) stating that they had no concerns regarding the proposed development and considered the development to be sufficient distance from the pipeline not to have any impact during the development and operations period. Clearance for the Development construction has been provided by both Qenos and Freyssinet.

Notwithstanding this, RiskCon conducted an analysis of the types of incidents and events that may impact a buried ethylene gas pipeline in order to confirm such incidents and events, as a result of the proposed Development, cannot cause impact to the Qenos ethylene pipeline. A summary of this assessment is provided in **Table 30** which confirms that the proposed Development is considered to be sufficiently separated from the ethylene pipeline so as not to have any impact on the pipeline position or operation.

Construction and Operational Impacts

This CAN identified two potential high pressure gas pipelines within the vicinity of the proposed development; the Jemena 3500 kPa Natural Gas Pipeline and the Qenos Ethylene Pipeline (currently shut down and not operating).

The European Gas Pipeline Incident Data Group (EGIG) collects and published a range of data in relation to high pressure gas pipelines and reports on the types of events that result in pipeline failure leading to loss of gas containment from the pipeline. RiskCon identified the relevant risks to the Jemena and Qenos pipelines from the proposed Qantas Flight Training Centre Development, and then assessed the risk of each incident occurring to understand whether the specific incident/event could impact the gas pipeline. This assessment has been summarised in **Table 30**.

Table 30 – Incident / Event types that May Impact the Jemena and Qenos Assets

Incident / Event	Risk to Jemena / Qenos Asset
<p>External Interference – excavations resulting in equipment impact to the pipeline. Excavations at the proposed development will all occur within the Development boundary</p>	<p>Nil – the closest excavation will be over 32m / 34m respectively from the pipelines, there is no potential for impact to the pipeline from external interference.</p> <p>Both Jemena, Qenos and Freyssinet confirm this assessment and have provided “clearance” for the Qantas flight training centre development.</p>
<p>Hot-Tap by Error – work on adjacent pipelines in the same pipeline corridor resulting in identification of the wrong pipeline and hot tap to the gas pipeline.</p>	<p>Nil – The Development will not access the pipeline trench or corridor and no work will be conducted within 32m / 34m respectively of the pipelines, hence, there will be no potential for incorrectly selecting the pipeline (i.e. hot-tap by error).</p>
<p>Corrosion – external or internal corrosion resulting in loss of pipeline thickness and pipeline failure.</p>	<p>Nil – The construction operations at the Development will have no impact on pipeline internal/external corrosion.</p> <p>Notwithstanding this, Jemena indicated that the pipeline is regularly internally “pigged” with an intelligent “pig” that performs corrosion detection along with a number of other condition monitoring functions.</p> <p>It should be noted that the Qenos pipeline is currently not operating and is in “maintenance” mode, meaning the pipeline may be brought on line at any time, but is not currently transporting gas. Qenos, have indicated that there are no immediate plans to bring the pipeline back to an operating state.</p>
<p>Ground Movement – subsidence as a result of earthquake or excavations close by causing ground collapse around the pipeline.</p>	<p>Nil – Earthquake may have an impact on the pipelines, however, the proposed Development has no influence on earthquake in the Mascot area. Excavation in close proximity to the pipelines may lead to land subsidence adjacent to the pipelines resulting in exposure of the pipelines and loss of pipeline support. A review of the proposed construction activities at the Development indicates the only excavations at the site will be for building foundation and connection of services. Excavation would typically not extend further than 1.5 to 2m below ground.</p> <p>It is noted that the closest point of the Development site to the pipeline is 32m / 34m respectively, hence, collapse of a trench on site would not result in subsidence of the pipeline support or ground cover. The separation distance is adequate to eliminate this hazard.</p>
<p>Construction Defect – incorrect weld installation (weld failure), poor ground preparation (i.e. pipeline bed contains rocks which damage the external corrosion protection) or poor overfill preparation (rocks in the overfill impacting the external corrosion protection).</p>	<p>Nil – The proposed Development has no influence over construction defects that may have occurred when the pipelines were constructed.</p>

Incident / Event	Risk to Jemena / Qenos Asset
<p>Material Defect – incorrect pipeline material selected for the specific application or poor material qualities not detected at time of pipeline section manufacture (i.e. poor-quality metallurgical assurance).</p> <p>Other Incidents – lightening impacts to the pipeline causing materials failure or maintenance induced failures (e.g. work on the pipeline leads to loss of containment during the project or after work is complete due to failure to complete the work correctly).</p>	<p>Nil – The proposed Development has no influence over pipeline material selection or manufacture that may have occurred when the pipelines were constructed.</p> <p>Nil – The proposed Development has no influence over lightening impact or maintenance activities associated with the pipelines.</p>
Source: RiskCon Engineering	

The results of the CAN indicate that the proposed development will have no impact on the high-pressure dangerous good or gas pipelines located within the Mascot area including the Jemena and Qenos assets. Operators of high pressure dangerous goods or gas pipelines (Jemena and Qenos), within the vicinity of the proposed Qantas development, have both “cleared” the facility construction.

SPECIFIC MITIGATION MEASURES

As the proposed development will have no impact on the high-pressure dangerous good or gas pipelines located within the Mascot area including the Jemena and Qenos assets no specific mitigation measures are proposed.

However, should it be identified that, during the ongoing development process, excavations or underground works are required outside the boundary of the Development site on the western or southern sides, it is recommended that consultation with Jemena and Qenos be implemented to ensure excavations remain clear of the Jemena 559 ST 3500 kPa pipeline and Qenos ethylene pipeline located adjacent to the Sydenham to Botany Rail Corridor.

7.10. CONTAMINATION

A combined Preliminary Site Investigation (**PSI**) and Detailed Site Investigation (**DSI**), also referred to as an Environmental Site Assessment (**ESA**) was undertaken by Arcadis Australia Pacific Pty Ltd (**Arcadis**). This ESA is included at **Appendix T**. The ESA was prepared in response to SEARs Key Issue: Soils and Water requiring:

- *an assessment of potential surface and groundwater impacts associated with the development.*

The objectives of this ESA are to:

- Identify issues, concerns or environmental risks and liabilities associated with the present and historical uses of the site; and
- Assessing whether there is potential for soil and/or groundwater contamination issues associated with current/past land use.

Methodology

The preparation of the ESA involved a review of historical data and aerial photography, conducting a site walkover, undertaking investigations on soils and conducting groundwater analysis at the site.

Existing environment

The site has been used for farming and agriculture, manufacturing and commercial/industrial land purposes. Contaminants of potential concern (**COPCs**) associated with historical land uses include heavy metals, BTEXN and TRH, asbestos, pesticides, VOCs/SVOCs and PFAS.

Assessment

Several locations reported soil contaminant concentrations above the adopted soil guidelines being the National Environmental Management Plan (**NEMP**) (2013) Commercial/Industrial Guidelines. This includes soil samples with concentrations of the following:

- C16-C34 (Petroleum hydrocarbon ranges);
- Lead;
- Benzo(a)pyrene; and
- Asbestos fines (AF)/ fibrous asbestos (FA).

Groundwater contaminant concentrations were also reported above the adopted groundwater guidelines being the Australian and New Zealand Environment and Conservation Council (**ANZECC**) 2000 Fresh Water guidelines. Contaminants found across the site include:

- Concentrations of Zinc in groundwater which is expected to be attributed to the Former Mascot Galvanising Facility located 40m south east of the site. The former galvanising site is known to have contributed high zinc concentrations of zinc to groundwater.
- Several additional heavy metal exceedances (including Arsenic, Cadmium and Copper) reported in groundwater well locations across the site. Heavy metal exceedances can be attributed to the historical commercial /industrial operations at the site and surrounding properties.

Concentrations of Ammonia were reported across the site. On the basis of the above findings, Arcadis concluded that groundwater remediation works at the site are not feasible as the elevated levels of metals in groundwater appear to be a local problem as a result of the historical commercial and industrial use of the site.

SPECIFIC MITIGATION MEASURES

Arcadis have made recommendations to manage the human and environmental risks to manage the proposed works including:

- Preparation of a Remedial Action Plan (**RAP**) to remediate the identified heavy metal, hydrocarbon, B(a)P and asbestos soil hotspots and to outline a validation plan for the site.
- Preparation of an Environmental Management Plan (**EMP**) to manage the elevated concentrations of heavy metals in groundwater (discussed below).
- All waste streams generated during site works are to be disposed of at an appropriate waste disposal facility that accepts asbestos contaminated waste.
- Soil material excavated from the general vicinity of MW05 is to be disposed of at an appropriate waste disposal facility that accepts asbestos contaminated waste.

Environmental Management Plan

An Environmental Management Plan (**EMP**) was prepared by Arcadis and contained at **Appendix QQ**. Based on the contamination found in the ESA, the preparation of an EMP is required to manage any intrusive works, excavation or other works undertaken during construction of the proposal or maintenance events due to the presence of some residual groundwater contamination remaining onsite post redevelopment.

The EMP is a working document that sets a series of targets, actions, responsibilities and performance indicators to achieve best practice environmental management of the site and will be updated as necessary

7.11. STORMWATER AND FLOODING

A Stormwater Management and Civil Design Report has been prepared by Enstruct and attached at **Appendix Y**. This report has been prepared in response to SEARs Key Issue: Soils and Water requiring,

- *a description of the proposed erosion and sediment controls during construction and operation;*
- *a description of the surface and stormwater management system, including on-site detention and measures to treat or re-use water;*

- an assessment of the impact of flooding on the proposed development for the full range of flood events up to probably maximum flood;
- an assessment of the impact of the proposed development on flood behaviour; and
- details of impact mitigation, management and monitoring measures.

The response to other Soils and Water SEARs requirements including water infrastructure, water demands, and balance is provided in **Section 7.13**.

Methodology

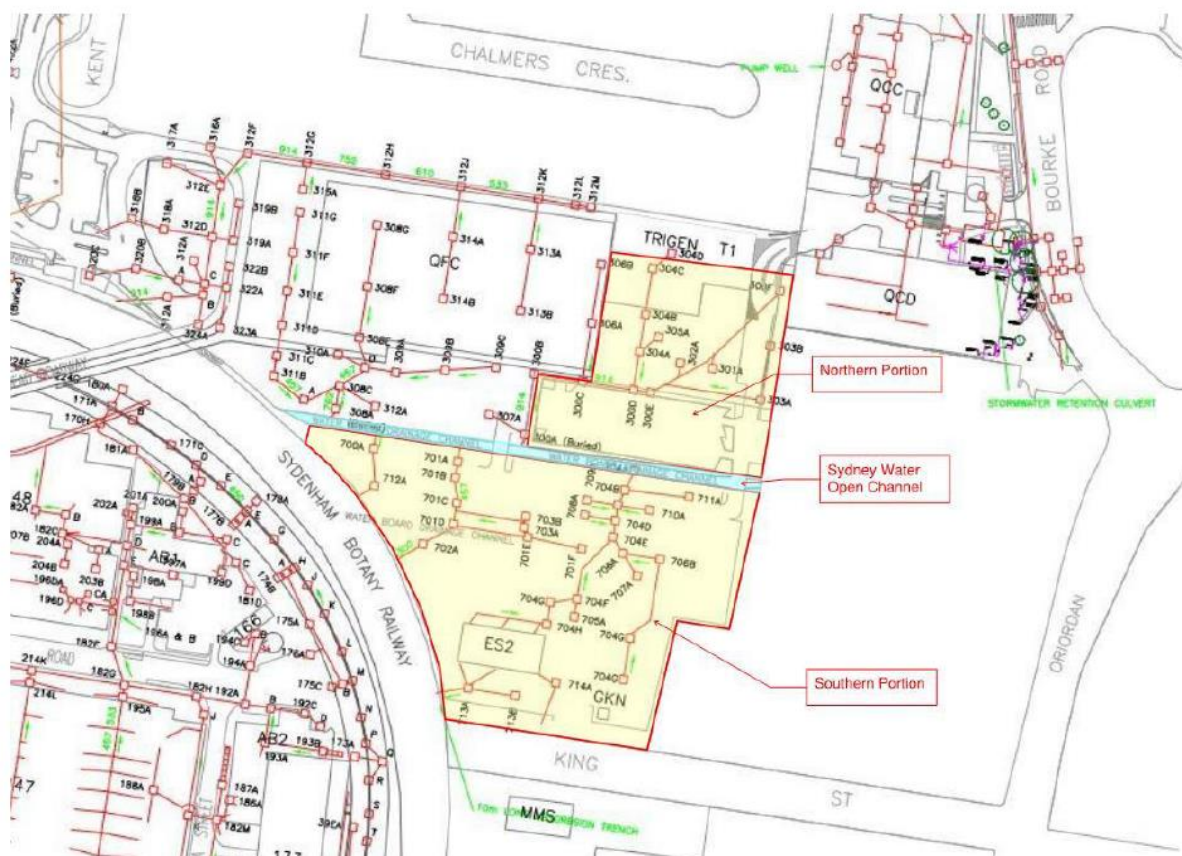
Enstruct acquired the TUFLOW model developed by WMA Water Ltd. in February 2019 for review and revision to improve the accuracy of the model by overlaying the most recent detailed survey and include all change in building locations. Enstruct's revision of the model and assessment is discussed below.

Existing environment

Stormwater

Existing stormwater infrastructure within the site is owned by Qantas and drains through to the open drainage channel, owned by Sydney Water, bisecting the site (see **Figure 48**). A previous flood study was undertaken by WMA Water in 2015 for Mascot, Roseberry & Eastlakes. This report, as well as advice from Bayside Council, found that the northern portion of the site was impacted by the 1% AEP and therefore is subject to inundation due to flooding from overland flow in the 1% AEP events. However, the report states that *"the flood impact to the northern portion was considered to be only Flood Fringe which places the site in a low hazard category"*.

Figure 48 – Existing site drainage



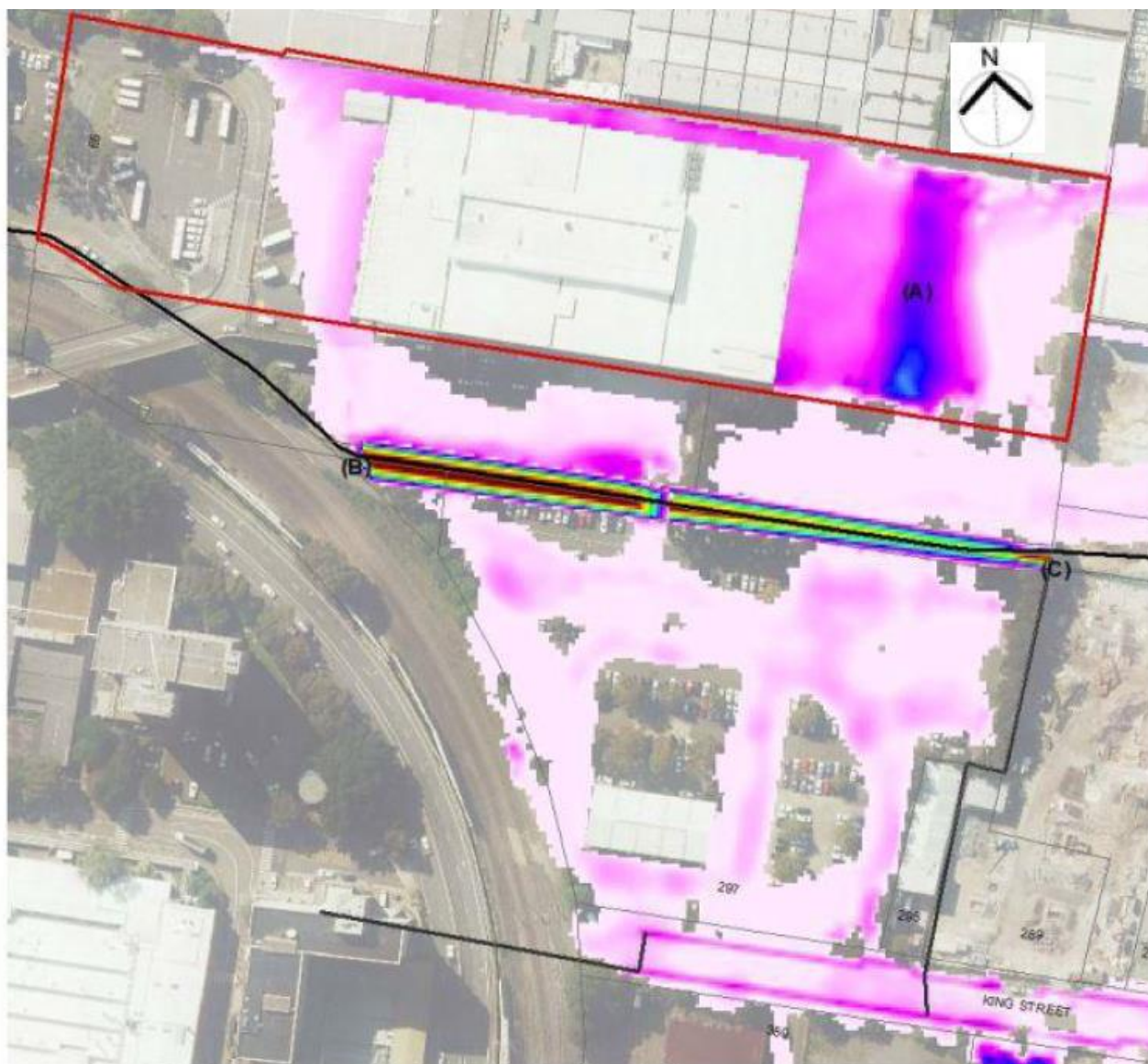
Source: Enstruct

Flooding

The site is part of the Alexandria Canal catchment consisting of industrial and commercial developments in the Mascot area. As stated above, Bayside Council have provided correspondence advising that the northern portion of the site is subject to inundation due to flooding from overland flow in the 1% AEP events.

Flood levels for three points within the site were provided by Bayside Council as shown in **Figure 49**. The dark blue indicates a greater depth of water, as shown at the north-eastern extent of the site, and the lighter pink indicates shallower depth. The approximate location of the existing drainage network is indicated by the black lines.

Figure 49 – Flooding within the site – 1% AEP Flood extent map



Source: Enstruct

Assessment

Flooding

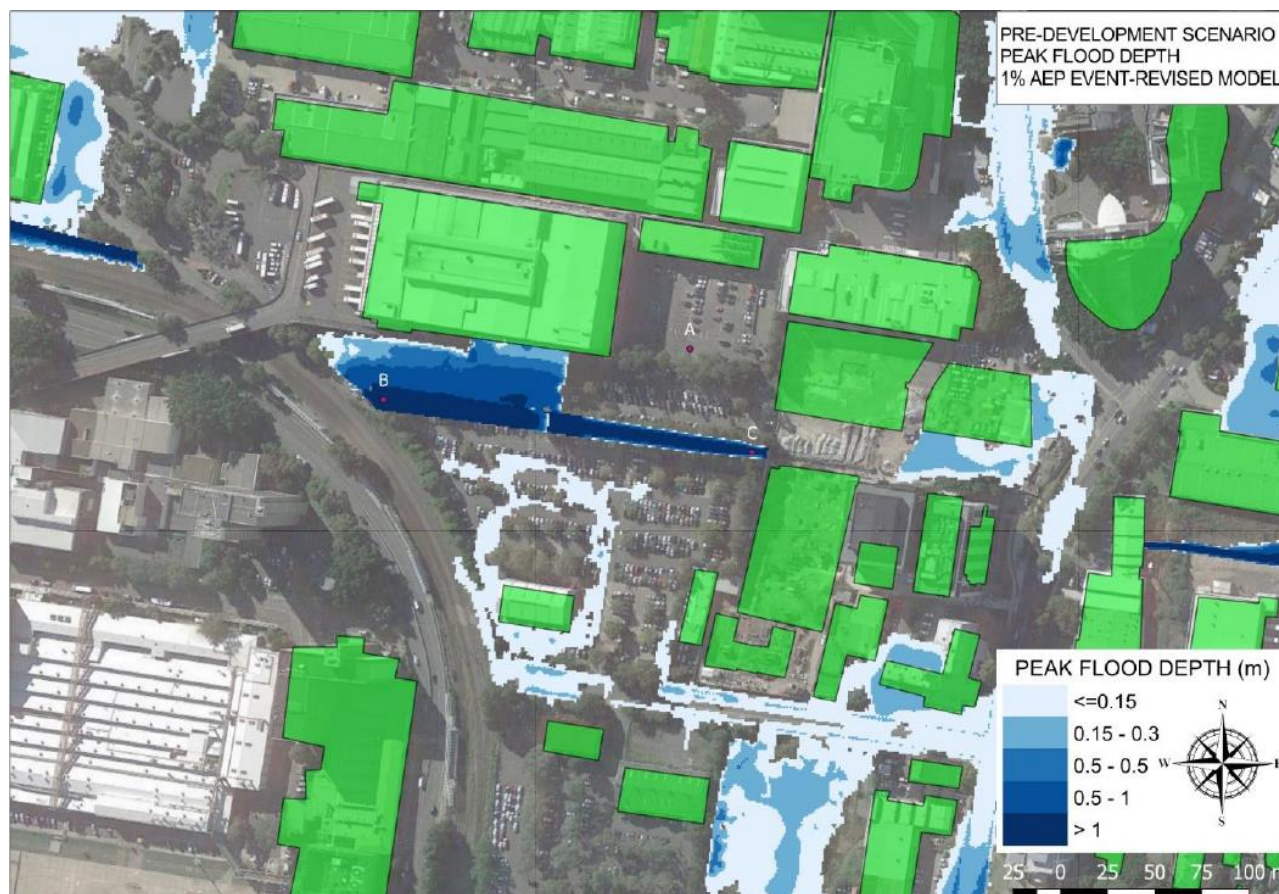
The modelling undertaken by Enstruct shows some differences when compared with Council's levels. This is illustrated in **Table 31** below. Updated survey data shows that Point A (where the multistorey car park will be located) is not flood affected up to the 1% AEP as the existing building at 185 O'Riordan Street is blocking the overland flow that in the council model was entering the site from the east. Based on this, Enstruct have been in consultation with Bayside Council to accept these levels as a base line for the design of the Project (refer to **Figure 50**).

