QANTAS GROUP FLIGHT TRAINING CENTRE

31 JULY 2019

PUBLIC DOMAIN & LANDSCAPE REPORT

scott carver

PREPARED FOR

Qantas Airways Ltd (Qantas)
10 Bourke Rd,
Mascot, NSW, 2020

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SSDA RTS UPDATES

CONTENTS

GLOSSARY

TERM	DEFINITION
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 at-grade carparking 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 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.
MASCOT CAMPUS	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. The following lots are leased by Qantas: Lot 14 DP 1199594 and Lot 2 DP 792885 and equates to 2.7ha of land.
JETBASE	Qantas leased land within the boundaries of Sydney Kingsford Smith Airport.
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.

LIST OF FIGURES

01

INTRODUCTION

1.1 INTRODUCTION

Scott Carver has been commissioned by Qantas Airways Ltd (Qantas) to prepare this report in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the SSD 10154 for the development of a new flight training centre at 297 King Street, Mascot.

DESCRIPTION OF SITE AND LOCALITY

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

Figure 1 Location Plan

Key features of the site are as follows:

- The site is approximately 5.417ha and is an irregular shape. It is approximately 240m in length and maintains a variable width of between approximately 321m in the northern portion of the site and approximately 93m along the King Street frontage (refer to Figure 2).
- The site possesses a relatively level slope across the site. An open Sydney Water drainage channel bisects the northern portion of the site in an east-west direction. There are some isolated changes in level immediately adjacent to this channel. A Site Survey Plan accompanies the application which details the topographic characteristics of the site.
- Multiple mature Plane trees are scattered throughout the site. A variety of native and exotic trees and vegetation also exist around the perimeter of the site which help screen the site from surrounding uses.
- Site improvements include at-grade carparking for Qantas staff, an industrial shed to store spare aviation parts, a substation, a disused gatehouse, a Sydney Water Asset with two driveways over it, the Qantas catering facility and Qantas tri-generation plant.
- The site forms part of a larger land holding under the ownership of Qantas that generally extends between Qantas Drive to the west, Ewan Street to the south, Coward Street to the north, with the Qantas “Corporate Campus” fronting Bourke Road.
- Vehicular access to the site from the local road network is available from King Street. The site has intra-campus connections along the northern boundary in the form of two connecting driveways in the north-eastern and north-western corner of the site along the northern boundary which link it to the broader Mascot Campus.
- The site is located within the Bayside LGA.

Figure 2 Existing Site Plan

Key features of the locality are:

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


North-eastern entrance from Qantas Corporate


Northern carpark


Main carpark


Eastern Boundary


Western Boundary


Sydney Water Drainage Channel


Existing Warehouse Storage


Travelodge & Wilson Carpark


King Street Frontage

Figure 3 Site and Location Photographs

1.2 PROJECT DESCRIPTION

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 carpark. 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 centre 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 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 carparking for approximately 40 spaces and a bus drop-off zone at the northern site boundary.

CARPARK

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

Figure 4 Artists Impression of the Proposed Development

02

LANDSCAPE SITE ANALYSIS

2.1 EXISTING LANDSCAPE

The existing site has a number of landscape elements that contribute to its existing character as follows:

NORTHERN CARPARK

Separated from the main carpark by the heavily vegetated Sydney Water Channel the northern carpark contains a number of large native trees between the car bays and along the channel boundary fence. The trees consist largely of *Casuarina* species. In general these trees are in good condition and are of substantial size, as such they will be retained where possible outside the proposed multi-storey carpark's footprint.

MAIN CARPARK

The main carpark contains a single existing building surrounded by bitumen carparking with a grid of *Platanus* species between the bays. In general these trees are in poor condition. These trees will all be removed as part of the works due to the extent of the Flight Training Centre building and surrounds.

EASTERN BOUNDARY

To the northern end the eastern boundary is flanked by a planted bank with existing tree and shrub planting, and weeds have taken hold. The area will be weeded and additional planting incorporated to fill gaps.

The central and southern portions of the boundary have *Casuarina species* trees growing closely along the fence line. Where possible these trees will be retained as they perform an important function screening the site. The existing boundary fence will be retained.

WESTERN BOUNDARY

A row of *Lophostemon confertus* in good health exist along the western boundary planted close to the fence bounding the rail line. At low level shrubs, mostly *Callistemon* species, provide additional screening. It is proposed to retain both the trees and shrubs along this boundary and augment this planting to fill gaps where they exist. The existing boundary fence will be retained.

SYDNEY WATER CHANEL

The channel is owned by Sydney Water and is divided into two main areas by small existing bridges. The Sydney Water land is fenced and remains largely unmaintained. No works are proposed within the channel itself and the fence will be retained.

Adjacent the northern side of channel, within the subject site, a number of large trees exist. On the western portion of the channel is a row of significant *Melaleuca* species trees which will be retained as they are not impacted by the works. Along the northern side of the eastern portion of the channel is a double band of *Casuarina* species trees, which will be retained and protected.

Stands of Casuarina glauca (She-oaks)

Sydney Water Drainage Channel

Boundary planting of Lophostemon confertus

Asphalt and concrete surfacing

King Street interface

Overgrown verges

Figure 5 Existing Site Landscape Photographs

KING STREET FRONTAGE

King Street is a public road terminating at the rail land with no through route. Given the land adjacent the site is also owned by Qantas and used for at grade parking there is very limited public traffic using King Street for the extent of the site. From this end of Kent Street the development will be clearly visible and as such vegetation to provide visual softening from the public domain will be provided.