Table 31 – Flood levels

Location	Surface Level	Revised model – 1% AEP Level	Council 1%	Revised Model – PMF Level	Council PMF
A	3.49	3.49	4.03	4.20	4.41
B	0.77	3.39	2.6	4.07	3.91
C	2.06	4.50	3.47	4.97	4.21

Source: Enstruct

Figure 50 – Overland flooding under existing conditions for 1% AEP event



Source: Enstruct

Stormwater

The proposed new building and multi-storey car park stormwater will be picked up and conveyed via a pipe and overland flow to the open channel in the centre of the site. The stormwater concept plan, contained at **Appendix Z**, has incorporated Water Sensitive Urban Design measures to reduce peak outflows, including the use of detention systems such as water storage tanks. Stormwater is able to be re-used on site through planned activities to collected roof stormwater in a water tank for reuse for irrigation of courtyards and gardens.

Water quality

Bayside Council's water quality treatment requirements are provided in Council's Stormwater Management Part 3G policy document and captured stormwater runoff must be treated in accordance with discharge requirements.

As stated in report, *"the proposal is able to meet these pollution control criteria through passing stormwater through pollutant control devices to remove oil and silt, nitrogen, phosphorous and gross pollutants."*

Pollution control measures will clean stormwater at the required levels to discharge from the site and control measures will require on-going maintenance.

Erosion and sediment control

Water runoff is proposed to be collected and distributed around the disturbed site or collected. Sediments will be removed prior to discharge to the existing stormwater system. It is also expected that there will be dust suppression, construction vehicle suppression and cleaning system are in place as procedures to control erosion and sediment.

All erosion and sediment control measures will be designed in accordance with the “*Managing Urban Stormwater – Soils & Construction – Soils & Construction Volume 1 2004 (Landcom)*”.

SPECIFIC MITIGATION MEASURES

The following mitigation and management measures are proposed:

- The stormwater concept plan incorporates Water Sensitive Urban Design measures to reduce peak outflows, including the use of detention systems such as water storage tanks.
- Pollution control measures will clean stormwater at the required levels to discharge from the site and control measures will require on-going maintenance.
- Sediments will be removed prior to discharge to the existing stormwater system.
- Dust suppression measures including construction vehicle suppression and cleaning system are to be place as procedures to control erosion and sediment.

7.12. ACID SULFATE SOILS

The site is classified as Class 2 acid sulfate soils (see **Figure 51**), which requires an Acid Sulfate Soils Management Plan to be prepared for any *works below the natural ground surface or works by which the watertable is likely to be lowered*. An Environmental Site Assessment (ESA) was prepared by Arcadias (refer **Appendix T**) and a site-specific Acid Sulfate Soil (ASS) investigation (refer to Appendix B in **Appendix AAA**) was conducted in response to SEARs Key Issue: Soils and Water, requiring:

- *an assessment of the impact of the development on acid sulfate soils.*

Methodology

The preparation of the ESA involved the following scope of works:

- A review of available zoning plans, historical title deeds and council documents (Section 149 Certificate) to determine the potentially contaminating activities that may have occurred on the site;
- An evaluation of aerial photographs to assist in historical land uses and conditions on and adjacent to the site;
- A review of the environmental setting with regards to geology, topography, hydrology and hydrogeology;
- Site visit and walkover to characterise the property setting, including inspection of the site surface for obvious signs of potential contamination and/or contaminant sources;
- A visual evaluation of surrounding land uses to identify any neighbouring activities which may have affected or present a potential risk to the environmental quality of the site;
- Preparation of an OHS plan and SWMs to cover the site intrusive works;
- Undertook a dial-before-you-dig search, obtainment of copies of Sydney Kingsford Smith Airport (the Airport) service diagrams and performing of underground service location;
- Formation of 56 soil bores using a track mounted geoprobe drill rig, to a depth of 0.5m into natural material. This sampling density meets the required minimum number of sampling points to characterise a site in accordance with the relevant industry Sampling Design Guidelines. i.e. 55 sample locations for a site size of 5 ha (not including Qantas Catering building footprint);
- Seven (7) of the soil bores were extended to the underlying groundwater table and converted into groundwater monitoring wells;
- One soil sample of the fill or surface per borehole and one sample from the natural layer of every second per borehole were submitted to a NATA accredited laboratory for analysis of:

- Total recoverable hydrocarbons (TRH);
 - Volatile Organic Compounds (VOCs) which include benzene, toluene, ethylbenzene, xylene;
 - Semi Volatile Organic Compounds (SVOCs) which includes organochlorine
 - (OCP) and organophosphorus (OPP) pesticides;
 - 8 metals (As, Cd, Cr, Cu, Ni, Pb, Zn and Hg);
 - Asbestos– surface soils only; and
 - PFAS in fifteen (15) selected samples.
- Groundwater samples from the seven (7) newly installed monitoring wells were submitted to a NATA accredited laboratory for analysis of:
 - TRH;
 - VOCs;
 - SVOCs;
 - 8 metals;
 - Ammonia; and
 - PFAS.
 - Groundwater samples from the four (4) existing monitoring wells located in the vicinity of the Qantas bus refuel area in the north western carpark area were submitted to a NATA accredited laboratory for analysis of:
 - TRH;
 - VOCs;
 - SVOCs;
 - 8 metals;
 - Ammonia; and
 - PFAS.
 - QA/QC analysis for both soil and groundwater consisted of 1:20 duplicates, 1:20 triplicates, a trip blank and a trip spike for the above analytes;
 - Results were compared against the NEPM (2013) Commercial / Industrial Guidelines and NEMP (2018) Guidelines; and
 - Preparation of a report consistent with NEPM (2013), NEMP (2018) and NSW OEH (2011) reporting guidelines.

The preparation of the ASS involved the following scope of works:

- Formation of eight (8) soil bored using a track mounted Geoprobe drill rig, to a depth of 6m from the surface;
- Six (6) soil samples per borehole (one every metre) will be submitted to a NATA accredited laboratory for analysis of:
 - pH – pH f and pH fox
 - SPOCAS.
- Results will be compared against the Acid Sulfate Soil Manual (1998); and
- Preparation of a report discussing the results.

During this ESA, A at the site and potential

Existing environment

During the ESA groundwater was encountered between 0.975m and 3.553m below ground level and between 1.307m and 3.182m (corrected to AHD).

The ASS investigation also identified potential acid sulfate soil (**PASS**) primarily within the natural soil horizon. Of the 48 analysed samples, 37 were identified to contain PASS material at a wide range of depths, both within the fill and natural material on site.

Assessment

An Acid Sulfate Soil Management Plan (**ASSMP**) has been prepared by Arcadias (refer to **Appendix AAA**). Under Section 6.1 of the BBLEP 2013 the preparation of an ASSMP is required for these works. This is prepared based on the investigations of the ESA and site-specific ASS investigation. The proposed works include excavation to approximately 1 metre in depth which has the potential to encounter PASS (from around 0.6 metres below grade) and ASS (from approximately 1 metre below grade). A risk assessment is made based on the site location, site setting, and proposed works and it is considered the risk of harm due to the release of acid water is moderate to high. This is based on the following:

- Shallow groundwater ranging between 0.975 and 3.2m BGS;
- PASS being identified at the site primarily within the natural sands;
- Site location is within 700m of surface water bodies;
- The amount of material to be excavated is undetermined at the time of this report.

However, the report states that the risk posed to sensitive ecological receptors from the works will be negligible subject to implementation of management procedures provided in the ASSMP.

SPECIFIC MITIGATION MEASURES

The following mitigation management measures have been made in the ASSMP.

Earthworks program

- Excavation activities should occur in a staged process to allow efficient assessment and management of the excavated materials.
- Excavated materials should be placed on an impermeable surface such as a PVC liner or compacted clay with a 300mm layer of crushed limestone.
- The stockpiled materials should be either treated/neutralised with lime at a rate designed from insitu sampling data (if available) or the stockpiles should be assessed for ASS/PASS and neutralised accordingly.
- Excavations into ASS/PASS material should be filled as soon as practicable to minimise the amount of time ASS/PASS are exposed to the atmosphere.

Stockpile management

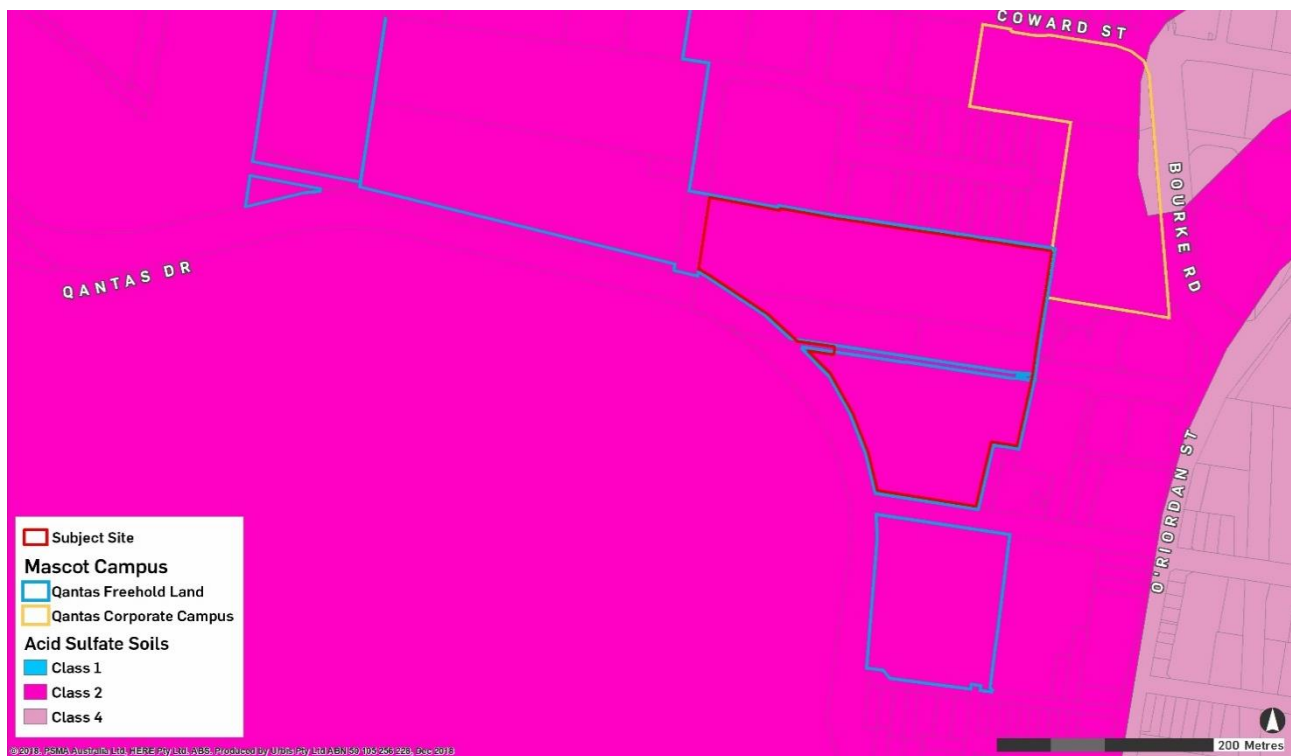
- Excavated PASS/ASS should be laid down in layers up to 300mm thick with lime applied as the required rate between layers.
- The ASS/PASS and lime should be mixed with an excavator taking care not to damage the impervious layer at the base.
- The stockpiles should be covered and bunded to prevent rain fall and stormwater ingress and prevent runoff from the stockpile entering the receiving environment.
- The stockpiles should have a runoff capture drain to allow any runoff to be managed.
- Runoff should be sampled and managed accordingly before release to the environment/stormwater.
- The stockpiled material should be sampled and analysed for SPOCAS to validate the effectiveness of the treatment/neutralisation.

Contingency plan

- If sampling of the stockpile following treatment/neutralisation shows the suitability criteria to not be met, then additional treatment/neutralisation is required.
- If site conditions do not allow for onsite treatment/neutralisation, then off-site disposal to a licensed facility is required.
- If excavations are required below the water table and dewatering is required, a dewatering management plan may be required.
- If stockpile runoff is shown to be unsuitable for release to the environment or the local stormwater network, a water treatment plan for disposal may be required.
- If stockpiled runoff breaches the bund, excavation of the impacted area and treatment/neutralisation will be required.

Additionally, the onsite reuse of neutralised classified ASS/PASS soils is permissible based on the neutralisation and validation of the materials has occurred. In the case that treated stockpiled material is to be considered suitable for re-use/off-site disposal criteria outlined in the ASSMP should be met.

Figure 51 - Extract from BBLEP 2013 Acid Sulfate Soils



Source: Urbis

7.13. INFRASTRUCTURE REQUIREMENTS

An Infrastructure Report was completed by Norman Disney & Young (refer to **Appendix AA**), and has been prepared in response to SEARs Key Issue: Infrastructure requirements, requiring:

- a detailed description of the existing infrastructure on-site;
- identification of any infrastructure upgrades required to facilitate the development, and describe any arrangements to ensure that upgrades will be implemented in a timely manner;
- a detailed description of cooling/heating systems to be installed on-site;
- endorsement and/or approval from Sydney Water to ensure that the development does not adversely impact on any Sydney Water Asset;
- an assessment of any potential impact on the Botany Rail Line; and

- preparation of an Infrastructure Management Plan, detailing the existing capacity any augmentation and easement requirements of the development for the provision of utilities, including any staging.

The following sections provide a description of the existing infrastructure on site and any new or upgraded infrastructure requirements that are needed to accommodate the proposal.

7.13.1. Water Infrastructure

Existing environment

The site is currently served by existing private water infrastructure in the form of two water services – 150mm and 40mm. The water services require reconfiguration to suit the new development.

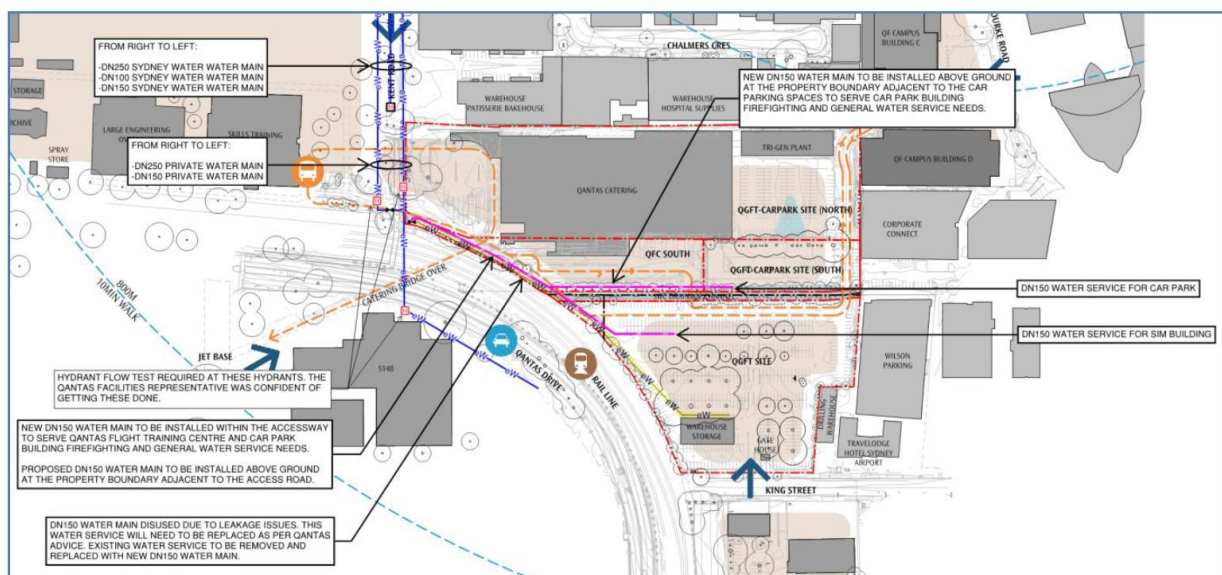
Assessment

Investigations by NDY have resulted in the need to demolish the existing 150mm water main to install a new 150mm water main for firefighting and domestic water services. The new water main will be reticulated above ground at the western boundary, providing water services to the flight training centre.

To provide adequate water infrastructure to the car park, a new 150mm water main will be extended from the proposed 150mm water main reticulating above ground to the flight training centre, as described above. The proposed water main to the car park will reticulate below ground to cross the flight training centre building and then reticulate above ground to the car park bidding service firefighting and domestic water services.

Figure 52 below shows the location of the new water main.

Figure 52 – Water Infrastructure



Source: Norman Disney & Young

7.13.2. Sewer Infrastructure

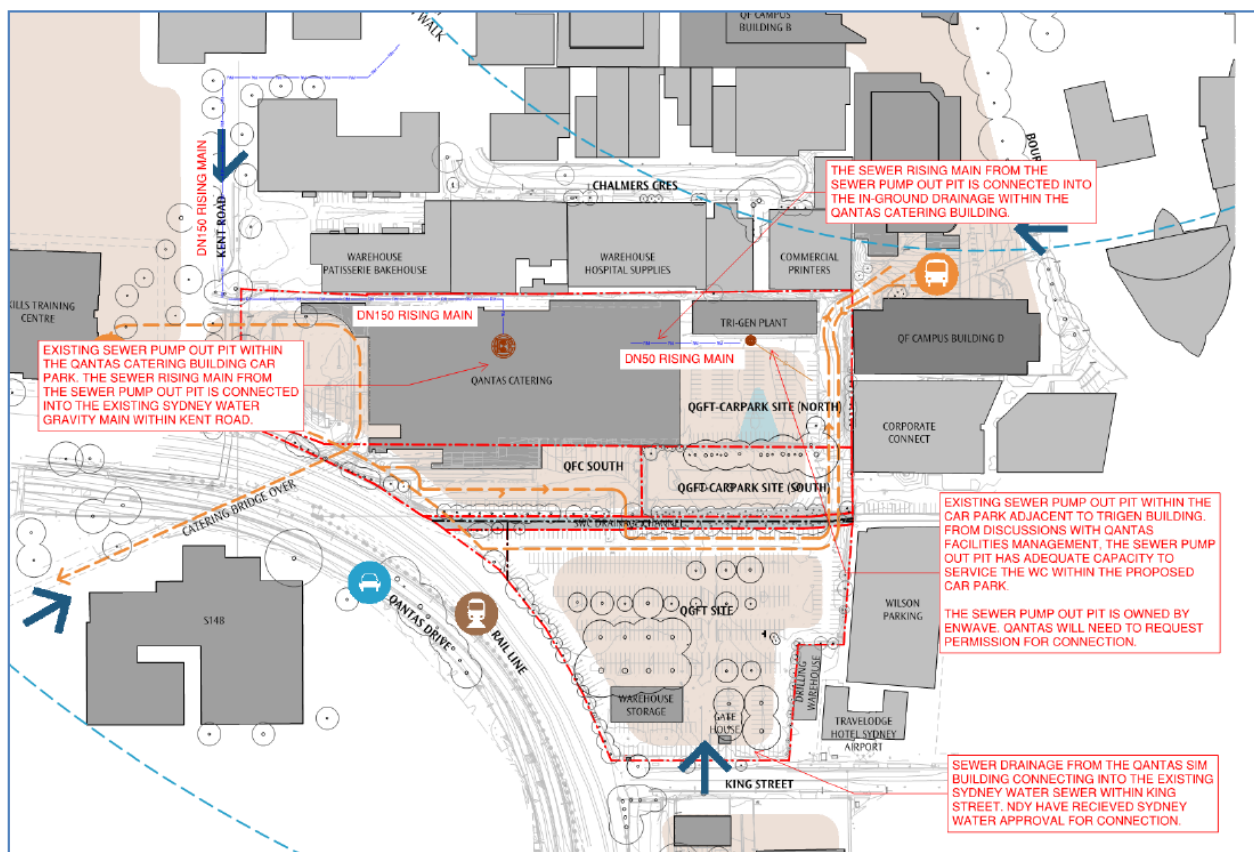
Existing environment

There is no sewer infrastructure within the site where the new flight training centre will be located. Written approval has been obtained from Sydney Water to make a new connection to the existing Sydney Water Sewer main within King Street. Confirmation on the requirement of a section 73 is still required from Sydney Water and will be part of the conditions of consent for the development.

There is currently a sewer pump out pit adjacent to the Trigeneration Building servicing the toilet/shower in the Trigeneration Building which is owned and operated by Enwave. The toilet proposed within the ground floor of the car park building will need to connect into the existing sewer pump owned by Enwave, requiring further consultation by Qantas during the construction phase.

Figure 53 provides further detail on the location of existing sewer infrastructure.

Figure 53 – Sewer Infrastructure



Source: Norman Disney & Young

Assessment

No assessment required.

7.13.3. Gas Infrastructure

Existing environment

There is an existing 50mm gas main at 210 kPa located in King Street, owned by Jemena. An application to extend the existing gas run to the site at a peak demand of 2200 MJ/hr has been made and approved by Jemena.

An existing stormwater drainage will need to be relocated and reconfigured to suit the proposed building layout.

Assessment

No assessment required.

7.13.4. Electrical Infrastructure

Existing environment

The main switchboard located at the trigenerational plant, owned and operated by Enwave, will service the flight training centre. There are existing underground gas lines located to the north of the proposed car park. Existing underground HV cables are also located along the eastern boundary of the site, connecting to an existing Andary substation on King Street. Existing electrical infrastructure is shown in green in **Figure 54**.

Assessment

A new dedicated High Voltage (HV) substation is to be installed and connected to the main switchboard and provided to the Flight Training Centre and the car park. Enwave will supply and install cables and complete the substation fitouts.

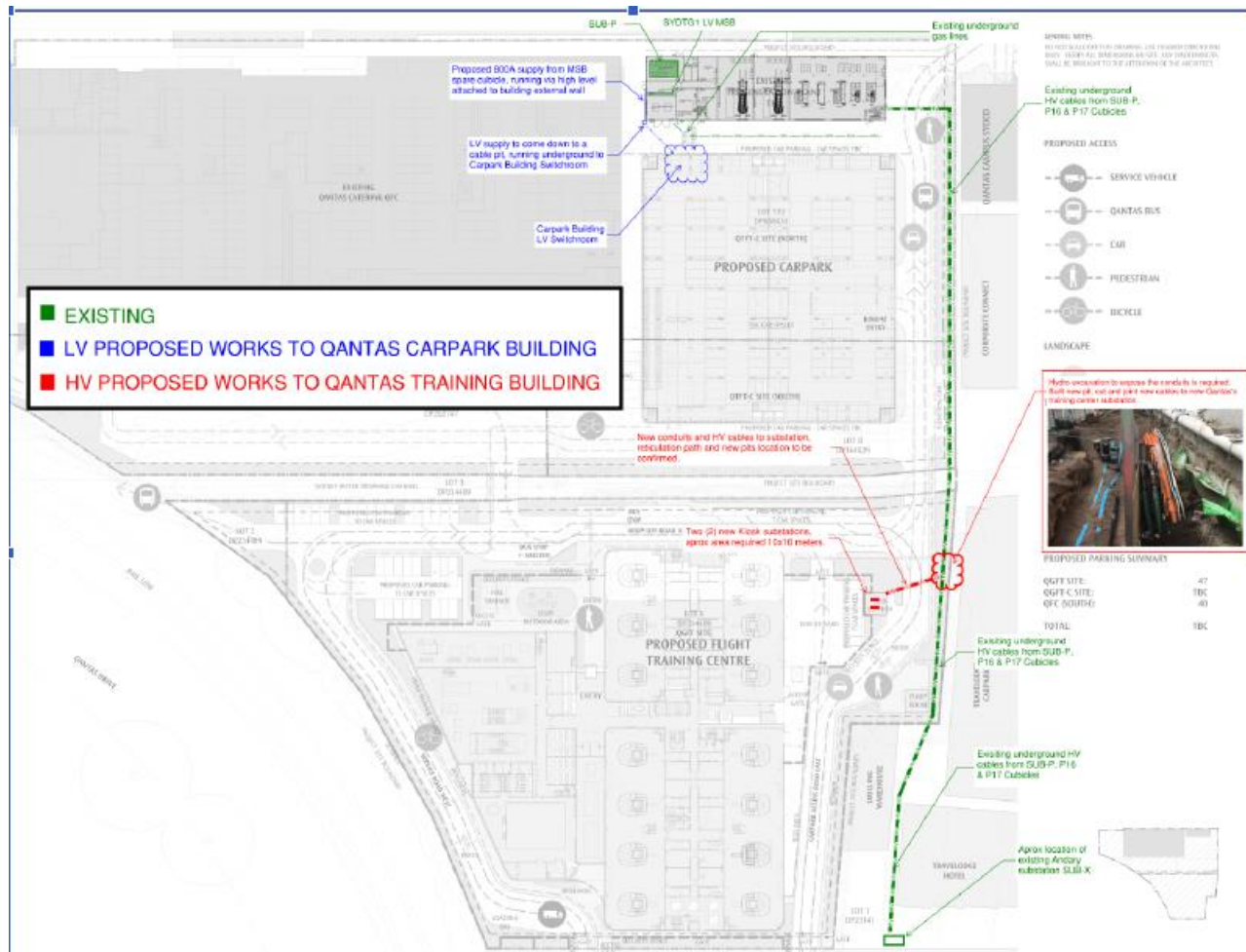
The Flight Training Centre will be served by two (2) x 2 MVA kiosk, linked via a bus tie for a duty/stand-by configuration (N+N). From the transformer, low voltage (LV) supply will reticulate into a dedicated LV switch

room located within the ground floor of the Flight Training & Simulation Centre. The new kiosk substations will be located at the service yard, located at the east of the Flight Training Centre.

The multi-storey car park will be provided with a low voltage (LV) supply from the existing main switchboard located at the trigeneration plant.

Proposed works are shown in blue and red in **Figure 54**.

Figure 54 – Electrical Infrastructure



Source: Norman Disney & Young

7.13.5. Emergency Power Generation System

Existing environment

The provision of continuous full emergency backup power to the flight training centre and multi-storey car park from the Substation P Mascot trigeneration plant will be provided by Enwave, within 5 minutes if needed.

Assessment

Not required.

7.13.6. Heating and Cooling Infrastructure

Existing environment

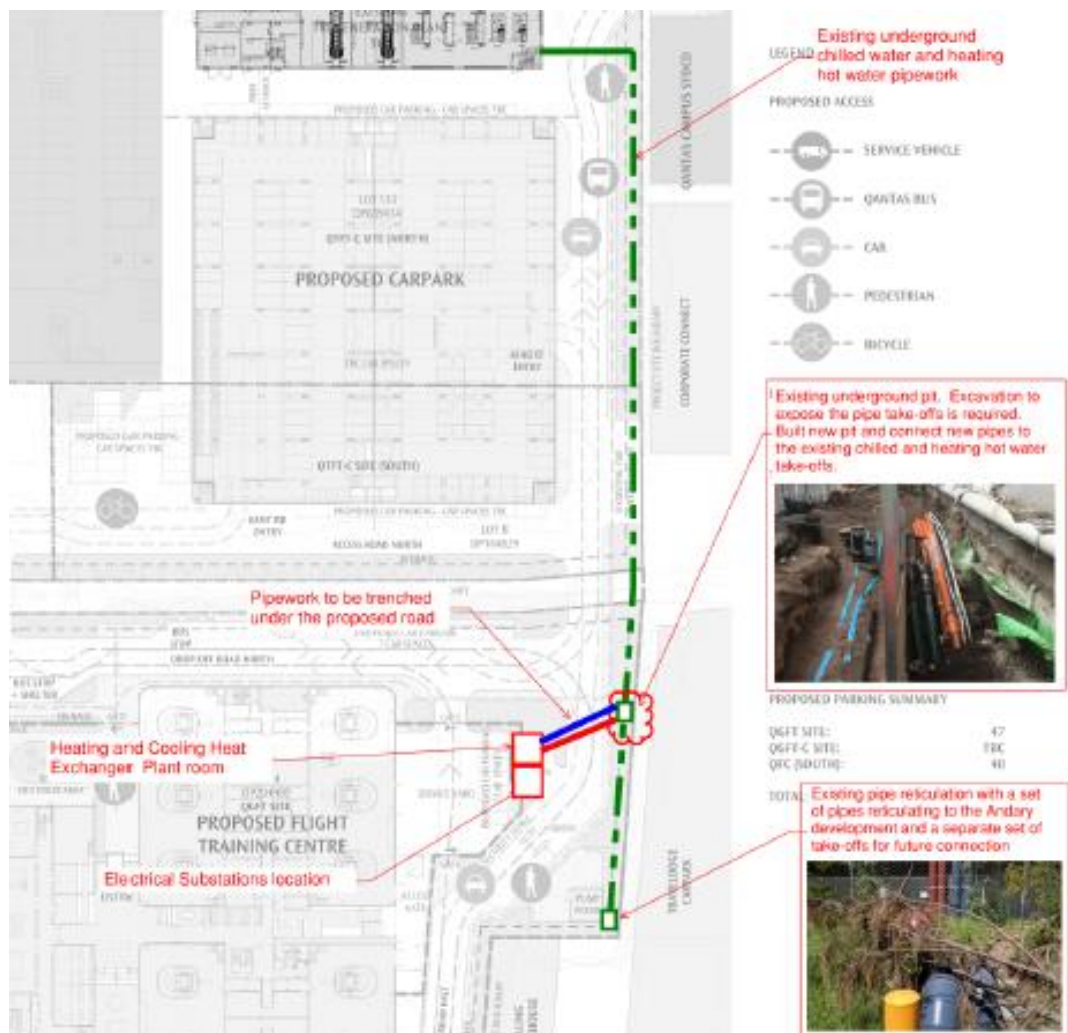
The flight training centre building will connect to the existing Trigenational plant, owned and operated by Enwave which has an existing heating and cooling plant. This will meet the performance requirements of the building.

Assessment

It is proposed to extend the cooling and heating pipework from the existing in-ground infrastructure. **Figure 55** below shows the proposed chilled water pipework in blue and the new heating hot water pipework in red.

The building itself will also utilise Air Handling Units to provide cooling to mixed use office and aquatic spaces, with heating and cooling pipe works extended from the trigeneration plant, in a closed loop with heat exchanges at the interface between Qantas and Enwave.

Figure 55 – Heating and Cooling Infrastructure



Source: Norman Disney & Young

7.13.7. Water demands and balance

This section has been prepared in response to SEARs Key Issue: Soils and Water, requiring:

- a description of the water demands and a breakdown of water supplies;
- a description of the measures to minimise water use;
- a detailed water balance; and
- a description of all wastewater generated on-site.

The proposal will incorporate water-efficient appliances and fixtures, and tapware in accordance with the Water Efficiency Labelling and Standards (**WELP**) ratings.

A rainwater tank with a 2,000 litre capacity is proposed for the flight training centre, to be located within the staff courtyard area. Rainwater collected is proposed to be re-used for irrigation purposes.

It is expected that the proposed water consumption will be approximately 40 kilolitres per day and the total wastewater discharge from the proposed development will be approximately 30 kilolitres per day.

Wastewater discharge will primarily be from male/female amenities, the café, fire trainer and proposed emergency procedures pool. The pool plant will incorporate a backwash filter and storage tank which is connected back to the Sydney Water wastewater system.

Additionally, in accordance with requirements from Sydney Water a trade waste treatment device will be provided for the café for wastewater associated with this use.

7.14. HERITAGE

7.14.1. European Heritage

A Heritage Impact Statement (HIS) has been prepared (**Appendix I**) in response to SEARs Key Issue: Heritage, requiring:

- *consideration of heritage items within the vicinity of the site and any potential impacts associated with the development.*

Methodology

The report assesses the heritage significance against the criteria for heritage listing set out by the NSW Heritage Division. The report did not consider the archaeological potential or moveable heritage potential of the site.

Existing environment

As indicated previously at **Section 2.5**, the site is not listed as a heritage item and is not located within a conservation area. However, part of the Sydney Airport is identified as a listed heritage item under the *Botany Bay Local Environmental Plan 2013*, as;

- Item 3: Commonwealth Water Pumping Station and Sewerage Pumping Station No 38, a heritage item of significance;
- Item 168: Ruins of the former Botany Bay Pumping Station, a heritage item of local significance; and
- Item 170: Sydney (Kingsford Smith) Airport group, a heritage item of local significance.

Assessment

The key matters are summarised below:

- Subject site – There are no known significant historical associations with the subject site and there are no current improvements of any aesthetic value. The existing structures on the site date from the late twentieth century and contains basic service and storage warehousing facilities of no heritage significance. The existing structures on the site are not required to be retained on heritage grounds and may be removed.
- Vicinity heritage items – The vicinity items are all located within the adjacent Sydney Airport site which is listed as a local heritage item in its own right. The proposed works are an extension to the airport-related uses of this precinct which complement the significant aviation use of the immediate locality. Additionally, there is no significant visual relationship with the airport heritage item from the subject site and the proposed works are not considered to have a detrimental impact on the airport heritage item due to its bulk or scale.
- Other heritage items – There are no other heritage items in the immediate vicinity of the subject site and therefore all other heritage items are substantially visually and physically separated from the proposed works and there are no heritage impacts.

Overall the proposed works are considered acceptable from a heritage perspective and complement and enhance the aviation character of the immediate area in relation to the Sydney Airport heritage item.

SPECIFIC MITIGATION MEASURES

The HIS did not consider the potential moveable heritage items which may be stored within existing structures on the subject site. The following is recommended:

- *Prior to demolition, any identified significant movable objects should be documented and stored in another secure area, for example Qantas' archives.*

7.14.2. Archaeology

A Historical Archaeological Assessment (HAA) has been prepared by Urbis (**Appendix MM**) to assess the potential for historical archaeological remains to be present on site, and impacted by the proposed works. It was prepared in response to SEARs Key Issue: Heritage, requiring:

- *consideration of heritage items within the vicinity of the site and any potential impacts associated with the development.*

Methodology

The HAA has been prepared in accordance with the NSW Office of Environment and Heritage (OEH) (2009) guideline *Assessing Significance for Historical Archaeological Sites and 'Relics'*, *Assessing Heritage Significance* (NSW Heritage Manual 2) (NSW Heritage Office 2001), the *Historical Archaeology Code of Practice* (Heritage Council of NSW 2006) and the requirements of the SEARs as per above.

The tasks undertaken to prepare the assessment include:

- Review of previous reporting prepared for The Site and for projects adjacent to The Site
- Searches of the NSW State Heritage Inventory and Bayside Council LEP
- Review of historical aerials available online
- Preparation of HAA.

Existing environment

The Site is not listed on any statutory heritage registers, either for built heritage or archaeological values. The Site is comprised of several lots, but overall has the following pattern of development:

- Land grant, 1837;
- Market gardens, ca.1900-1950;
- Industrial uses, ca. 1950-1980; and
- Qantas ownership and use, ca.1980-present.

Assessment

The Site is assessed as having low potential for archaeological remains or relics that reflect its past occupation and use. There is low potential for artefact bearing deposits dating to the use of the site as market gardens, however subsequent land uses would have disturbed such deposits. Should they remain are likely to represent assemblages commonly found in historical archaeological sites, and not considered to be of high research value or significance.

The research potential of the historical archaeological resource is assessed as low. It is unlikely that archaeological deposits or features that can provide meaningful research information are extant. Any artefacts identified during earthworks are unlikely to contribute previously unknown information about the subject site or the surrounding area, however they may have some level of comparative research value.

SPECIFIC MITIGATION MEASURES

Implementation of a Chance Finds Procedure

While the chances of finding in-situ archaeological features is considered low, the process to be undertaken in the event of an unanticipated discovery should be included in all site inductions to ensure legislative obligations are met.

In the event that sub-surface material in the form of building footings, structural remains or artefact deposits are found in the course of site works, the following steps are recommended:

1. All works cease in the vicinity of the find to avoid further disturbance of remains;
2. Person who makes the discovery is to notify the head contractor / site manager of the find;

5. Head contractor / site manager to seek advice from archaeological consultant to assess the find. The assessment may require notification to the Heritage Division in accordance with s146 of the *Heritage Act 1977*. Depending on the nature of the find, additional assessment and possibly a s140 excavation permit may be required prior to the recommencement of excavation in the affected area;
6. No works are to continue until the find has been assessed and managed in accordance with the guidance of the archaeologist and/or the Heritage Division;
7. Recommence work following approval by archaeologist and/or Heritage Division.

Discovery of Skeletal Remains

It is considered unlikely that human skeletal remains will be present within The Site, however, should such finds be uncovered all works must stop in the vicinity of the find and the NSW Police be contacted immediately for investigation. Works must not recommence until directed by the Police.

7.14.3. Aboriginal Heritage

Urbis is currently in the process of preparing an Aboriginal Cultural Heritage Assessment Report (**ACHAR**), to assess the potential for Aboriginal archaeological remains to be present on site, and impacted by the proposed works (refer to **Appendix NN** for draft). It is prepared in response to SEARs Key Issue: Heritage, requiring:

- *the preparation of an Aboriginal Cultural Heritage Assessment Report.*

Methodology

The preparation of the ACHAR involved the following tasks:

- Background research and review of projected proposal documents
- Search of AHIMS database
- Consultation with Aboriginal parties
- Preparation of ACHAR in accordance with the following guidelines:
 - *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010) (the Consultation Guidelines)*
 - *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011) (the Assessment Guidelines)*
 - *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010).*

It is noted that no archaeological excavation or sub-surface testing has been undertaken for the purposes of the ACHAR.

The ACHAR is expected to be finalised by the end of June 2019. Due to the statutory minimum timeframes associated with completing an ACHAR, it is not expected to be finalised before the end of June 2019. Due to the timeframe requirements of the Project more broadly, it is proposed that once the ACHAR is finalised it will be provided to the Department and OEH for assessment.

Existing environment

Based on predictive modelling for the potential of encountering Aboriginal archaeological sites within the Site is considered to be low to none as summarised below:

- Rock shelter: the potential for rock shelters within The Site is none.
- Midden: the potential for middens within The Site is very low to none.
- Grinding Groove: the potential for grinding grooves within The Site is none.
- Art/ Engraving Site: the potential for art sites within The Site is none.
- Open Campsite: the potential for stone artefacts in The Site is considered low.
- Scarred Trees: the potential for scarred trees in The Site is considered none.

- Ceremonial Sites: no ceremonial sites or places of spiritual significance are known to exist within the subject site or surrounds. Consultation with Aboriginal parties would be required to identify such sites.

Assessment

Stage 1

Stage 1 involved identification, notification and registering of Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the area of the proposed project. The following Aboriginal parties were contacted, as stipulated in Section 4.1.2 (g) of the Consultation Guidelines:

- Office of Environment and Heritage (OEH) Greater Sydney Branch;
- Office of the Registrar, *Aboriginal Land Rights Act 1983*; and
- Bayside Council (local council).

On 1 February 2019 38 Aboriginal groups and individuals were notified via email and on 12 February 2019 four letters were sent via post. An 18 day response timeframe was adopted as per the 14-day minimum requirement outlined in the Consultation Guidelines.

Within this timeframe 21 groups registered interest in the project. A total of 18 additional registrations were received from groups and individuals not identified through the Stage 1 process, and prior to the publishing of the newspaper advertisements. The additional respondents were identified as being part of the Murrin Stakeholder Group.

No responses were received from the newspaper advertisement.

Stage 2

During Stage 2 registered Aboriginal parties were provided with information about the scope of the proposed project, and the proposed cultural heritage assessment process. The information pack was prepared as a combination of Stages 2 and 3 was sent via email or post to Aboriginal parties, from the 5 April 2019 and responses were requested by 3 May 2019.

Stage 3

Stage 3 involves gathering feedback on the project, proposed methodologies and obtaining any cultural information that registered Aboriginal parties wish to share. No site inspections were directly requested and only one expression of interest was received for a site inspection if there was interest from any other parties. Details of the responses to the Stage 2/3 letter are shown in

Table 32 – Stage 2/3 Responses

Respondent	Method	Response
A1 Indigenous Services	Email	Interest in a site inspection if others also response with interest
Darug Land Observations	Email	Supports methodology

Stage 4

The final stage involves preparation and finalisation of an ACHAR with input from all 39 registered Aboriginal Parties for review and comment. A minimum 28 days will be provided to received submissions and all comments will be included in the Final ACHAR.

The Draft ACHAR is anticipated to be sent to RAPs in the last week of May or first week of June, with responses to be received by the end of June. This timeframe will result in an anticipated final ACHAR in early July 2019.

Summary

The draft ACHAR determines the following:

- The site location of the proposed Flight Training Centre conforms to the OEH definition of 'disturbed land' based on 19th and 20th Century subdivision, establishment of roads, agricultural (market garden) uses and associated building construction in the 20th Century, mid-to late-20th Century industrial uses and late 20th Century building construction.
- These historical uses are likely to have disturbed topsoil layers. It is known that between 1.1m and 3m of fill is present across the site, however natural layers appear to be beneath this. The fill is likely to have been laid to form a level surface for the car park and therefore natural layers beneath the fill are likely to be disturbed.
- One archaeological site has been located within 1km of the Site, at Alexandra Canal approximately 750m to the north west of the Site. The archaeological site is believed to have been salvaged, but dated to the late 19th Century;
- Substantial, complex archaeological deposits are unlikely within the Site, and are therefore unlikely to be impacted on by the Project.

It is noted that a values assessment of the social, historical, scientific and aesthetic values of the Site will be completed following consultation and input by RAPs and will be delivered as part of the final ACHAR.

SPECIFIC MITIGATION MEASURES

Direct or indirect impacts to archaeological deposits are considered unlikely and therefore no further archaeological investigation is considered to be necessary.

7.15. SECURITY AND OPERATIONAL MANAGEMENT

An Operational Management Plan (OMP) has been prepared by Qantas and is enclosed at **Appendix L**.

It is proposed that the facility will operate 24 hours a day, 365 days a year in order to meet the operational and training requirements of Qantas. The ongoing operations of the flight training centre will continue to be the responsibility of Qantas' Simulator Facilities & Commercial Operations Department.

7.15.1. Services Provided

Services provided will at the flight training centre include:

- Recurrent and Initial Type Ratings for Pilots and Cabin Crew;
- Bespoke Flight Crew training courses such as Human Factors and Aviation Medicine and Security Training; and
- The sale of such services to non-Qantas Group customers.

This training is provided specific to the fleet on which the flight crew is operating. Every year each member of Flight Crew (Pilots and Cabin Crew) is required to renew their licence to operate on that particular fleet and following successful completion of the particular training matrix, their licence to operate is renewed (recurrent training).

Where Flight Crew are promoted or change aircraft type, an Initial Type Rating is completed, which requires additional training specific to that particular aircraft. This training includes an overview of the specific equipment, door training and in the case of Pilots, a comprehensive training footprint for that specific aircraft.

Pilots, Cabin Crew, Maintenance Technicians, Instructors and contractors will frequent the facility on a 24/7 basis to conduct and attend training and to attend to facility/equipment breakdowns. These people will park at the multi-story carpark and walk to the facility. Arrival at the facility will vary depending on their starting location and how the individual navigates to the facility. On-site parking will be available for those contractors requiring close proximity to the facility.

7.15.2. Security

The flight training centre operations have specific security requirements which will be met through the provision of a secure perimeter, together with a number of layers of access control. This will be achieved through a combination of façade design, bollards and perimeter fencing.

The Operational Management Plan prepared by Qantas (see **Appendix L**) provides security procedures as summarised below:

- Access control to the flight training centre via CCTV and card readers.
- Secure building line around the perimeter of the building with multiple access control gates to enter the site and building, as well as internal access control gates. For example, access to the Sim Bay Hall is limited to authorised personnel access.
- Third party instructors are inducted into the facility and issues a swipe card to access the flight training centre only. The instructor is responsible for meeting the crew at the Jetbase and walking the group to the flight training centre and providing and swiping the crew in.

The building has also been designed with consideration of CPTED principles including swipe access control, secure pedestrian pathways, lighting and wayfinding through landscaping and signage. This is discussed in more detail in **Section 5.10**. Views from the public domain into the Simulator Bays have also been avoided for safety and security purposes.

SPECIFIC MITIGATION MEASURES

The Project has been designed from the outset with the operations of the flight training centre and its security as key requirements. CPTED principles have been built into the Project and no further recommendations or mitigation measures are considered to be required.

7.16. REFLECTIVITY

A Solar Light Reflectivity Study (SLRS) has been prepared by Windtech to detail the potential effect of solar glare from the Project and provided at **Appendix ZZ**.

Methodology

The report adopted the limiting veiling luminance of 500 cd/m² for the comfort of motorists, as suggested in Hassal (1991).

Study point locations (16 in total) were chosen for assessment where motorists are facing the general direction of the subject development (within $\pm 10^\circ$ of the direct sight-line). Photographs were taken from the viewpoint of motorists at each study point location using a calibrated camera and a scale glare protractor was superimposed over each viewpoint image.

Check zones and study point locations are shown in **Figure 56**.

Existing environment

Not applicable.

Assessment

Solar glare for motorists

Of the 16 study point locations, four locations were observed as having potential for solar glare to be observed. All other study points were observed as having no adverse solar glare observed by motorists. Locations observed as having potential for solar glare to be observed and mitigation measures are provided below:

- Motorists heading east along the flight training centre South Access Road;
- Motorists heading west along the access road between pullman and ibis Sydney airport hotel;
- Motorists heading east along King Street; and
- Motorists heading west along King Street.

Glare observed by train drivers

No adverse solar glare will be observed by train drivers on the railway line from the façade of the development as the view of the flight training centre will be blocked by the existing densely foliating trees between the railway line and the site at the western boundary.

Glare observed by pedestrians and occupants of neighbouring buildings

It is considered that buildings which cause a nuisance to pedestrians and occupants of neighbouring buildings are those that have a normal specular reflectivity of visible light greater than 20% which is an

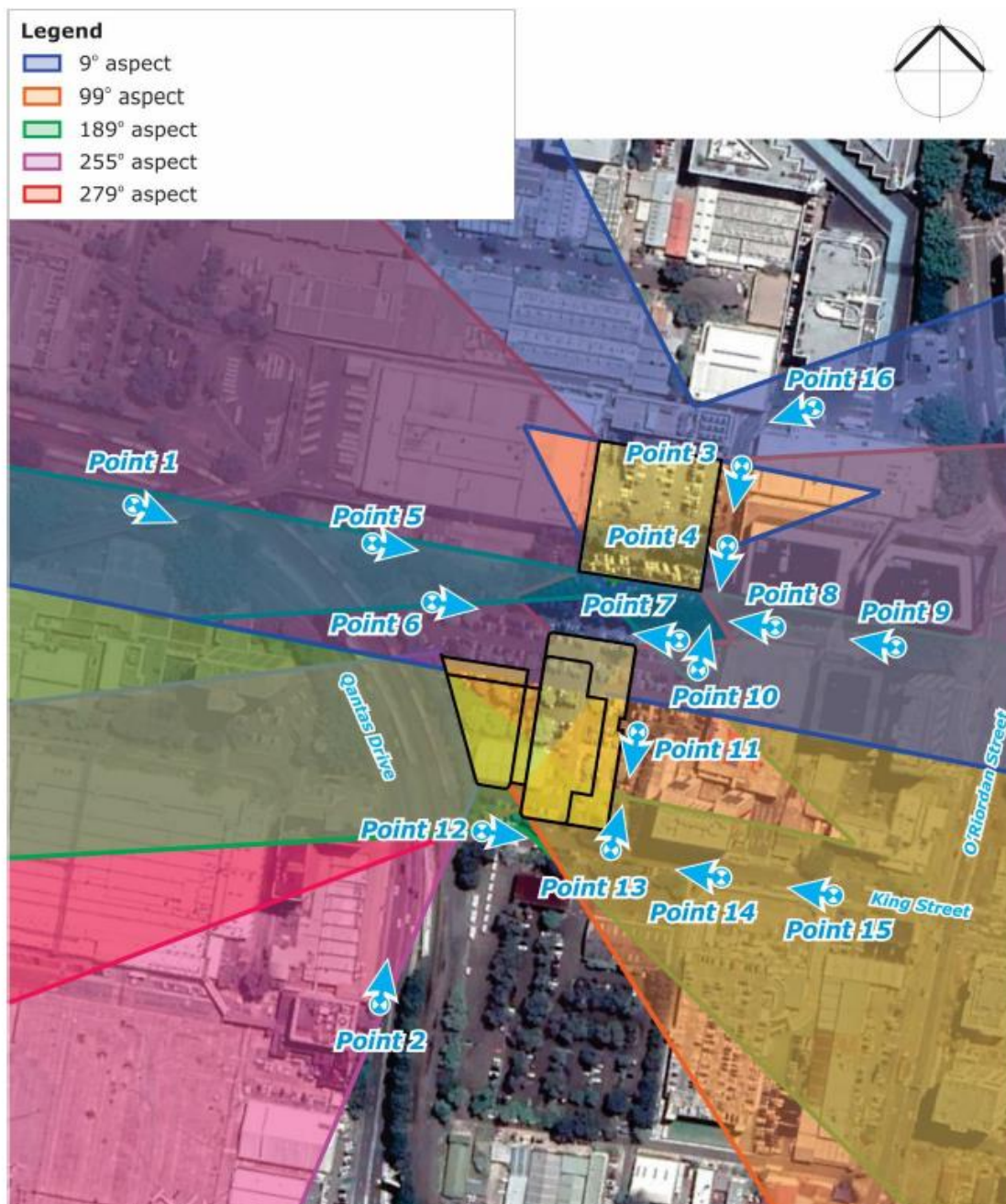
accepted limit by most government authorities and state planning bodies. Thus, the recommendation provided below specifies that all glazing and other reflective materials used on the façade of the subject development have a maximum normal specular reflectivity of 20%.

SPECIFIC MITIGATION MEASURES

The following limitations to the maximum normal specular reflectance of visible light of the external façade glazing is recommended to avoid any adverse glare to motorists and pedestrians on the surrounding streets

- The maximum normal specular reflectance of visible light on the façade and windows on all levels of the 279o western aspects of the car park development is to be 11%.
- Note that if glazed balustrades are used along the 279o western aspects of the car park development, they are to have a maximum normal specular reflectance of visible light of 8%.
- All other glazing (windows and balustrades) should have a maximum normal specular reflectance of visible light of 20%.

Figure 56 – Check zones and study point locations



Source: Windtech Consultants Pty Ltd

7.17. AVIATION IMPACTS

An Aeronautical Impact Assessment prepared by Landrum & Brown and provided at **Appendix SS**. This report has been prepared in response to SEARs Key Issue: Urban Design requiring:

- *consideration of the obstacle limitation surface.*

The report provides an assessment of any impacts on the Prescribed Airspace as a result of the Project. Prescribed Airspace for an airport relates to either the Obstacle Limitation Surface (**OLS**), a PANS OPS (**Procedures for Air Navigation Services – Aircraft Operations**) surface, or the Radar Terrain Clearance Chart (**RTCC**) protection surfaces.

The OLS are conceptual surfaces with the intention to protect aircraft operations from unrestricted obstacle growth and any infringement from a building or cranes requires the support of SACL, CASA and the approval of the Department of Infrastructure, Regional Development and Cities (**DIRC**).

Methodology

The assessment was prepared in response to the requirements of the relevant aviation authorities which includes:

- The Department of Infrastructure, Regional Development and Cities (DIRDC);
- The Civil Aviation Safety Authority of Australia (CASA);
- Airservices Australia (ASA);
- Airport Operators; and
- Department of Defence where appropriate.

The Airports Act 1996 and Airports (Protection of Airspace) Regulations 1996 prescribes the volumes of airspace surrounding Federally Leased Airports that protect aircraft operations into those airports, in order to ensure the safety and regularity of airline and other flight operations.

Sydney Kingsford Smith Airport (the Airport)'s Prescribed Airspace comprises:

- Obstacle Limitation Surfaces (OLS) that restrict obstacle growth in the vicinity of takeoff and landing paths; and
- PANS OPS surfaces that provide a buffer between flight paths and terrain or obstacles.

Existing environment

The outer segments of the OLS for Sydney Airport is 15km from the airport's aerodrome reference point.

The lowest segment of the Airport's OLS, overhead the project site, is the Inner Horizontal Surface, which at this location, is at a height of 51metres.

The proposal is also located beneath both the Take-Off Surface and the Approach Surface for Runway 16L/34R of the Airport's OLS. This continues to increase in height above the IHS.

Assessment

The maximum height of the proposal is 47.53 metres and therefore does not infringe the Airport's OLS.

Overall, the assessment found that the proposed height of the flight training centre and car park will:

- Not infringe the OLS for Sydney Kingsford Smith Airport;
- Not infringe the PANS OPS surface for the Airport;
- Not infringe the BRA for navigation aids at the Airport; and
- Not infringe the ATC Radar clearance planes.

Therefore, the Project's built form does not require approval from SACL, CASA or DIRC. However, it is noted that construction activity and methodology will need consideration prior to gaining approval from SACL and

DIRDC to ensure the construction of the Project will not cause disruption to the safety and regularity of flight operations at Sydney Airport.

SPECIFIC MITIGATION MEASURES

None identified.

7.18. CONSTRUCTION MANAGEMENT

The Project to be constructed in three stages, being:

1. Construction of flight training centre and internal road network;
2. Construction of Stage 1 of the multi-deck carpark (first 4 levels which equates to 736 spaces) and 40 at grade spaces; and
3. Construction of Stage 2 of the multi-deck carpark (levels 5 to 13 which equates to 2,059 spaces).

A Preliminary Construction Management Plan prepared by APP is attached at **Appendix DD** that details the expected construction process and management protocol. Once a Head Contractor is appointed a Detailed Construction Management Plan will be prepared outlining its proposed methodologies, process and procedures for the entire Works prior to commencement of Works on site, this is discussed further in **Section 3.2**.

The appointed Head Contractor will be responsible for all management of the design and the Site and all Preliminaries including but not limited to:

- a. design management;
- b. trade and supplier procurement;
- c. site security;
- d. site survey and setting out;
- e. dilapidation surveys of adjoining buildings;
- f. vehicular movement and traffic control including access, parking and loading;
- g. administration, supervision and co-ordination;
- h. management and planning;
- i. fees and insurance (as stated in the Contract);
- j. work health and safety;
- k. protection, including protection of adjacent buildings and property as stated in the Contract;
- l. quality assurance;
- m. industrial relations management;
- n. control of nuisance, water, dust, noise and vibration;
- o. constructional plant, material handling and movement;
- p. site hoarding, fencing, screens and scaffold;
- q. site accommodation and amenities;
- r. temporary services and works;
- s. making good;
- t. rubbish removal and bin hire;
- u. street clean with street sweeper;
- v. maintenance or protection of required trees in accordance with professional advice and planning requirements; and

w. cleaning.

7.18.1. Construction Hours

As outlined in **Section 3.2.11** the Project will require extended construction hours which are generally proposed to be between 6am to 8pm Monday to Sunday for external works and internal works permitted to be conducted 24 hours Monday to Sunday, but with specific restrictions as follows:

- External works - 6am to 8pm Monday to Friday; 6am to 5pm Saturday and 7am to 5pm Sunday (NB: Sunday required for maintaining progress of critical works or recovering lost time to meet Construction completion milestone date)
- Upon completion of building envelope, Internal 'non-noisy' works – 24 hours Monday to Saturday and Sunday is required only for maintaining progress of critical works or recovering lost time to meet Construction completion milestone date. (NB: Deliveries would generally be restricted to 6am to 8pm Monday to Friday and 6am to 5pm Saturday)

A number of operations such as service shutdowns and connections, and tower crane erection and removal from King Street will be conducted out of normal business hours and in accordance with the building methodology and program proposed by the appointed Contractor and following any necessary authority approvals.

SPECIFIC MITIGATION MEASURES

As the Head Contractor has not yet been engaged, The Preliminary Construction Management Plan outlines the requirements of the future Head Contractor to detail and manage all aspects of construction, in order to mitigate and minimise construction impacts. The Detailed Construction Management Plan be required to incorporate the appointed Head Contractor's:

- a. Construction Methodology Plan;
- b. WH&S Management Plan;
- c. Environmental Management Plan;
- d. Quality Management Plan;
- e. Risk Management Plan;
- f. Program Management;
- g. Communications and Document Management;
- h. Industrial Relations;
- i. Site Security;
- j. Process for Dilapidation Survey;
- k. Adjoining Owners Management;
- l. Protection and Making Good Procedures;
- m. Management of Existing Services;
- n. Requirements for Temporary Services;
- o. Requirements for Temporary Sewer and Stormwater;
- p. Access to the Site;
- q. Requirements for Temporary Road and Access Works;
- r. Pollution Control Methodology; and
- s. Cleaning Requirements.

7.18.2. Construction Traffic

A Construction Pedestrian and Traffic Management Plan has been prepared by CBRK (**Appendix O**) to manage and mitigate the impacts of construction traffic during the construction of the Project.

As outlined in this report, the movement of construction vehicles to and from the site will be managed by qualified traffic controllers. Of particular importance will be the management of trucks associated with the removal of demolition and excavated material.

The construction methodology stages will be undertaken as follows:

- Stage 1: site establishment;
- Stage 2: demolition and excavation;
- Stage 3: internal roads and civil works; and
- Stage 4: construction of the development.

Stage 1

Site establishment will occur within the first two to three weeks. During this time, construction vehicle access will be available from the existing access driveways onto King Street and via the internal access roads through the corporate campus.

Stage 2

During demolition and excavation, it is estimated that there will be approximately 20 to 30 trucks per day removing demolition and excavated material from the sites, generating an average of four to six trucks per hour two-way over the day.

Stage 3

Civil and road works within the site will be staged throughout the construction period in order to maintain continued Qantas operations within the adjacent building and to maintain access through the corporate campus. This will also allow for the continued operation of the internal bus services. Stage 3 works are estimated to have 15 to 20 trucks per day through either removing excavated material or delivering construction material to the site. This will generate an average of three to four trucks per hour two-way over the day, entering and exiting the site.

Stage 4

The construction of the flight training centre is expected to take approximately 15 months to complete and the multi-deck car park approximately 8 months to complete. Construction material will be lifted and transported onto the construction sites from designated construction compounds, using tower cranes. On street work zones will not be required.

Peak traffic activity during Stage 4 is expected to occur during concrete pours, which are estimated to be up to two per week during the period of construction. Trucks required for concrete pours will range from 30 to 40 concrete trucks per day for large pours and approximately 15 to 20 concrete trucks per day for moderate sized pours. This will generate an average of 3 to 4 truckloads of concrete per hour or one truck delivery every 15 to 20 minutes over the day, for large pours. At other times of the day approximately 10 trucks will be required for other construction related activities.

As outlined in the report, the traffic flows are considered modest, however will be managed accordingly to minimise the overall traffic effects on the surrounding road network. It is considered that the surrounding road network and its intersections will be able to cater for the construction traffic generated by the development.

SPECIFIC MITIGATION MEASURES

The following measures are outlined to manage construction traffic:

- Control the hours of construction work;
- Control the size of construction vehicles;
- Ensure that trucks travel to and from the site along designated truck routes;

- Prevent trucks from accessing other roads in the vicinity of the site;
- Carefully manage and control on-site construction activity and construction access driveways;
- Stage and coordinate the construction activity with the on-going operation of the site, to minimise traffic impact on the surrounding road network;
- Ensure that truck drivers are advised of the construction traffic management procedures;
- Give consideration to allowing 24-hour construction activity during the later stages of construction associated with building fit-out; and
- Co-ordinate and manage the arrival of trucks removing demolition material and delivery of construction material to/from the site.

7.19. OPERATIONAL WASTE MANAGEMENT

An Operational and Construction Waste Management Plan (**WMP**) has been prepared by Waste Audit and Consultancy Services and is submitted at **Appendix CC**. The plan has been prepared in response to SEARs Key Issue: Waste, requiring:

- *details of the quantities and classification of all waste streams to be generated on-site;*
- *details of waste storage, handling and disposal; and*
- *details of the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021.*

Methodology

The Plan has developed in accordance with Botany Bay Development Control Plan 2013 (BBDCP 2013), and specifically Part 3N – Waste Minimisation and Management. The plan is also consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021.

Assessment

Waste streams

Waste streams expected to be generated on site include general waste, paper/cardboard recycling and commingled recycling. It can also be expected that small quantities of other waste such as toner cartridges, confidential documents and maintenance waste may also be generated.

Waste generation estimates

The plan states that the development is expected to generate a maximum of 6,000 litres of waste and recyclables per week. This is summarised in **Table 33**.

Table 33 – Waste/recycling generation

Waste Stream	Bin Size	No. of Bins	Clearance Frequency per week	Capacity (litres per week)	Estimated volume / week
General Waste	3.0m ³	1	1	3,000	3,000
Paper and Cardboard Recycling	3.0m ³	1	1	3,000	2,000
Commingled Recycling	3.0m ³	1	1	3,000	1,000
TOTAL		3		9,000	6,000

Source: Waste Audit and Consultancy Services

SPECIFIC MITIGATION MEASURES

The following mitigation measures are recommended:

- Signage should be erected throughout the development and waste storage area(s). Refer to Appendix A of the WMP for example signage.
- All areas will be designed so as to allow effective segregation of recyclables. These sites will (depending on the types of wastes/recyclables generated) be provided with sufficient smaller bins to allow for effective segregation of wastes/recyclables.
- Containers will be located within appropriate locations for the collection of toner cartridges and confidential documents. Separate bins (240 litre MGB's), will also be located in maintenance areas for the collection of oil contaminated waste, metals for recycling and e-waste.
- In keeping with best practice sustainability programs, all waste areas and waste and recycling bins will be clearly differentiated through appropriate signage and colour coding to Australia Standards to reflect the materials contained.
- All users of the building will be provided with information on the proper use of the waste management systems.
- The waste area will be screened so as to prevent the escape of litter and banded to contain any spills. The floor will be concrete or similar materials to prevent any liquids being absorbed to the soil.
- Cleaners will monitor the bin storage area and all spills will be attended to immediately by cleaners.
- All staff will receive information regarding the waste collection systems including how to use the system, which items are appropriate for each stream and collection times.
- On a quarterly basis waste and recycling performance reports will be reported back to staff so that they are aware of their performance and areas for improvement. An active waste monitoring program will be employed. The waste contracts will ensure that contractors actively participate in the waste reduction program for the site and meet monthly to identify performance and new opportunities for diversion and avoidance.
- A basic reporting program be set up at which would include bin tally sheets that detail the number of bins collected and how full they are at the time of collection, in addition to communication procedures to allow waste contractors to provide feedback regarding contamination and leakage.

7.20. CONSTRUCTION WASTE MANAGEMENT

An Operational and Construction Waste Management Plan has been prepared by Waste Audit and Consultancy Services and is submitted at **Appendix CC**. The plan has been prepared in response to SEARs Key Issue: Waste, requiring:

- *Details of the quantities and classification of all waste streams to be generated on-site;*
- *Details of waste storage, handling and disposal; and*
- *Details of the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021.*

Methodology

The Plan summarises the types, quantities and management systems for construction materials that may be generated during the construction phase of the development.

The Plan has developed in accordance with Botany Bay Development Control Plan 2013 (BBDCP 2013), and specifically Part 3N – Waste Minimisation and Management. The plan is also consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021.

Assessment

The Plan details the estimated composition by cubic metres of construction waste to be generated for the total site. Construction material will generally either be stockpiled on site for use during construction if required and if not, disposed off site. The estimated volumes of construction waste materials to be generated on site is summarised in **Table 34** below.

Table 34 – Construction materials generated on site

Type of material	Estimated volume	On-site (reuse or recycle)	Destination	Disposal
Excavation material (non-contaminated soil and rock)	100m	Stockpiled for use during construction and if not disposed off-site	Excavation materials will be collected and used as clean fill by the appointed contractor with appropriate notification as to location and/ or forwarded to various facilities such as garden landscapers or roadworks	No disposal to landfill
Concrete	40	Separated on site and crushed for use in pavement construction where possible	Collected by contractor and disposed at concrete recycling facility	Facility TBA upon appointment of contractor
Bricks	55m	Separated and where feasible, reused for further formwork	Unused material separated and stockpiled onsite Collected by specialist subcontractor for recycling	Facility TBA upon appointment of contractor
Metals	30m	No on-site reuse	Collected by specialist metal subcontractor for recycling	Facility TBA upon appointment of contractor
Plasterboard	35m	No on-site reuse	Collected by the contractor for recycling	Facility TBA upon appointment of contractor
Glazing	8m	No on-site reuse	Recyclers consulted as to potential for recycling and if suitable separated for recycling	Facility TBA upon appointment of contractor
Carpet	10m	No on-site reuse	This will be disposed of into a designated bin and collected regularly as required for recycling if of the required quality or disposal to landfill	Facility TBA upon appointment of contractor
Mixed hard plastics	35m	No on-site reuse	Collected by contractor for recycling. Facility TBA upon appointment of contractor	No disposal to landfill
Soil/Sand/Gravel	20m	Will be stockpiled for reuse	Excavation materials will be collected and used as clean fill by the waste contractor with appropriate notification as to location	All remaining material will be disposed at landfill – facility, TBA upon appointment of contractor
Mixed recyclables	55m	No on-site reuse	Contractor appointed to collect and recycle	No disposal to landfill
General waste	180m	No on-site reuse	No recycling or reuse	Facility TBA upon appointment of contractor

Source: Waste Audit and Consultancy Services

SPECIFIC MITIGATION MEASURES

- All actions will be undertaken to avoid pollution entering stormwater drains and for litter generation.
- Waste products which cannot be reused or recycled will be removed and disposed of.
- Daily site inspections will be conducted to identify litter, remedy the situation and investigate the cause so as to reduce the potential for the issue to occur in the future.
- Sufficient quantities of bins (and/or bin space), will be made available so as to avoid dumping of materials outside bins

- All waste/recycling bins will have covers so as to ensure that wastes cannot be blown out during windy conditions. This will also apply to relevant stocks of materials to be used in construction.
- Personnel will be allocated the role of litter management in that they will periodically inspect the site and surrounds for litter and if identified collect and dispose of it.
- Records will be kept of all wastes and recyclables generated and either used on site or transported offsite.
- All waste and recycling materials will be stored in bins provided by the appointed contractor(s). These bins will be appropriately coloured and signed to indicate what materials are to be deposited into them and located so as to maximise the recovery of reusable/recyclable materials.
- As construction activities progress, the designated bins may be re-located so as to maximise the collection of materials that will be diverted from landfill. This will also involve relocating signage advising as to correct waste management.
- All locations where waste/recycling bins are located will be designed so as to avoid contaminating surface/stormwaters and have active litter control measures.
- There will be no treatment of wastes or recyclables on-site except for possible removal of contaminants prior to forwarding to off-site recyclers.
- Prior to commencing any clean-up activities, a Workplace Health & Safety Plan will be developed, implemented and monitored with all relevant site personnel receiving specific training in management of hazardous waste materials (including suspected hazardous materials).
- All site employees and sub-contractors will be required to attend a site specific induction that will outline the components of the WMP and explain the site specific practicalities of the waste reduction and recycling strategies outlined in the WMP.

7.21. ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

The development's Ecologically Sustainable Development (**ESD**) initiatives are outlined in Norman Disney & Young's Greenhouse Gas, Energy Efficiency and Ecologically Sustainable Development Report at **Appendix Q**. This report has been prepared in response to SEARs Key Issue: Ecologically Sustainable Development, requiring:

- *an assessment of how the development will incorporate ecologically sustainable development principles in all phases of the development;*
- *the use of green roof and/or cool roof into the design; and*
- *climate change projections development for the Sydney Metropolitan area and how they will be used to inform building design and asset life of the project*

Methodology

In addition to the SEARs requirement, the following information sources were used to inform the preparation of the report:

- NCC 2016 Section J
- Green Star Design & As Built v1.2 Submission Guidelines
- Architectural drawings prepared by Noxon Giffen
- Discussions and workshops with the design team.

The climate change projections for the Sydney Metropolitan area were reviewed and appropriate design responses were formulated to mitigate against potential impacts, as shown in the assessment section below.

Existing environment

Not relevant for this assessment.

Assessment

The following ESD initiatives are proposed for the flight training centre:

Green walls and green/cool roofs

- Green planting to the car park at the upper ground and upper most level.
- Green roof to the bus stop.
- Green climbing to the precast wall of the Emergency Procedure area at the entry of the training centre.
- The training centre is proposed to have roof sheeting of 0.58 SAR instead of a green roof or terrace due to the risk to the simulators.

Climate change

- HVAC system and equipment will include review of chilled water reticulation capacity to meet cooling demand during heat wave and projected climate change in the detailed design.
- Selection of drought tolerant plants and an irrigation strategy to account for high temperatures.
- Measures in place to deal with the potential for damage to buildings as a result of annual rainfall or flash flooding.
- Rainwater and stormwater drainage designed to accommodate periods of potential drought or heavy rainfall.
- Secure attachment of roof and externally mounted equipment/cladding to support risk cause by potential increased intensity of cyclones or storms.
- Fire protection design to mitigate against potential increase in fire incidents.

In addition to the measures outlined above, ESD initiatives are being targeted through benchmarking against the Green Star Design & AS Built v.2 framework. A formal rating is not currently targeted; however, the development intends to achieve the design intent of a number of credits under each of the environmental impact categories covered by Green Star. This includes Management, Indoor Environmental Quality, Energy, Water, Transport, Ecology, Emissions, Materials and Innovation. The development is targeting equivalency to a 5 star Green Star benchmark with a 6 star aspiration.

SPECIFIC MITIGATION MEASURES

Overall commitment is being made to ESD principles that meets or exceeds the Deemed to Satisfy Requirement of Section J of the National Construction Code (**NCC**) 2016.

No further recommendations or mitigation measures are required.

7.22. GREENHOUSE GAS AND ENERGY EFFICIENCY

The development's Greenhouse Gas and Energy Efficiency (**ESD**) initiatives are outlined in Norman Disney & Young's Greenhouse Gas, Energy Efficiency and Ecologically Sustainable Development Report at **Appendix Q**. This report has been prepared in response to SEARs Key Issue: Ecologically Sustainable Development, requiring:

- *an assessment of the energy use on-site, and demonstrate the measures proposed to ensure the development is energy efficient.*

Methodology

The JV3 verification method has been used to assess the energy saving derived from improving the thermal performance of building fabrics proposed for the Flight Training Centre compared to the minimum performance prescribed in the Section J NCC 2016.

This method involves modelling a reference building with the NCC Deemed-to-Satisfy (DtS) provisions which then provides an annual energy consumption benchmark.

The table below identifies the modelled energy consumption of the proposed building against a DtS compliant reference building. This table includes the energy saving benefit of utilising the trigeneration system to provide chilled water and heating water to air handling and fan coil units.

Figure 57 – JV3 Verification Method Results

System/Component	Reference Building	Proposed Building	Proposed Building with Re-claimed Energy
	(DtS Compliant Fabric and Services)	(Proposed Fabric, DtS Compliant Services)	
Heating thermal energy (kWh)	337,981	325,440	60% recovered energy
Cooling thermal energy (kWh)	911,558	911,088	40% recovered energy
Heating gas (kWh)	422,476	406,800	162,720
Cooling electricity (kWh)	182,312	182,218	109,331
Total GHG Emissions (kgCO ₂ -e)	272,814	269,095	142,624
Reduction	3,719		130,190
Reduction Percentage	1.36%		48%

Source: Norman Disney & Young

Assessment

Energy use

- 100% of electricity supplies is sourced from trigenerational plant powered by natural gas with lower greenhouse gas emissions intensity;
- 100% of the cooling and heating requirements are to be met by chilled water and heating water supplied by the trigeneration plant;
- Building fabric thermal performance that meets or exceeds the Deemed to Satisfy Requirement of Section J of the National Construction Code (NCC) 2016. Energy modelling based on the NCC Section J JV3 methodology was performed to demonstrate annual energy consumption reductions of the proposed building through improvements to the building fabric (glazing, shading and insulation);
- High efficiency and area specific mechanical systems to provide effective and energy efficient solutions;
- Energy efficient lighting (typically LED) with lighting controlled by motion and/or daylight sensors;
- Energy efficient equipment selections; and
- Controls measures to ensure equipment is switched off after hours.

The proposed measures outlined above potentially reduce the greenhouse gas emissions by 48.2% (as also indicated in **Figure 57** above. The estimated greenhouse gas emission reduction by system or component is summarised in the table below, identifying that the largest energy reductions will be from equipment and fans and pumps.

Figure 58 – Greenhouse Gas Emission Estimate Summary

System/Component	Reference Building	Proposed Building
Heating and Cooling (kWh)	272,814	142,624
Fans and Pumps (kWh)	791,833	442,995
Lighting (kWh)	757,077	312,562
Equipment (kWh)	959,383	536,731
Miscellaneous Equipment (kWh)	163,167	91,285
Total GHG emissions (kgCO ₂ -e)	2,944,274	1,526,197
Reduction	1,418,078	
Reduction Percentage	48.2%	

Source: Norman Disney & Young

7.23. FIRE AND INCIDENT MANAGEMENT

Fire and Incident Management Fire Safety Strategies have been prepared by Xel Consulting for both the flight training centre and the car park and are provided at **Appendix VV**. The reports have been prepared in response to SEARs Key Issue: Fire and Incident Management, requiring:

- *include details of the operational capability of all fire and life safety systems.*

The reports provide high-level solutions which will be further developed in the detailed design stage.

Methodology

The reports provide high-level solutions which will be further developed in the detailed design stage. In preparing the strategies for both the Flight Training Centre and the Carpark the following information was considered:

- Architectural drawings
- BCA Assessment Report.

Assessment

Flight Training Centre

The flight training centre building is divided into fire compartments within the limits of clause C2.2 of the BCA, which are the EP Hall, SIM Hall South, including Level 1 and Level 2 and the entry hall, SIM Hall North and Admin on Level 3.

The flight training centre will have three fire isolated stairs, at both northern and southern ends and in the middle of the building. The central, non-required stair connects all four levels. Exits are located at the ground floor level at the perimeter of the SIM bays and the entry space. Exits and fire isolation, where required, will comply with the BCA DtS provisions.

The Fire hydrant system, fire hose reels and fire extinguishers are generally compliant with Part E1 of the BCA and relevant Australian Standards, with the exception of the location of the fire brigade booster assembly which will be located at the rear of the building facing King Street to enable better site access. This design solution was based on consultation with Fire & Rescue NSW and therefore considered appropriate.

An automatic fire detection and alarm system will be installed throughout the building. A smoke exhaust system will be located in the EP Hall only to maintain tenable conditions for occupants on both levels. Smoke exhaust is not proposed in the SIM halls due to smoke separation of Level 2 and low population on Ground and Level 1.

Car Park

The car park will comply with the definition of an open-deck car park and as all boundaries are more than 3m from any fire source features the building is not required to be divided into fire compartments. Therefore, the whole building is considered as one fire compartment. Four fire isolated stairs will be provided at each corner of the car park. An emergency lift will also be provided in accordance with BCA Clause E3.4 as the height of the car park is over 25m.

Fire hydrant coverage to the central areas of each level will be provided via two lengths of hose from hydrants within the fire stairs in lieu of single hose from additional internal hydrants on the floor. This is generally compliant with the relevant Australian Standards.

Fire hose reels generally comply with the relevant Australian Standards with the exception of the central area where cover is unable to be provided by fire hose reels located within 4m from the fire stairs. Portable fire extinguishers are proposed as a solution, replacing fire hose reels.

Xel also consulted with representatives of NSW Fire and Rescue and the key outcomes of the meeting are discussed in **Section 6.1.5** of this report.

7.24. ACCESSIBILITY

An Accessibility Report was prepared by City Plan and is attached at **Appendix GG**. This assessment has considered the proposed development for compliance against the AS1428, AS2890 and AS1735 series', Building Code of Australia (BCA) and the DDA Access to Premises Standards (including DDA Access

Code). The report notes that it does not verify compliance with the *Disability Discrimination Act 1992*, other than the requirement to comply with the *Premises Standards 2010*.

Methodology

The development has been assessed based on the following methodology applied to the proposal:

- Movable furniture has not been considered as part of this assessment;
- The new carpark and flight training centre have been assessed individually on their separate allotments for the purpose of this assessment;
- Stairways and elevated walkways to aircraft simulators have been excluded under Clause D3.4 due to their use and the level of mobility required by the occupants;
- Simulators have not been included in this assessment and are not considered part of the building;
- Due to the unique nature of the proposed building and challenges presented by existing site constraints, in some instances a performance-based approach is proposed by the design team in lieu of meeting the Deemed to Satisfy (DtS) requirements of the BCA.

Existing environment

Not applicable.

Assessment

The assessment confirms that:

"The design, as proposed is considered capable of complying with Part D3 and Clauses F2.4 and E3.6 of the BCA 2019 and relevant Australian Standards. This report has provided information to be incorporated at design development and identified areas where a performance-based approach might be pursued. While the design will be developed at construction certificate stage, it is our view that the changes will not impact the overall design."

SPECIFIC MITIGATION MEASURES

The report contains a number of performance-based approach recommendations for the following DtS non-compliances:

BCA Clause D3.2(a)(ii)

- As a result of the existing site constraints it is not possible to provide a compliant with compliant gradients between the proposed multi-storey car park and the flight training centre. A performance-based approach is proposed to ensure equitable parking is provided for staff and visitors in accordance with the BCA requirements.

BCA Clause D3.2(b)(ii)

- The second entrance to the multi-storey car park provided to the west at Stage 2 is inaccessible and located more than 50m from the accessible entrance. A performance base approach is being pursued to justify the reliance on the accessible principal pedestrian entrance to the east due to the existing site gradients which will not be suitable for some wheelchair users. This demonstrates compliance with the performance requirements of the BCA.

BCA Clause D3.10(a)

- The evacuation training pool has a perimeter of more than 40m, it is proposed that due to the unique nature of the pool, nil provision of an accessible entry/exit is to be addressed via a performance-based approach.

BCA Clause F2.4(a)

- Level 1 accessible sanitary facilities have not been provided at 50% of banks of WCs as required by the BCA. A performance-based approach is proposed to justify the provision of one accessible WC at every 3 banks provided at Level 1. This is justified based on the high level of mobility required by the dominant user group of the flight training centre.

8. SECTION 4.15 ASSESSMENT SUMMARY

The proposed development has been assessed in accordance with the matters of consideration listed in Section 4.15 of the *Environmental Planning and Assessment Act 1979* as outlined below:

Table 35 – Section 4.15 Assessment

Consideration	Comment
Environmental Planning Instrument	State and Local Environmental Planning Instruments have been assessed in Section 4 .
Draft Environmental Planning Instruments	None relevant to this proposal.
Development Control Plans	The proposed development has been assessed against the Botany Bay Development Control Plan 2013 in Section 5.15 . Although we note the provision of clause 11 of the SEPP SRD excludes the application of DCPs to SSD.
Any Matters Prescribed by the Regulations	This EIS has been prepared in accordance with Sections 6 and 7, Part 3 in Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i> .
Likely Impacts of the Development	An impact and risk assessment has been provided in Section 7 of this report. Mitigation measures to the risks and impacts identified within Section 7 and the relevant Appendices are contained within an Environmental Risk Assessment Matrix in Section 9 .
Suitability of the Site	The site is entirely suitable for the development of the proposal as it continues the use of the site for aviation related uses and is consistent with the surrounding industrial/commercial context.
Any Submission made in accordance with this Act or the Regulations	Submissions will be considered following exhibition of the application.
The Public Interest	<p>The development is compliant with the relevant planning instruments and controls applying to this site.</p> <p>The proposal will not create any adverse significant social, economic or amenity impacts which cannot be mitigated via the proposed mitigation measures in this application.</p> <p>This project is critically important to maintaining the operations of Qantas, by ensuring their ongoing ability to train pilots and cabin crew in accordance with CASA regulations.</p>

9. MITIGATION MEASURES AND ENVIRONMENTAL RISK ASSESSMENT

The SEARs require an environmental risk analysis to identify potential environmental impacts associated with the proposal.

This analysis comprises a qualitative assessment consistent with AS/NZS ISO 31000:2009 *Risk Management—Principles and Guidelines* (Standards Australia 2009). The level of risk was assessed by considering the potential impacts of the proposed development prior to application of any mitigation or management measures.

Risk comprises the likelihood of an event occurring and the consequences of that event. For the proposal, the following descriptors were adopted for 'likelihood' and 'consequence'.

Table 36 – Risk Descriptors

LIKELIHOOD		CONSEQUENCE	
A	Almost certain	1	Widespread and/or irreversible impact
B	Likely	2	Extensive but reversible (within 2 years) impact or irreversible local impact
C	Possible	3	Local, acceptable or reversible impact
D	Unlikely	4	Local, reversible, short term (<3 months) impact
E	Rare	5	Local, reversible, short term (<1 month) impact

The risk levels for likely and potential impacts were derived using the following risk matrix.

Table 37 – Risk Matrix

		LIKELIHOOD				
		A	B	C	D	E
CONSEQUENCE	1	High	High	Medium	Low	Very Low
	2	High	High	Medium	Low	Very Low
	3	Medium	Medium	Medium	Low	Very Low
	4	Low	Low	Low	Low	Very Low
	5	Very Low	Very Low	Very Low	Very Low	Very Low

The results of the environmental risk assessment for the proposed development are presented in **Table 10** and are based upon the range of technical and specialist consultant reports appended to this EIS.

The table has directly related mitigation measures responding to each impact (satisfying the SEARs for a consolidated summary of all proposed mitigation measures) also based upon the range of technical and specialist consultant reports appended to this EIS.

It is considered that with the mitigation measures required the impacts resulting from the proposal will be acceptable.

Table 38 – Risk Assessment and Mitigation Measures

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
Biodiversity impact	Removal of native vegetation	B	3	Medium	Replanting of landscape areas to incorporate native species as per Landscape Plan (Appendix E). Replacement landscaping should keep in context with the existing character of the property.
	Impact on threatened flora species	E	3	Very Low	No mitigation is required as the occurrence of any threatened flora species is considered unlikely.
	Impact on threatened fauna species	D	3	Low	No mitigation is required as the occurrence of any threatened flora species is considered unlikely.
	Impact on aquatic habitat	D	4	Low	Construction sediment and erosion control measures are to be installed and maintained in accordance with approved CEMP to minimise impact of possible construction sedimentation to local drainage (Appendix UU).
Wind Impact	Adverse wind conditions for pedestrians generated in and around subject development	E	5	Very Low	Retention of wind mitigation features in current design along with inclusion of localised screening/planting at the Staff Outdoor Area as per Pedestrian Wind Environment Statement Report Section 8 (Appendix J). Retention of wind mitigation features in current design including the open car park façade design, an awning over the southern entrances of the flight training centre and the inclusion of localised planting at the western site boundary, along the Sydney Water Drainage canal, and along the southern aspect of the flight training centre.
Safety and security	Safety of users outside of normal operating hours	D	5	Very Low	Inclusion of a lighting strategy, monitoring of the site by security patrol, an intercom system to provide a response in case of security issues and provision of CCTV cameras at key entry and exit points as per CPTED Report (Appendix PP).
	Malicious damage to property and maintenance of the site.	B	4	Low	Inclusion of a Plan of Management to manage landscaping maintenance, rubbish and graffiti removal and lighting maintenance as per CPTED Report (Appendix PP).
	Unauthorised access to the site once operational.	B	2	High	To enhance security measures at key entry and exit points CCTV cameras are recommended in the CPTED Report (Appendix PP).

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
	Unauthorised access to the site during construction.	C	3	Medium	<p>The appointed Contractor shall outline how they will secure the Works under the Contract, and outline measures it deems necessary to ensure the security of the site and keep unauthorised persons out of the Works Zone, including erection of suitable Class A Hoardings, installation of security fencing, and consideration of use of traffic controllers and or security guards.</p> <p>The appointed Contractor will reasonably agree with the Superintendent a security management plan for post-completion of the project or any Separable Portions.</p> <p>Provide project updates for staff and surrounding public in order to minimise curiosity.</p> <p>Erect site signage clearly delineating entrance points to construction zone and limited access to authorised personnel only.</p>
	Reduction of pedestrian safety during construction.	B	3	Medium	<p>Ensure measures as outlined within the CBRK Preliminary Construction Pedestrian and Traffic Management Plan are implemented (Appendix O), including:</p> <p>Class A hoardings are erected along pedestrian pathways to be retained through site</p>
Accessibility for persons with a disability	In some areas (specifically towards the Sydney Water drainage channel – land not owned by Qantas - gradients might be unsafe for wheelchair users or people with a temporary or permanent ambulant disability, who are not steady on their feet.	D	2	Low	<p>Due to the dominant occupant characteristic of the site, it is unlikely that a user will have a mobility impairment that will prevent them from traversing across the site gradients. Accessible routes with compliant gradients, from site boundaries and accessible parking bays are available. The provision of clear signage will reduce the risk of users with a disability attempting non-compliant gradients, in particular, a visitor who might not be familiar with the site. An access management plan communicated to staff will also greatly reduce any risk (predominately considered a social and safety risk).</p>
	Legibility of accessways and continuous accessible path for users with sensory disabilities.	E	5	Very Low	<p>Sufficient lighting to be provided to ensure users with a sensory disability, in particular those with a visual impairment, can safely navigate the environment predominately considered a social risk)</p>
	Unfamiliar Users (visitors) are unable to locate accessible parking bays.	C	5	Very Low	<p>Provision of directional signage to assist users (particularly visitors who are unfamiliar with the Campus) to locate accessible parking bays.</p>

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
Air Quality	A wheelchair user who is unable to use stairs requires access to aircraft Simulators.	E	2	Very Low	Expectation that physical requirements for Pilots is known by all potential users (Appendix HH).
	Off-site amenity and human health impacts associated with fugitive dust emissions during demolition, earthworks and construction activities.	C	3	Medium	A range of dust mitigation measures are proposed for incorporation into the CEMP (Appendix UU). Reputable D&C Contractor to be engaged (with proven record). Implement recommendations of Air Quality Reports at Appendix GG .
	Off-site human health impacts associated with emissions of products of combustion from the fire trainer cabins and onsite vehicle movements during operations.	C	5	Very Low	Operational phase air quality impacts can be managed by implementing the following mitigation measures (Appendix GG): <ul style="list-style-type: none">Restrict the fuel type to be used in the fire cabins to "natural propane gas".Idling vehicles to be switched off while on site.
High Water Table	Impact on the compaction of the existing materials at subgrade level	D	3	Low	Building Contractor to dewater excavations locally to achieve the correct compaction of materials.
Flood Planning Levels	Council not agree to lowering Flood Planning Levels for Multistorey car park	B	5	Very Low	Site levels for the multistorey car park remain unchanged.
Stormwater Blockage	Flood waters inundate SIMs building. High cost to SIMs machinery for replacement	D	1	Low	Provide adequate overland flowpath (Appendix Z).
	Flood waters inundate multistorey carpark. Inconvenience to drivers on ground floor.	D	4	Low	Provide adequate overland flowpath (Appendix Z).
In-ground services are not in the position	Services may clash with works resulting in time and cost claims from contractor due to service diversions	C	3	Medium	Undertake existing services survey to inform the design. Provide all services documentation to design team to work around. Engage with authorities early and gain approvals as required.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
shown on the drawings.					Complete comprehensive Environmental investigations and CEMP (Appendix UU).
Excessive wet weather experienced on project	Construction program delays and increased costs	C	3	Medium	<p>Ensure suitable allowance in program for inclement weather.</p> <p>Have strategy for delivering a reduced scope if major weather delays.</p> <p>Wet weather delay allowance inserted to contract, any claims against the allowance being assessed by APP.</p> <p>Ensure CEMP has strategies in place to mitigate groundwater (Appendix UU).</p>
Presence of Contaminated Ground	Unexpected contamination of ground & latent conditions are experienced resulting in delay or change in design.	C	3	Medium	<p>Undertake in ground testing.</p> <p>Undertake additional testing of building fabric such as, roof, walls, windows, floors.</p> <p>Engage a EPA Auditor to determine suitability of not remediating land which will enable a reduction in program.</p> <p>Complete comprehensive Environmental investigations and CEMP (Appendix UU).</p>
	Risk to Health and Safety of Workers	B	2	High	<p>Undertake detailed site investigations and provide all information to tenders.</p> <p>Engage a EPA Auditor to determine suitability of not remediating land which will enable a reduction in program.</p> <p>Preparation of a CEMP to ensure contractors understand the requirements for in ground and civil works across the site (Appendix UU).</p>
Reflectivity	Impact on Airport's air traffic	D	4	Low	<p>Specialist Aviation Impact Statement and Light Spill Analysis by Landrum Brown completed and attached confirming suitability of Project (Appendix ZZ).</p> <p>Materials selected to meet non reflective requirements.</p>
	Glare into the eyes of pedestrians, motorists or train drivers from building	C	4	Low	Limit Specular Reflectance values on the 279° western aspect of the car park façade to less than 11% and all other glazing on the development to less than 20% as per Solar Light Reflectivity Report (Appendix ZZ).

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
Amenity	Reduced quality of streetscape along King Street due to reduced setback.	D	3	Low	To King Street the building is nominally 21m high, well below the maximum permissible 44m height limit. This mitigates the reduced setback.
	Increase in overshadowing of neighbouring properties.	A	3	Medium	Due to the relatively low nature of the building there is minimal overshadowing to neighbouring properties, with minor shadowing impacting the service yard of BG Drilling in the afternoon of mid-winter.
	Overlooking of Travelodge	E	4	Very Low	The east façade of flight training centre will sit some 29.5m from the Travelodge façade. Minimal windows to the proposed east façade.
Visual Impact	Light pollution from carpark open facade	C	3	Medium	Specialist lighting consultant input in design and specification of lighting to meet NCC approved levels. Refer lighting specification.
	Impact of the views of the carpark from key public places	A	3	Medium	Building to be constructed in non-visually dominant colours to minimise perceived bulk, with open façade to all sides to reduce mass as per Architectural Drawings (Appendix C). Provision of landscape screening as per Landscape Drawings (Appendix E).
	Impact on key views immediately adjacent to the Site from King Street, the Travelodge, the Wilson Carpark and the 1-5 Chalmers Crescent DA approved development	B	3	Medium	Building to be constructed in non-visually dominant materials to minimise perceived bulk, as per Architectural Drawings (Appendix C). To King Street the building is nominally 21m high, well below the maximum permissible 44m height limit. This will minimise the impact on the western views of the Travelodge by sitting below the majority of their rooms. Provision of native planting including layers of grasses and shrubs to create green buffers around the building and an attractive frontage to King Street, as per (Appendix F). Provision of a pergola with native climbing plants to provides green to top of carpark.
	Impact on key close-range views to the proposed multi-storey carpark from Bourke Road and Qantas Corporate Building.	C	3	Medium	Building to be constructed in non-visually dominant materials to minimise perceived bulk, as per Architectural Drawings (Appendix C).

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					<p>Provision of a landscape buffer around the perimeter of the carpark with climbing plants to soften view to the base of the carpark.</p> <p>Provision of a pergola with native climbing plants to provides green to top of carpark.</p>
	Impact on key middle range views from high-rise residential apartments in the north looking towards the proposed carpark	C	3	Medium	<p>Building to be constructed in non-visually dominant materials to minimise perceived bulk, as per Architectural Drawings (Appendix C).</p> <p>Provision of a landscape buffer around the perimeter of the carpark with climbing plants to soften view to the base of the carpark.</p> <p>Provision of a pergola with native climbing plants to provides green to top of carpark.</p>
Landscape Impact	Impacts on Local Character Area - Local Boundary Vegetation	C	3	Medium	<p>Existing trees to be protected during the construction works and integrated in the landscape proposals.</p> <p>Proposed native planting to buffer and supplement the existing vegetation</p>
	Impact on Local Character Area – King Street Corporate Carparks	C	3	Medium	<p>Proposed landscape design principles to enhance the setting and character of the proposed buildings where possible including the provision of high quality outdoor amenity space for staff enjoyment.</p>
	Tree loss across the northern and southern carparks and eastern and southern boundaries	B	3	Medium	<p>Landscape proposals incorporate new layers of native planting including groundcovers, grasses, shrubs and trees.</p> <p>Trees will be replaced as part of the Landscape Strategy, as per (Appendix E).</p>
Noise and Vibration	Impact from construction noise and vibration on neighbours resulting in sleep disturbance, annoyance, increased hypertension, reduced productivity.	B	3	Medium	<p>Adopt measures within a Construction Noise Management Plan addressing the requirements contained in the Assessment of Noise and Vibration Emissions Report by Norman Disney Young dated April 2019 (Appendix X).</p> <p>Restrict construction activities to only during designated times. Implement Preliminary Construction Management Plan recommendations.</p> <p>Construction equipment may be fitted with noise mitigation equipment wherever possible or reasonable.</p>

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					<p>Noisy work will be identified and communicated to relevant stakeholders and neighbours, giving them sufficient notice.</p> <p>Opportunity for noisy works to be limited to approved windows of time if agreed between all parties.</p> <p>Noisy equipment to be located further away from residential/hotel neighbours wherever possible.</p>
	Vibration during excavation, piling and structural works	C	3	Medium	<p>Use bored piles rather than driven piles where appropriate.</p> <p>Applicable works will be identified and communicated to relevant stakeholders and neighbours giving them sufficient notice.</p> <p>Vibration monitors may be provided in close proximity to buildings (if applicable) as an early warning alarm during adjacent piling & structural works.</p> <p>Less intrusive construction methodologies where required to meet 'vibration criteria for human comfort and structural damage.</p>
	Increase in mechanical plant noise levels at sensitive receivers	C	3	Medium	<p>Acoustic treatment of new mechanical plant shall be undertaken control noise emissions at or below the intrusiveness criteria as outlined in the Assessment of Noise and Vibration Emissions Report by Norman Disney Young and dated April 2019 (Appendix X).</p> <p>Plant can be satisfactorily attenuated to levels complying with the noise emission criteria outlined in the above report through appropriate location and (if necessary) standard acoustic treatments such as noise screens, enclosures, in-duct treatments (silencers/lined ducting) or similar.</p> <p>Acoustic rectification treatment shall be designed for existing plant if an acoustic review determines this necessary.</p>
	Vibration impact from building services equipment and other occupational noise sources	E	3	Very Low	<p>Vibration isolation where required to meet 'vibration criteria for human comfort and structural damage.</p>

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
Construction Traffic Impacts	Impact on road network from construction traffic	A	3	Medium	<p>Implement traffic management in accordance with the CPTMP (Appendix O).</p> <p>Truck movements to be restricted to designated truck routes. Trucks at no time will be permitted to park on-street in the vicinity of the site during construction.</p> <p>Construction traffic to be restricted to the main road network through the area.</p>
	Construction vehicles, plant and equipment on public roads (arriving/leaving the site)	A	3	Medium	<p>Implement traffic management in accordance with the CPTMP (Appendix O).</p> <p>All construction deliveries will be in accordance with Council's requirements and the NSW Police regulations.</p> <p>Safe public access routes to be pre-agreed with the authorities and maintained during construction.</p> <p>Traffic management measures, construction warning/guidance signs and devices will be provided in King Street, Kent Road and on the internal access roads within the Qantas Corporate Campus, in accordance with the Australian Standards and the Roads and Maritime Service's Manual for Traffic Control at Work Sites.</p>
	Construction traffic parking on King Street	A	3	Medium	<p>All construction vehicles to be located on-site. No construction vehicles to be accommodated on-street.</p> <p>Construction traffic will be managed by the following measures:</p> <ul style="list-style-type: none"> - control the hours of construction; - control the size of construction vehicles; - ensure that trucks travel to and from the site along designated truck routes; - prevent trucks from accessing other roads in the vicinity of the site; - manage and control on-site construction activity and construction access driveways; - stage and coordinate the construction activity with the on-going operation of the site, to minimise traffic impact on the surrounding road network;

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					<ul style="list-style-type: none"> - ensure that truck drivers are advised of the construction traffic management procedures; <p>co-ordinate and manage the arrival of trucks to and from the site.</p>
	Risks to pedestrian safety from construction traffic	A	3	Medium	<p>Implement traffic management in accordance with the CPTMP (Appendix O).</p> <p>The movement of trucks and pedestrian activity at the construction access driveways will be managed and controlled by qualified traffic controllers.</p> <p>Construction fencing will be provided around the construction compounds and adjacent to the internal access roads to provide a safe and convenient environment for pedestrians adjacent to the site.</p> <p>The design, set out and erection of the construction hoarding and containment fencing will be the responsibility of the site contractor/builder.</p> <p>Pedestrian warning signs and construction safety signs/devices will be located adjacent to the driveways and the construction compounds, in accordance with SafeWork NSW requirements.</p>
Operational Traffic and Parking	Impact on the operation of surrounding intersections as a result of the development and the RMS road upgrade works	A	4	Low	<p>The proposed relocation of the flight training centre and construction of the new multi-deck car park will not result in any major change in staff numbers or parking provision with respect to the Qantas operations.</p> <p>With the road upgrades currently under construction or proposed by RMS, the surrounding road network would accommodate the traffic generated by the proposed development with surrounding intersections operating at satisfactory or better levels of service in the peak periods.</p>
	Negative impact on level of parking provision surrounding the site	D	4	Low	<p>The new multi-deck car park is being constructed to replace parking lost as a result of the relocation of the flight training centre and to provide parking that will be lost by Qantas due to future development or end of leases.</p> <p>Construction of the new car park will allow for consolidation of Qantas staff parking within the campus site, resulting in Qantas being able to better manage its parking facilities.</p>

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
Heritage	Negative impact on internal campus car park layout and circulation	D	4	Low	<p>All parking areas, including parking bays, ramps and circulation aisles, have been designed in accordance with the Australian Standards.</p> <p>A parking guidance system will be implemented to inform motorists of the number of vacant parking spaces on each level.</p>
	Negative impact on service vehicle access to the site	D	4	Low	<p>Access driveways and internal roads around the flight training centre have been designed have been designed to cater for service vehicles ranging from rigid trucks to articulated vehicles, in accordance with the Australian Standards.</p>
	Impacts to heritage items during demolition and development	E	2	Very Low	<p>During the excavation process, should any object with archaeological potential be uncovered, all work is to cease, and a suitably qualified archaeologist engaged.</p> <p>Complete comprehensive Environmental investigations and CEMP to be undertaken (Appendix UU).</p> <p>Recommendations in the Heritage Impact Statement by Urbis dated April 2019 to be implemented (Appendix I).</p>
	Discovery of items of archaeological significance during construction	D	5	Very Low	<p>During the excavation process, should any object with archaeological potential be uncovered, all work is to cease, and a suitably qualified archaeologist engaged.</p>
	Disturbance of previously unidentified items of aboriginal heritage	D	3	Low	<p>Implement an 'unexpected finds protocol' to ensure that if, during excavation, any items of potential archaeological significance are uncovered they are identified, managed, protected and preserved.</p>
Hazardous materials	Hazardous materials being encountered during demolition, excavation or construction phases	B	3	Medium	<p>Hazardous materials survey conducted prior to works commencing on site.</p> <p>Appropriately licenced contractors engaged to remove any hazardous materials found.</p> <p>Appropriate signage and exclusion zones maintained during applicable works.</p> <p>Complete comprehensive Environmental investigations and CEMP dated 12 April 2019 by Arcadis to be implemented (Appendix UU).</p>

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
Human Health	Human exposure (direct or indirect) to impacted soil and / or groundwater remaining onsite.	C	2	Medium	Compliance with Acid Sulfate Soil Management Plan (Appendix AAA) and CEMP (Appendix UU) for specific Acid Sulphate management practices
	Human exposure to contaminants via direct contact, ingestion or indirect contact with contaminated soil and / or groundwater.	C	2	Medium	Preparation of a Remedial Action Plan (RAP) to identify remediation options for impacted soil identified at the Site. Preparation of an Environmental Management Plan (EMP) to manage the impacted groundwater located beneath the Site (Appendix UU).
Contamination	Potential spread of impacted soil and groundwater into uncontaminated areas of the site.	C	2	Medium	Compliance with Acid Sulfate Soil Management Plan, at Appendix AAA .
	Spread of identified contaminants into uncontaminated areas.	C	2	Medium	Preparation of a RAP to identify ways to prevent or otherwise minimise the spread of contaminants during remediation works. Preparation of an Environmental Management Plan (EMP) to manage the potential spread of contaminants remaining onsite into uncontaminated areas of the Site (Appendix UU).
Sediment, Erosion and Dust Controls	Risk for generation and off-site transmission dust and fine particles	B	3	Medium	Appropriate hoardings to be provided around the site. Ensure construction vehicles have been appropriately cleaned before exiting the site. Ensure sufficient wetting-down is completed during demolition and excavation activities. Ensure stockpiles are sufficiently protected.
	Sediment run-off entering the storm water system or surrounding streets	C	2	Medium	Follow prescribed sedimentation and erosion control measures as provided by the Civil Engineer (Appendix Y). Conduct regular visual inspections of silt socks and all other sedimentation controls to ensure integrity of the systems is maintained at all times. Provide dedicated wash-out facilities for use by relevant Subcontractors.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
Construction Waste Management	Disposal of waste generated during demolition and construction	C	2	Medium	<p>A comprehensive survey of the existing site shall be conducted to identify existing materials for reuse or recycling. Salvageable materials include sandstone, bricks, timber, and similar materials suitable for re-use.</p> <p>Excavated materials shall be reused on the site wherever possible. Any surplus materials needing to be exported from the site will be sorted into separate classifications i.e. soil, rock, concrete, steel, aluminium, timber, etc. and exported to facilities which are appropriately licenced to accept them.</p> <p>Prior to commencement of demolition and excavation works, a hazardous material and contaminated ground survey will be undertaken. Any hazardous materials identified will be disposed of in accordance with statutory and EPA requirements.</p> <p>A project specific Waste Management Plan (WMP) will be developed and implemented to manage all waste streams expected to be generated from the site. See the Operational and Construction Waste Management Plan by Waste Audit dated April 2019 (Appendix CC).</p> <p>Complete comprehensive Environmental investigations and CEMP dated 12 April 2019 by Arcadis to be implemented (Appendix UU).</p>
	Dumping of excavated spoil and potential contamination	C	2	Medium	<p>Validation of waste classification will be required before spoil material is removed from the site.</p> <p>All spoil must be transported to a site that is licenced to receive that category of spoil/waste as appropriate.</p> <p>Complete comprehensive Environmental investigations and CEMP dated 12 April 2019 by Arcadis to be implemented (Appendix UU).</p>
	Litter from construction workers contaminates neighbouring environment and contrary to regulations	D	4	Low	<p>Bins closed between uses and bunding around bins to "trap" litter.</p>
	Fire contained in the room of origin – Threat to life safety of occupants in the	C	5	Very Low	<p>Automatic fire detection to provide occupant warning and notification to fire brigade.</p>

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
Fire and Incident Management	vicinity of the fire and other areas with open connection with the room of fire origin. Reasonably low threat to firefighting personnel.				Fire aid firefighting equipment (fire hose reels and fire extinguishers). Sufficient means of egress and emergency plan and staff training.
	Fire contained in the fire compartment of origin – Threat to life safety of occupants in the more areas within the same fire compartment. Not significant increase of risk to occupants as the fire growth to reach this stage is longer than the time required for evacuation. Higher risk to firefighting personnel due to high intensity and larger affected areas involved in fire.	D	2	Low	Automatic fire detection to provide occupant warning and notification to fire brigade. Fire aid firefighting equipment (fire hose reels and fire extinguishers). Sufficient means of egress, emergency plan and staff training. Fire resisting building elements. Fire compartmentation in the flight training centre. Natural ventilation of heat and smoke in the carpark to slow down temperature increase and delay onset of untenable conditions. Pre-incident planning with adjacent fire stations.
	Fire spreading out of the fire compartment of origin – Threat to life safety of occupants in the more areas within the same fire compartment. Not significant increase of risk to occupants as the fire growth to reach this stage is longer than the time required for evacuation. Extreme high risk to firefighting personnel may render internal fire intervention impossible.	E	1	Very Low	Automatic fire detection to provide occupant warning and notification to fire brigade. Fire aid firefighting equipment (fire hose reels and fire extinguishers). Sufficient means of egress, emergency plan and staff training. Fire resisting building elements. Fire compartmentation in the flight training centre. Natural ventilation of heat and smoke in the carpark to slow down temperature increase and delay onset of untenable conditions. Pre-incident planning with adjacent fire stations.
Social Impacts	Construction site personnel behaviour both inside and external of the site (eg	B	5	Very Low	Site inductions will include site requirements. That is no inappropriate language, no throwing rubbish on streets, parking of vehicles legally and wearing appropriate clothing etc.

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
	language, rubbish left on streets, interaction with neighbours)				Weekly tool box talks will reinforce requirements. Regular check of surrounding streets.
Trees	Damage to trees identified as being retained	C	2	Medium	<p>Adherence to all mitigation measures identified in Arboriculture Impact Assessment by The Ents Tree Consultancy dated April 2019 (Appendix P), including:</p> <p>Appointment of Site Arborist: A site arborist shall be appointed prior to the commencement of work on site. The Site Arborist shall clearly mark out all trees to be removed and ensure that all trees documented for retention are preserved with the implementation of tree protection zones, fencing and signage. The Site Arborist shall have a minimum qualification equivalent to a NSW TAFE Certificate Level 5 or above in Arboriculture.</p> <p>Inspection Points: Give 5 working days notice to allow inspections to be undertaken at the following stages:</p> <ul style="list-style-type: none"> • Installation of Tree Protection Zones including Tree Protection Fencing, Silt Fencing and Signage by the Site Arborist; • Any modification of the Tree Protection Zone by the Site Arborist; • Works within the Tree Protection Zone by the Site Arborist; and • Completion of Construction Works by the Site Arborist and Site Supervisor. <p>Education: Contractors and site workers shall receive a copy of these specifications prior to the commencement of work. Contractors and site workers undertaking any works within a TPZ shall sign the site log to confirm that they have read and understand these specifications prior to their undertaking.</p> <p>Tree Protection Zones: Where applicable, all trees to be retained through the construction process shall be protected from mechanical damage and the indirect impacts of the construction process with the installation of Tree Protection Zones.</p> <p>Tree Protection Fencing: Tree Protection Fencing shall be installed at the perimeter of the TPZ. As a minimum the Tree Protection Fencing shall be 1.8 meters high temporary</p>

Matter	Potential Impact	Likelihood	Consequence	Risk Level	Proposed Mitigation Measures
					<p>chain supported by steel stakes. This shall be fastened and supported to prevent sideways movement. The trees woody roots shall not be damaged during the installation of this Tree Protection Fencing. This Tree Protection Fencing shall be erected prior to the commencement of works on site and shall be maintained for the duration of the construction process.</p> <p>Signage: Tree Protection Signage shall be attached to the TPZ and displayed in a prominent location. These signs shall be repeated in 10m intervals or closer where the fence changes direction. These shall be a minimum of a 72 font size and each sign at least 600 x 500mm.</p> <p>Mulching: The area within the TPZ shall be mulched and maintained with 80mm of leaf litter mulch for the duration of the construction process. This mulch shall be spread by hand to limit the impact on underlying roots and shall be installed prior to the commencement of works on site. The Site Arborist shall inspect and approve the TPZ including mulching, signage, Tree Protection Fencing, Silt fencing and Signage prior to the commencement of works on site.</p> <p>Site Management: Materials and waste storage, site sheds and temporary services shall not be located within the TPZ unless specified. Storage points shall be covered when not in use and be no greater than 2m in height.</p> <p>Works within the TPZ: The TPZ may need to be modified during the works to allow access between the protected tree and the proposed construction. The TPZ shall remain as specified and only those works detailed in the proposed construction undertaken.</p> <p>Completion of Works within specified TPZ: Upon the completion of works within a TPZ the protective fencing shall be reinstated as specified. Where the construction of new structures does not allow for the reinstallation of fencing the TPZ shall be modified by the Site Arborist.</p> <p>Complete comprehensive Environmental investigations and Construction Environmental Management Plan (CEMP) dated 12 April 2019 by Arcadis to be implemented (Appendix UU).</p>

10. EVALUATION AND CONCLUSION

This EIS has been prepared by Urbis Pty Ltd on behalf of Qantas Airways Ltd in support of a State Significant Development Application (SSD 10154) for the development of a new flight training centre, multi-deck carpark and ancillary uses at 297 King Street, Mascot. For all of the reasons outlined in this EIS, the site is suitable for the proposed development:

- The land is zoned 'IN1 – General Industrial' under the BBLEP 2013. The proposed development is permissible with consent and consistent with the land use objectives of IN1 zoning;
- The proposal is consistent with the objectives of all relevant planning controls and achieves a high level of planning policy compliance and design excellence;
- There are no significant environmental constraints limiting development; and
- Traffic can be managed, and the proposal will not result in new traffic to or from the airport precinct, rather it is considered to be a redistribution of existing trips.

The proposal is in the public interest for the following reasons:

- The Project is crucial in maintaining Qantas' operational effectiveness as a global airline, whose headquarters/home base are at Mascot. In the absence of a flight training centre, Qantas' ability to operate and thus in turn effectively support the Airport and the National economy will be undermined.
- The proposal has been prepared having regard to Council's planning policies and generally complies with the aims and objectives of the controls for the site;
- Subject to the various mitigation measures recommended by the specialist consultants, the proposal does not have any unreasonable impacts on adjoining properties or the public domain in terms of traffic, social and environmental impacts;
- The site is well serviced by public transport and various walking and cycling routes and the road network. Further, the proposal will centralise some of Qantas' staff parking into a central location facilitating more effective transport of staff within the Campus and Airport;
- The proposal will result in the development of a world class training facility to service the Qantas fleet that at its completion it will be the largest flight training centre in the Southern Hemisphere;
- The location of the flight training centre in Sydney enables Qantas' long-term employment generation to remain predominantly in Sydney and represents a logical co-location with Qantas' Head Office in its Corporate Campus. More specifically the Project will create a new strategic centre for the airline's operations, within a new Qantas Corporate Precinct;
- The Project demonstrates design excellence and is intended to be a material expression of Qantas' identity as the national carrier; with 'earth' inspired elements to reflect the red earth of the Australian soil; and 'air' inspired elements referencing aviation and the sky;
- The building form and design addresses the urban design constraints of the site and the functional requirements of the facilities with a clear understanding of the industrial context informing an appropriate contextual design response; and
- The effective day to day operation of Qantas' business at Mascot generates demand from some 5,480 spaces across multiple airside and non-airside locations which Qantas controls through ownership, lease or rental arrangements. Qantas's parking strategy is to maintain existing parking supply by proactively replacing known future parking losses to allow it to continue to successfully operate.
- Construction of the new multi-deck car park will allow for consolidation of Qantas staff parking within the campus site resulting Qantas being able to better manage its parking facilities.
- The proposal will contribute positively to energy efficiency and environmental sustainability. The design has incorporated many ESD features to reduce energy consumption during the life of the proposed development with a targeted equivalency to a 5 star Green Star benchmark with a 6 star aspiration.

Given the site is suitable for the development and the proposal is in the public interest, this application should be approved.

- The proposal satisfies the applicable local and State planning policies;
- The proposal is highly suitable for the site;
- The proposal is in the public's best interest; and
- The proposal appropriately satisfies each item within the SEARs.

It is requested that the consent is structured to enable the staged construction of the car park to enable the consolidation of carparking across Qantas' landholdings into a central location. Additionally, it is requested that the consent is structured so that both the flight training centre and carpark are able to obtain Occupation Certificates independent of each other to ensure business continuity for Qantas and to limit project risk associated with construction timeframes.

Due to the specialised nature of the flight training centre and the length of time it takes to relocate, install and recalibrate the simulators, the process is expected to take a minimum of 23 months before the new flight training centre is operational. In order to meet RMS' construction timetable for Gateway (vacating existing facility by 30 June 2021), Qantas needs to begin construction of their new flight training centre by no later than 1 September 2019, and are requesting extended construction hours of 06:00am – 08:00pm seven days a week (inclusive of public holidays) and 24 hour construction during fitout works with no noisy works beyond the standard hours.

Considering the above and the content contained in this EIS, it is recommended that the Department approve this SSD Application, subject to appropriate conditions.

11. LIST OF APPENDICES

Appendix A	Secretary's Environmental Assessment Requirements (SEARs)
Appendix B	Quantity Surveyors Cost Assessment
Appendix C	Architectural Drawings
Appendix D	Architectural Design Report
Appendix E	Landscape Architecture
Appendix F	Public Domain and Landscape Report
Appendix G	Planning Compliance Assessment – Botany Bay Development Control Plan 2013
Appendix H	Planning Compliance Assessment – SEPP 64
Appendix I	Heritage Impact Statement
Appendix J	Pedestrian Wind Environment Statement
Appendix K	Pedestrian Wind Environment Study
Appendix L	Preliminary Operational Plan of Management
Appendix M	Landscape and Visual Impact Assessment
Appendix N	Operational Traffic and Parking Assessment
Appendix O	Construction Pedestrian and Traffic Management Plan
Appendix P	Arboricultural Impact Assessment
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13. CONSOLIDATED GLOSSARY AND ABBREVIATIONS

Abbreviation	Meaning
%	percent
*	Denotes exotic species
µg	microgram
µg/m ³	microgram per cubic metre of air
ABCB	Australian Building Codes Board
ABS	Australian Bureau of Statistics
AC	Advisory Circular (document support CAR 1998)
Accreditation	The formal recognition of a laboratory's competence to carry out specific tests. It covers a lab's quality system and its technical quality
ACFT	Aircraft
ACHAR	Aboriginal Cultural Heritage Assessment Report
Acid Sulphate Soils	Acid sulfate soils (ASS) is the common name given to naturally occurring soil and sediment containing iron sulfides. When these natural occurring sulfides are disturbed and exposed to air, oxidation occurs, and sulfuric acid is ultimately produced. ASS are generally acidic (< 4.5 pH) in an undisturbed natural state
ACM	Asbestos Containing Materials
AD	Aerodrome
ADS-B	Automatic Dependent Surveillance - Broadcast
AEP	Annual Exceedance Probability
AF/FA	Asbestos fines / fibrous asbestos
AHD	Australian Height Datum
AHU	Air Handling Unit
AIP	Aeronautical Information Publication
Airports Act	<i>Airports Act 1996</i> as amended
AIS	Aeronautical Information Service
ALT	Altitude
Ambient	Pertaining to the surrounding environment or prevailing conditions
Ambient Sound	Of an environment: the all-encompassing sound associated with that environment, being a composite of sounds from many sources, near and far. Usually taken to mean the LAeq value.

Abbreviation	Meaning
AMSL	Above Mean Sea Level
Analyte	The specific component or element measured in chemical analysis
Anthropogenic	Coming from or having been caused by man.
ANZECC	Australian and New Zealand Environment Conservation Council
ANZECC & ARMCANZ	Australian and New Zealand Environment and Conservation Council & Agriculture and Resource Management Council of Australia and New Zealand
ANZG	Australian and New Zealand Governments
AP	Sydney Airport
APARs	<i>Airports (Protection of Airspace) Regulations 1996</i> as amended
Appointed Contractor	The party that is engaged to undertake the works required for the construction of the new Qantas facility.
AQIA	Air Quality Impact Assessment
AQMS	Air Quality Monitoring Station
Aquatic	Growing, living in or frequenting water, occurring or situated in or on water
Aquifer	Stratum or zone below the surface of the earth capable of producing water as from a well
Aromatic Compounds	Contain ring structure formed from closed loops of carbon chains (most often containing C-atoms) where carbons in the ring have resonant double bonds. Aromatic compounds include compounds such as benzene, toluene, ethylbenzene and xylene (BTEX), as well as polyaromatic compounds such as naphthalene. Because of the double bonding between carbon atoms, the molecules are not saturated with hydrogen atoms (as with un-saturated hydrocarbons).
ARP	Aerodrome Reference Point
ARTC	Australian Rail Track Corporation
AS	Australian Standard
AS2021	AS2021:2015 – Aircraft Noise Intrusion – Building siting and construction
AS2107	AS2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors
AS2436	AS2436:2010 Guide to noise and vibration control on construction, demolition and maintenance sites
AS2670	AS2670-2:1990 Evaluation of human exposure to whole-body vibration - Part 2: Continuous And Shock Induced Vibration In Buildings (1 to 80 Hz)
AsA	Airservices Australia
ASCE	American Society of Civil Engineers
ASG	Australian Dangerous Goods Code (Ref.1)

Abbreviation	Meaning
ASS	Acid Sulfate Soils
ASSMAC	Acid Sulfate Soil Management Advisory Committee
ASSMP	Acid Sulfate Soil Management Plan
ATC	Air Traffic Control(ler)
ATM	Air Traffic Management
AVaTG	Assessing Vibration: a technical guideline
AWES-QAM	Australian Wind Engineering Society Quality Assurance Manual
B(a)P	Benzo(a)pyrene
Background	The existing air quality in the Project area excluding the impacts from the proposed development or an area not influenced by chemicals released from the site under evaluation or other impacts created by the activity on the site under evaluation
Background Sound Level	The average of the lowest levels of the sound levels measured in an affected area in the absence of noise from occupants and from unwanted external ambient noise sources. Usually taken to mean the LA90 value.
BAM	Biodiversity Assessment Method 2017 that supports the <i>Biodiversity Conservation Act 2016</i> .
BARO-VNAV	Barometric Vertical Navigation
Baseline Studies	Work done to determine and describe the environmental conditions against which any future changes can be measured or predicted and assessed.
BBLEP 2013	<i>Botany Bay Local Environmental Plan 2013</i>
BC Act	<i>Biodiversity Conservation Act 2016</i>
BC Regulation	<i>The NSW Biodiversity Conservation Regulation 2017</i>
BCA	<i>National Code of Construction, Volume One, Building Code of Australia 2019</i>
BDAR	Biodiversity Development Assessment Report
Bentonite	A type of mineral deposit consisting principally of montmorillonite clay (A major constituent of drilling muds)
BH	Borehole
Biodiversity	The biological diversity of life is commonly regarded as being made up of the following three components: Genetic diversity — the variety of genes (or units of heredity) in any population. Species diversity — the variety of species. Ecosystem diversity — the variety of communities or ecosystems.
BMS	Building Management System

Abbreviation	Meaning
BOCSAR	Bureau of Crime Statistics and Research
BOM	Bureau of Meteorology
BOS	Biodiversity Offset Scheme
BRA	Building Restricted Area
BS7385	BS7385-2 1993 Evaluation and measurement for vibration in buildings – Part 2 Guide to damage levels from ground-borne vibration
BTEXN	Benzene, toluene, ethylbenzene, xylene and Naphthalene
Burra Charter	<i>The Australia ICOMOS Charter for Places of Cultural Significance</i>
ca.	Circa (approximately)
Calibration	Comparison of a measurement standard or instrument with another standard or instrument in order to report or eliminate by adjustment any variation (deviation) in the accuracy of the item being compared
CAM	Computer Aided Manufacture
CAMBA	China Australia Migratory Bird Agreement
Candidate Species	Species assessed as having a moderate to high likelihood of occurrence within the site.
CAO	Civil Aviation Order
CAR	Civil Aviation Regulation
CASA	Civil Aviation Safety Authority
Casing	The lining put into a well. It extends the total length of the wellbore to ensure safe control of production, prevent water from entering the wellbore and keep rock formations from slumping into the well bore.
CASR	<i>Civil Aviation Safety Regulation</i>
Cat	Category
CBD	Central Business District
CCTV	Closed Circuit Television
Cd/m2	Candela per metre square
CEET	Cabin Emergency Evacuation Trainer
CEMP	Construction Environmental Management Plan
Characterisation	The process of identifying areas of similar landscape character, classifying and mapping them and describing their character.
Characteristics	Elements, or combinations of elements, which make a contribution to distinctive landscape character.

Abbreviation	Meaning
CLM Act	<i>Contaminated Land Management Act (1997)</i>
CMP	Construction Management Plan
CNVG	<i>Construction Noise and Vibration Guideline 2016</i>
CO	Carbon Monoxide
CO2	Carbon Dioxide
COC	Chain of Custody
Combustion	The process of thermal oxidation. A chemical change, especially oxidation, accompanied by the production of heat and light
Commingled Recycling	Combined materials such as beverage containers composed of glass, plastic and metals
Contaminant	A general term referring to any chemical compound added to a receiving environment in excess of natural conditions. The term includes chemicals or effects not generally regarded as "toxic", such as nutrients, salts and colour.
Contamination	The condition or state of soil, water or air caused by a substance release or escape which results in an impairment of, or damage to, the environment, human health, safety, or property.
CoPCs	Contaminants of potential concern
Council	Bayside Council.
CPTED	Crime Prevention through Environmental Design
CPTMP	Construction Pedestrian and Traffic Management Plan
Credit Calculator	The computer program that provides decision support to assessors and proponents by applying the BAM, in particular by using the data required to be entered and the equations in Appendix 6 and Appendix 9 to calculate the number and class of biodiversity credits required to offset the impacts of a development or created at a biodiversity stewardship site.
Critical Habitat	The whole or any part or parts of an area or areas of land comprising the habitat of an Endangered species, an Endangered population or an Endangered Ecological Community that is critical to the survival of the species, population or ecological community (Department of Environment and Conservation 2004). Critical habitat is listed under the EPBC Act with the Secretary (Department of the Environment and Energy) maintaining a register of this habitat. Capitalisation of the term 'Critical Habitat' in this report refers to the habitat listed specifically under Commonwealth legislation.
Cryptic Species	An inconspicuous species which can be difficult to identify
CSIRO	The Commonwealth Scientific and Industrial Research Organisation
CSM	Conceptual Site Model
CTBUH	Council for Tall Buildings and Urban Habitat
DAP	Departure and Approach Procedures (charts published by AsA)

Abbreviation	Meaning
dB(A)	<p>In most national and International environmental standards assessments adopt “A” weighted decibels. “A” weighted decibels are measured with a sound level meter which has been electronically adjusted to an international standard in an attempt to match the response of the human ear.</p> <p>The spread of noise over a time period can be expressed in a number of ways. The two methods used in the noise level targets are:</p> <p>L10 The sound level exceeded for 10 per cent of the time.</p> <p>L95: The sound level exceeded for 95 per cent of the time.</p> <p>Leq: The average sound pressure level over the measurement period.</p> <p>Lmax: The loudest single event over the measurement period.</p>
DDCoP	Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW
decibel, dB	<p>The decibel scale is logarithmic. A doubling in loudness would subjectively be represented by an increase in noise levels of 10 decibels (dB). A small change of 3dB would be just noticeable to most listeners.</p> <p>Decibels are not actually a unit of sound pressure but are simply an expression of a ratio from a standardised sound pressure level representing zero decibels.</p>
Deemed-to- Satisfy Provisions	Provisions that are deemed to satisfy the Performance Requirements.
Defects Liability Period	A period of time following practical completion during which the contractor remains liable under the building contract for dealing with any defects which become apparent
DEFRA Database	Department for Environment Food and Rural Affairs UPDATE OF NOISE DATABASE FOR PREDICTION OF NOISE ON CONSTRUCTION AND OPEN SITES (2005)
Department of the Environment and Energy	<p>The department develops and implements national policy, programs and legislation to protect and conserve Australia's natural environment and cultural heritage and administers the EPBC Act. The Commonwealth Department of Department of the Environment was previously known as: Department of Sustainability, Environment, Water, Population and Communities (SEWPAC); Department of the Environment, Water, Heritage and the Arts (DEWHA); Department of Environment and Heritage (DEH); and Department of the Environment and Water Resources (DEWR).</p>
DER	Departure End of (the) Runway
DG	Dangerous Goods
DIRDC	Department of Infrastructure, Regional Development and Cities. (Formerly Dept. of Infrastructure, Transport, Regional Development and Local Government and Department of Transport and Regional Services (DoTARS))
Direct effect	An effect that is directly attributable to the proposed development.
Dispersion	The spreading and dilution of substances emitted in a medium (e.g. air or water) through turbulence and mixing effects
DME	Distance Measuring Equipment

Abbreviation	Meaning
DNAPL	Volatile organic compounds / semi-volatile organic compounds
Doc nn	ICAO Document Number nn
DOTARS	See DIRD above
DP	Deposited Plan
DQO	Data Quality Objectives
DSC	Duty Security Controller
DSI	Detailed Site Investigation
DtS	Deemed to Satisfy
Dust Deposition	Settling of particulate matter out of the air through gravitational effects (dry deposition) and scavenging by rain and snow (wet deposition)
EBG	Edwards Blasche Group
Ecological Community	An assemblage of species occupying a particular area.
Ecosystem Credit	A measurement of the value of threatened ecological communities, threatened species habitat for species that can be reliably predicted to occur with a PCT, and PCTs generally. Ecosystem credits measure the loss in biodiversity values at a development site and the gain in biodiversity values at a biodiversity stewardship site.
EDBs	Electrical Distribution Boards
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).
EIS	Environmental Impact Statement
Elements	Individual parts which make up the landscape, such as, for example, trees, hedges and buildings.
ELEV	Elevation (above mean sea level)
EMP	Environmental Management Plan
ENE	East North East
Enhancements	Proposals that seek to improve the landscape resource and the visual amenity of the proposed development site and its wider setting, over and above its baseline condition.
ENSO	El Niño Southern Oscillation
Environmental Health	The study of the protection of human populations from biological, chemical and physical hazards in their environment.
Environmental Weed	Any plant that is not native to a local area that has invaded native vegetation.

Abbreviation	Meaning
EOA	<i>Environment Operations Act 1997</i>
EP	Emergency Procedure
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Environment Protection Authority
EPA (NSW)	Environmental Protection Agency (NSW)
ERSA	Enroute Supplement Australia
ESA	Environmental Site Assessment
ESD	Ecologically Sustainable Development
EWIS	Emergency Evacuation Intercom System
Exotic	Introduced from outside the area (Stralberg, et al. 2009). Used in the context of this report to refer to species introduced from overseas.
Exposure Assessment	The process of estimating the amount (concentration or dose) of a chemical that is taken up by a receptor from the environment.
Exposure Pathway	The route by which an organism comes into contact with a contaminant.
F&R NSW	Fire and Rescue NSW
FAF	Final Approach Fix
FAP	Final Approach Point
FAS	Final Approach Surface of a BARO-VNAV approach
FCU	Fan Coil Unit
Feature	Particularly prominent or eye-catching elements in the landscape, such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposal.
Fill	Depth of which material is to be placed (filled) to bring the surface to a predetermined grade. Also, the material itself.
Fire resistance level	The grading periods in minutes determined in accordance with Schedule 5 of the BCA, for the following criteria – Structural adequacy; and Integrity; and Insulation, And expressed in that order.

Abbreviation	Meaning
Fire-isolated stairway	Means a stairway within a fire-resisting shaft and includes the floor and roof or top enclosing structure
FRL	Fire resistance level
ft	feet
FTE	Full-time Equivalent
g/m2/month	grams per square metre per month
Gateway	Sydney Gateway Project
GBAS	Ground Based Augmentation System (satellite precision landing system)
GBCA	Green Building Council of Australia
GCM	Global Climate Model
GEM	Gust-Equivalent Mean
General Waste	Waste destined for landfill
GHG	Greenhouse Gas
GIL	Groundwater Investigation Level
Glazing	Means a translucent element and supporting frame, includes a window other than a roof light
GME	Groundwater Monitoring Event
GNSS	Global Navigation Satellite System
GP	Glide Path
Green Infrastructure (GI)	Networks of green spaces, features and watercourses and water bodies that connect the urban and rural environment.
GSC	Greater Sydney Commission
guideline	A general rule, principle, or piece of advice. A statement or other indication of policy or procedure by which to determine a course of action.
Guideline	A basis for determining a course of action. An environmental guidelines can be either procedural (directing a course of action) or numerical (providing a numerical value that is generally recommended to support and maintain a specified use.
ha	Hectares
HAA	Historical Archaeological Assessment
Habitat	An area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community, including any biotic or abiotic components.
HBSIL	Health Based Soil Investigation Levels

Abbreviation	Meaning
High Threat Weed	Vascular plants not native to Australia that if not controlled will invade and outcompete native species. A list of high threat weeds is available as part of the BAM Calculator (https://www.lmbc.nsw.gov.au/bamcalc)
HIS	Heritage Impact Assessment
HMA	Hazardous Materials Audit
HVAC	Heating, Ventilation and Air-Conditioning
IAS	Indicated Airspeed
IBRA	Interim Biogeographic Regionalisation for Australia
ICAO	International Civil Aviation Organization
ICNG	<i>Interim Construction Noise Guideline 2009</i>
IHS	Inner Horizontal Surface, an Obstacle Limitation Surface
ILS	Instrument Landing System
Indigenous	Native to the area: not introduced (Stralberg, et al. 2009).
Indirect Effects	Effects that result indirectly from the proposed project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.
Introduced	Not native to the area: not indigenous (Stralberg, et al. 2009). Refers to both exotic and non-indigenous Australian native species of plants and animals.
IP	Interface Probe
IPC	Independent Planning Commission
IPCC	Intergovernmental Panel on Climate Change
IPT	Integrated Procedures Trainer
ISA	International Standard Atmosphere
ISEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i>
Iterative design process	The process by which project design is amended and improved by successive stages of refinement which respond to growing understanding of environmental issues.
JAMBA	<i>Japan Australia Migratory Bird Agreement</i>
Jetbase	Qantas leased land within the boundaries of Sydney Kingsford Smith Airport.
JP	Section J Performance requirement
Key characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.

Abbreviation	Meaning
kg	kilograms
kL	kilo Litres
km	kilometre
kph	Kilometres per hour
kt	Knot (one nautical mile per hour)
kWh	Kilowatt-hours
L	Litres
Land use	What land is used for, based on broad categories of functional land cover, such as urban and industrial use.
Landform	The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.
Landscape	An area, as perceived by people, the character of which is the result of the action and interaction of natural and/ or human factors.
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Character Areas (LCAs)	These are single unique areas which are the discrete geographical areas of a particular landscape type.
Landscape Character Assessment (LCA)	The process of identifying and describing variation in the character of the landscape, and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscapes distinctive. The process results in the production of a Landscape Character Assessment.
Landscape quality (condition)	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape receptors	Designated aspects of the landscape resource that have the potential to be affected by a proposal.
Landscape value	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
LAT	Latitude
LCP	Lead Containing Paint
LDPE	Volatile organic compounds / semi-volatile organic compounds
LEP	Local Environmental Plan

Abbreviation	Meaning
LGA	Local Government Area
Light Non-Aqueous Phase Liquid (LNAPL)	Compounds that are soluble in hydrocarbons but less dense than water, thus these compounds will float on water.
Likely	Taken to be a real chance or possibility (Department of Environment and Conservation 2004).
LLZ	Localizer
LNAV	Lateral Navigation criteria
Local population	The population that occurs within the site, unless the existence of contiguous or proximal occupied habitat and the movement of individuals or exchange of genetic material across the boundary can be demonstrated.
Locality	The area within a 10 kilometre radius of the site.
LONG	Longitude
LPG	Liquefied Petroleum Gas
m	metre
m/s	metre per second
m ²	square metre
m ³	cubic metre
Magnitude	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
MAPt	Missed Approach Point
Mascot Campus	<p>Over 19ha of Qantas Airways Limited controlled land in Mascot to the north of Sydney Kingsford Smith Airport consisting of freehold and leased land.</p> <p>The following lots are owned by Qantas: Lot 133 DP 659434; Lots 4 & 5 DP 38594 Lot 23 DP 883548; Lots 1 & 2 DP 738342; Lot 3 DP 230355; Lot 4 DP 537339; Lots 2 & 4 DP 234489; Lot 4 234489; Lot 1 DP 81210; Lot 1 DP 202093; Lot 1 DP 721562; Lot 2 DP 510447; Lot 1 DP 445957; Lot B DP 164829 and Lot 1 DP 202747 and equates to 16.5ha of land.</p> <p>The following lots are leased by Qantas: Lot 14 DP 1199594 and Lot 2 DP 792885 and equates to 2.7ha of land.</p>
mBGS	Meters below ground surface
MDA	Minimum Descent Altitude
meteorological	The science that deals with the phenomena of the atmosphere, especially weather and weather conditions
MGA94	Map Grid Australia 1994
MGB	Mobile Garbage Bin

Abbreviation	Meaning
MIC	Ministerial Call-In Request
Migratory species	Species listed as Migratory under the EPBC Act relating to international agreements to which Australia is a signatory. These include Japan-Australia Migratory Bird Agreement, China-Australia Migratory Bird Agreement, Republic of Korea-Australia Migratory Bird Agreement and the Bonn Convention on the Conservation of Migratory Species of Wild Animals. Capitalisation of the term 'Migratory' in this report refers to those species listed as Migratory under the EPBC Act.
MNES	Matters of National Environmental Significance
MOC	Minimum Obstacle Clearance
MOS	Manual of Standards, published by CASA
Mottling	Formation or presence of soil mottles (spots of blotches of different colour or shades of colour found in imperfectly drained soils).
MSA	Minimum Sector Altitude
MVA	Minimum Vector Altitude
MW	Marine Water
MW	Monitoring Well
NASAG	National Airports Safeguarding Advisory Group
NATA	National Association of Testing Authorities
NCC	National Construction Code
NDB	Non Directional Beacon
NDY	Norman Disney & Young
NE	North East
NEHF	National Environment Health Forum
NEMP	National Environmental Plan
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
Neutralisation	The Process of Applying Lime of calcium carbonate to neutralise the acidic effects of the soil effectively producing an inert soil pH ranging from 6-8
NLA	National Library of Australia
NLR	Dutch Aerospace Research Organisation
NM	Nautical Mile (= 1.852 km)

Abbreviation	Meaning
nnDME	Distance from the DME (in nautical miles)
NNE	North East
NOHSC	National Occupational Health and Safety
NOS	Not Otherwise Specified
NOTAM	NOtice to AirMen
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NPW Regulation	<i>National Parks and Wildlife Regulation 2009</i>
NSW	New South Wales
NSW EPA	New South Wales Environment Protection Authority
NSW NPfI	<i>NSW Noise Policy for Industry 2017</i>
OAS	Obstacle Assessment Surface
OCA	Obstacle Clearance Altitude
OCH	Obstacle Clearance Height
OCP & OPP	Organochlorine & organophosphorus Pesticides
ODS	Ozone Depleting Substances
OEH	Office of Environment and Heritage
OEM	Original Equipment Manufacturer
OH&S	Occupational Health & Safety
OHS	Outer Horizontal Surface
OIS	Obstacle Identification Surface
OLS	Obstacle Limitation Surface
Open-deck carpark	<p><i>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 –</i></p> <p><i>Each side that provides ventilation is not less than 1/6 of the area of any other side; and</i></p> <p><i>The openings are not less than 1/2 of the wall area of the side concerned.</i></p>
PAH	Polycyclic aromatic hydrocarbon
PANS OPS	Procedures for Air Navigation Services – Aircraft Operations, ICAO Doc 8168
particulate	Of, relating to, or formed of minute separate particles. A minute separate particle, as of a granular substance or powder

Abbreviation	Meaning
PASS	Potential Acid Sulfate Soils
Pb	Lead
PBN	Performance Based Navigation
PCBs	Polychlorinated Biphenyls
PCT	Plant Community Type
Peat	Material constituting peatlands, exclusive of the live plant cover, consisting of largely organic residues accumulated as a result of incomplete decomposition of dead plant constituents under conditions of excessive moisture (submergence in water and/or waterlogging).
Performance Requirement	A requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.
Petroleum	A naturally occurring mixture of hydrocarbons in gaseous, liquid or solid form.
PFAS	Per- and poly- fluorinated alkyl substances
PG	Packaging Group (PGI - High Risk, PGII - Medium Risk, PGIII – Low Risk)
pHF	pH field
pHFOX	pH Field (oxidising agent)
Photomontage	A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs.
Pit	An excavation in the surface made for the purposes of removing, opening up, or proving sand, gravel, clay or any other substances and includes any associated infrastructure, but does not include a mine, quarry or borrow excavation.
Plant community type (PCT)	A NSW plant community type identified using the PCT classification system.
plume	A space in air, water, or soil containing pollutants released from a point source
PM10	Particular matter with an equivalent aerodynamic diameter of 10 microns or less
PMF	Probable Maximum Flood
PoC	Point of Choice, a point from which travel in different directions to 2 exits is available.
POEO Act	<i>Protection of the Environment (Operations) Act 1997</i>
pollutant	A substance or energy introduced into the environment that has undesired effects, or adversely affects the usefulness of a resource
POMP	Preliminary Operational Management Plan

Abbreviation	Meaning
Potential Acid Sulfate Soil	Soils that can potentially produce acidic conditions if disturbed and exposed to atmospheric oxygen. PASS is generally non-acidic in its natural undisturbed state (>4.5pH) but has the potential to become acidic if disturbed.
PPE	Personnel Protective Equipment
PPM	Parts Per Million
PPV	Peak particle velocity
Priority Weeds	An introduced species listed under the Biosecurity Act 2015. Under the Act, priority weeds have specific control measures for each region.
PRM	Precision Runway Monitor
Protected species	Those species defined as protected under the National Parks and Wildlife Act 1974. Includes all native animals, as well as all native plants listed on Schedule 13 of the National Parks and Wildlife Act 1974.
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance/ Quality Control
Qantas	Qantas Airways Limited
Qantas Catering Facility	A facility located on site that operates to supply the in-flight meals and provisions for Qantas customers.
Qantas Tri-Generation Plant	A facility located on site that produces energy from natural gas to supply electricity, heating and cooling.
QCC	Qantas Corporate Campus
QFC	Qantas Food Catering
QFTC	Qantas Flight Training Centre
QGFTC	Qantas Group Flight Training Centre
QNH	An altimeter setting relative to height above mean sea level
RAPs	Registered Aboriginal Parties
RBLs	Rating Background Levels
RCP	Representative Concentration Pathway
receptor	Coordinate locations specified in an air dispersion model where ground level pollutant concentrations are calculated by the model
Receptor	The person or organism subjected to exposure to chemicals or physical agents.
REF	Reference

Abbreviation	Meaning
Region	A bioregion defined in a national system of bioregionalisation. The Proposal is located within the Sydney Basin Bioregion as defined in the Interim Biogeographic Regionalisation for Australia (IBRA) (Thackway and Cresswell 1995).
Remediation	The removal, reduction or neutralisation of substances, wastes or hazardous material from a site so as to prevent or minimise any adverse effects on the environment now or in the future.
RINP	<i>NSW Rail Infrastructure Noise Policy 2013</i>
Rise in storey	The greatest number of storeys calculated in accordance with C1.2 of the BCA.
RL	Relative Level
RMS	NSW Roads and Maritime Services
RMS	Root Mean Square
RNAV	aRea NAVigation
RNP	Required Navigation Performance
RNP	<i>NSW Road Noise Policy 2011</i>
RoKAMBA	<i>Republic of Korea Australia Migratory Bird Agreement</i>
RPA	<i>Rules and Practices for Aerodromes — replaced by the MOS Part 139 — Aerodromes</i>
RPD	Relative Percentage Difference
RPT	Regular Public Transport
RTCC	Radar Terrain Clearance Chart
RWY	Runway
SA	Solar Absorptance
SACL	Sydney Airport Corporation Limited
SafeWork NSW	SafeWork NSW requirements.
SAIL	Serious and Irreversible Impact
SEARs	Secretary's Environmental Assessment Requirements
Sediment	Soil material, both mineral or organic, that is in suspension, is being transported, or has been moved from its surface of origin by air, water, gravity or ice and has come to rest on the earth's surface either above or below sea level.
SEIFA	Socio-Economic Indexes for Areas
sensitive receptor	Locations such as residential dwellings, hospitals, churches, schools, recreation areas etc where people (particularly the young and elderly) may often be present, or locations with sensitive vegetation and crops.

Abbreviation	Meaning
Sensitivity	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.
SEPP	State Environmental Planning Policy
SEPP SRD	<i>State Environment Planning Policy (State and Regional Development) 2011</i>
SFC	Surface
SGHAT	Solar Glare Hazard Analysis Tool
SHGC	Solar Heat Gain Coefficient
SHR	State Heritage Register
SID	Standard Instrument Departure
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Significant	Important, weighty or more than ordinary
Simulators	Full Motion Flight Simulators
SiX	Spatial Information Exchange (NSW)
SMF	Synthetic Mineral Fibre
SOC	Start Of Climb
Species credit	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection.
Species richness	Species richness is simply the number of species present in a sample, community, or taxonomic group. Species richness is one component of the concept of species diversity, which also incorporates evenness, that is, the relative abundance of species (Matteneson and Langellotto 2010).
SPOCAS	Suspension peroxide oxidation combined acidity and sulfur analysis
sqm	Square Metres
SSD	State Significant Development
SSDA	State Significant Development Application
standard	The prescribed level of a pollutant in the outside air that should not be exceeded during a specific time period to protect public health
STAR	STandard ARrival
Susceptibility	The ability of a denuded landscape or visual receptor to accommodate the specific proposed development without undue negative consequences.

Abbreviation	Meaning
SWDC	Sydney Water Drainage Channel
Swimming Pool	Means any excavation or structure containing water and principally used, or that is designed, manufactured or adapted to be principally used for swimming, wading, paddling, or the like
SWL	Standing Water Level
SWMs	Safe Work Method Statement
Sydney Gateway Project	A RMS Project including a road and rail component that is intended to increase capacity and improve connections to the ports to assist with growth in passenger, freight and commuter movements across the region, by expanding and improving the existing road and freight rail networks.
TAA	Total Actual Acidity
TAR	Terminal Approach Radar
TAS	True Air Speed
TBC	To Be Confirmed
TEC	Threatened Ecological Community
the Airport	Sydney Kingsford Smith Airport
the Department	Department of Planning and Environment
the District Plan	<i>Eastern City District Plan (2018)</i>
The Geotech Report	Traffic Report for Proposed Relocation of Flight Training Centre (Mascot) (REF: 11146/1) by Colston Budd Rogers & Kafes Pty Ltd, dated April 2019
the Minister	the Minister for Planning
The Project	The construction of a new Flight Training Centre and ancillary uses to replace the existing facility on the Qantas Jetbase that will be impacted by RMS' Sydney Gateway Project.
the Region Plan	<i>A Metropolis of Three Cities – the Greater Sydney Region Plan (2018)</i>
The Site	Qantas Airways Limited owned land in Mascot to the north of Sydney Kingsford Smith Airport consisting of Lots 2-5 DP 234489, Lot 1 DP 202747, Lot B DP 164829 and Lot 133 DP 659434. Current site improvements include including 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 Strategy	<i>The Future Transport Strategy 2056 (2018)</i>
The Traffic Report	Traffic Report for Proposed Relocation of Flight Training Centre (Mascot) (REF: 11146/1) by Colston Budd Rogers & Kafes Pty Ltd, dated April 2019
THR	Threshold (Runway)

Abbreviation	Meaning
Threatened biodiversity	Threatened species, populations or ecological communities as listed under the BC Act, FM Act or the EPBC Act.
Threatened species, populations and ecological communities	Species, populations and ecological communities listed as Vulnerable, Endangered or Critically Endangered (collectively referred to as threatened) under the TSC Act, FM Act or the EPBC Act. Capitalisation of the terms 'Vulnerable', 'Endangered' or 'Critically Endangered' in this report refers to listing under the relevant state and/or Commonwealth legislation.
TNA	Turn Altitude
TODA	Take-Off Distance Available
topography	Detailed mapping or charting of the features of a relatively small area, district, or locality
TPA	Total Potential Acidity
TPH/TRH	Total petroleum hydrocarbons / total recoverable hydrocarbons
TSA	Total Sulfate Acidity
TSP	total suspended particulate matter
TUV Nord	TUV Nord Ermittlung der Geräuschemission von Kfz im Straßenverkehr (2005)
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.
UCL	Upper Control Limit
UN	United Nations
UPSS	Underground Petroleum Storage Systems
Urbis	Urbis Pty Ltd
USCS	Unified Soil Classification System
UST	Underground Service Tank
UTM	Universal Transverse Mercator
Uv	U-Value
VAV	Variable Air Volume
Viable local population	A population that has the capacity to live, develop and reproduce under normal conditions, unless the contrary can be conclusively demonstrated through analysis of records and references (Department of Environment and Climate Change 2007).
Visual amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.

Abbreviation	Meaning
Visual impact/effects	Effects on specific views and on the general visual amenity experienced by people.
Visual receptors	Individuals and/ or defined groups of people who have the potential to be affected by a proposal.
Vn	aircraft critical Velocity reference
VNAV	Vertical Navigation criteria
VOCs/SVOCs	Volatile organic compounds / semi-volatile organic compounds
VOR	Very high frequency Omni directional Range
WAC	World Aeronautical Chart
WACS	Waste Audit & Consultancy
Waste Audit	A process to quantify types and quantities of waste and recyclables
WC	Water Capacity (in reference to the volume of gas cylinders)
Weed	A plant growing out of place or where it is not wanted: often characterised by high seed production and the ability to colonise disturbed ground quickly (Stralberg, et al. 2009). Weeds include both exotic and Australian native species of plant naturalised outside of their natural range.
WH&S	Workplace Health and Safety
wind direction	The direction from which the wind is blowing
wind erosion	Detachment and transportation of loose topsoil or sand due to action by the wind
wind rose	A meteorological diagram depicting the distribution of wind direction and speed at a location over a period of time
Work Zone	A designated area of the site that is utilized for the efficient and safe operation of construction activity.
Zone of Theoretical Visibility (ZTV)	A map, usually digitally produced, showing areas of land within, which a development is theoretically visible.
ZTV	Zone of Theoretical Influence
OMP	Operational Management Plan
FTC	Flight Training Centre
FSW	Flight Simulator Wing
EPH	Emergency Procedures Hall
FTE	Full Time Equivalent
AS 1428.1-2009	AS 1428.1-2009 Design for access and mobility Part 1: General requirements for access – New building work, Standards Australia, November 2010

Abbreviation	Meaning
AS 1735.12-1999	AS 1735.12-1999 Lifts, escalators and moving walks Part 12: facilities for persons with disabilities, Standards Australia, May 1999
PM2.5	particular matter with an equivalent aerodynamic diameter of 2.5 microns or less
Class 2.1 Aerosols	Disposal (non-refillable) container filled with propellant gas and product discharged via a nozzle at the container top.
Class 2.2	Non-Flammable/Non-Toxic gas held in cylinders
Class 3	Flammable liquids held in packages (containers)
Class 5	An office building used for professional or commercial services
Class 6.1	Toxic substances held in packages (containers)
Class 7a	A building which is a carpark
Class 8	Corrosive Substances held in packages (containers)
Class 9	Miscellaneous Dangerous Goods
Class 9b	An assembly building, including a trade workshop, laboratory or the like
SEPP 33	<i>State Environmental Planning Policy No. 33 – Hazardous and Offensive Developments</i>
SEPP 55	<i>State Environmental Planning Policy No. 55 - Remediation of Land</i>
SEPP 64	<i>State Environmental Planning Policy No. 64 – Advertising and Signage</i>
Premises Standards 2010	<i>Disability (Access to Premises – Buildings) Standards 2010</i> , Attorney-General's Department Canberra, May 2010
BBDP 2013	Botany Bay Development Control Plan 2013
AS/NZS 1428.4.1:2009	AS/NZS 1428.4.1:2009 Design for access and mobility Part 4.1: Means to assist the orientation of people with vision impairment – tactile ground surface indicators, Standards Australia, December 2009
AS/NZS 2890.6:2009	AS/NZS 2890.6:2009 Parking facilities Part 6: Off-street parking for people with disabilities, Standards Australia, October 2009

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