The verge on King Street is raised above the adjacent existing carpark level and as such this level difference will need to be mitigated as part of the works. This may have some implications on the retention of the existing eastern boundary trees.

Within the verge there are five existing street trees alternating between *Agonis flexuosa* and *Eucalyptus scoparia*. Inside the boundary along this frontage there are a further eight trees consisting of *Platanus x hybrida*, *Casurarina glauca* and *Lophostemon confertus*. The proposed introduction of vehicle entries along the street frontage and proximity of the proposed building will result in the removal of some of these existing trees.

SITE SURROUNDS

The site is quite internalised within the Qantas Campus with only glimpsed views into the area available from along O'Riordan Street, Bourke Street, Coward Street, Kent Road and Chalmers Crescent. The new Travelodge Hotel with associated Wilson Carpark and Goodman's Corporate Connect will have the widest views of the development. The Landscape and Visual Impact Assessment (LVIA) prepared by Scott Carver as part of the application, explains the significance of the impacts and key mitigation measures in detail.

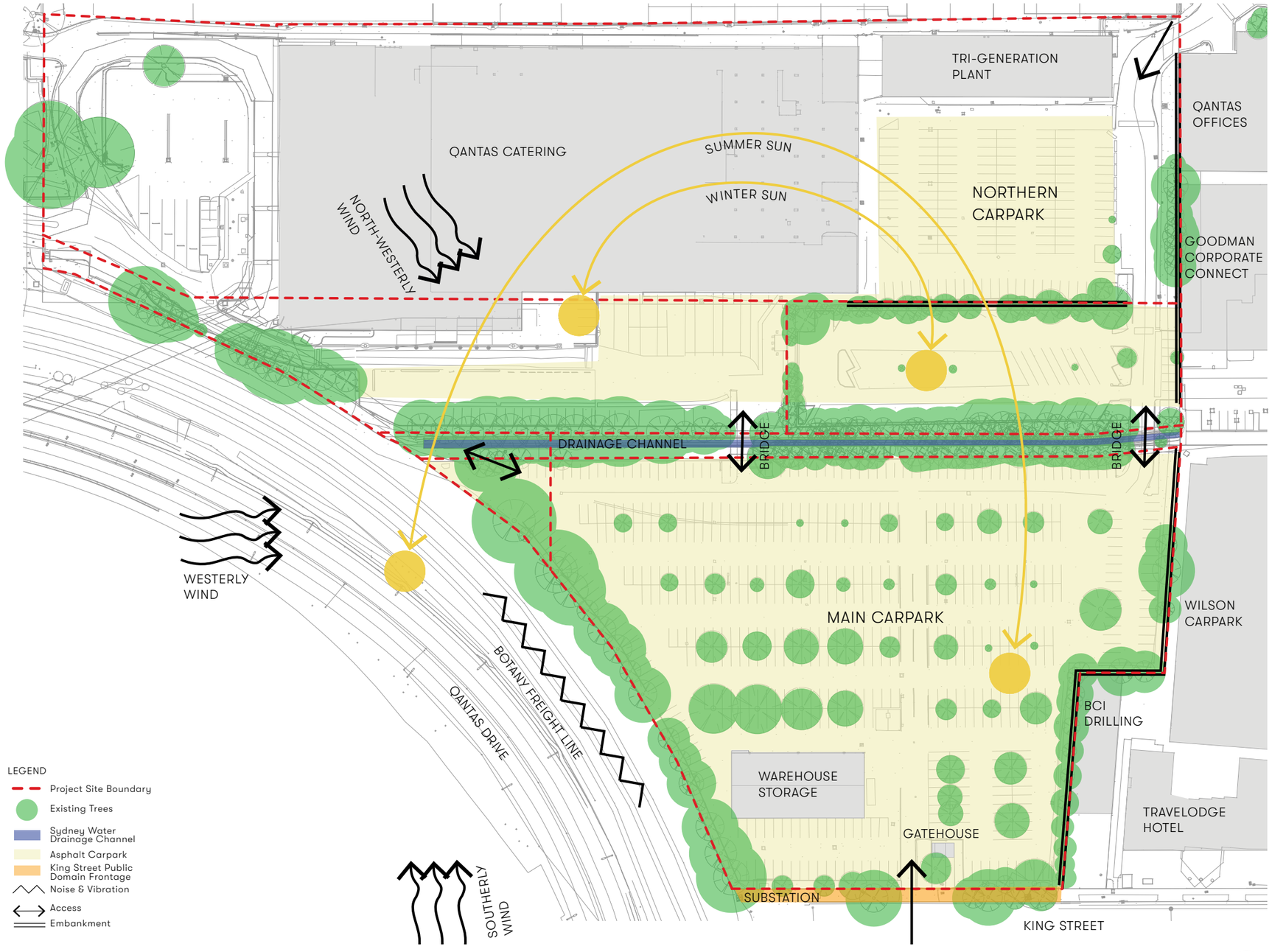

Figure 6 Landscape Site Analysis Plan

2.2 EXISTING TREES

The site contains a significant number of existing trees as shown on Figure 7.

The species, size and condition of these trees are detailed in the Arborist's Report by The Ents Tree Consultancy.

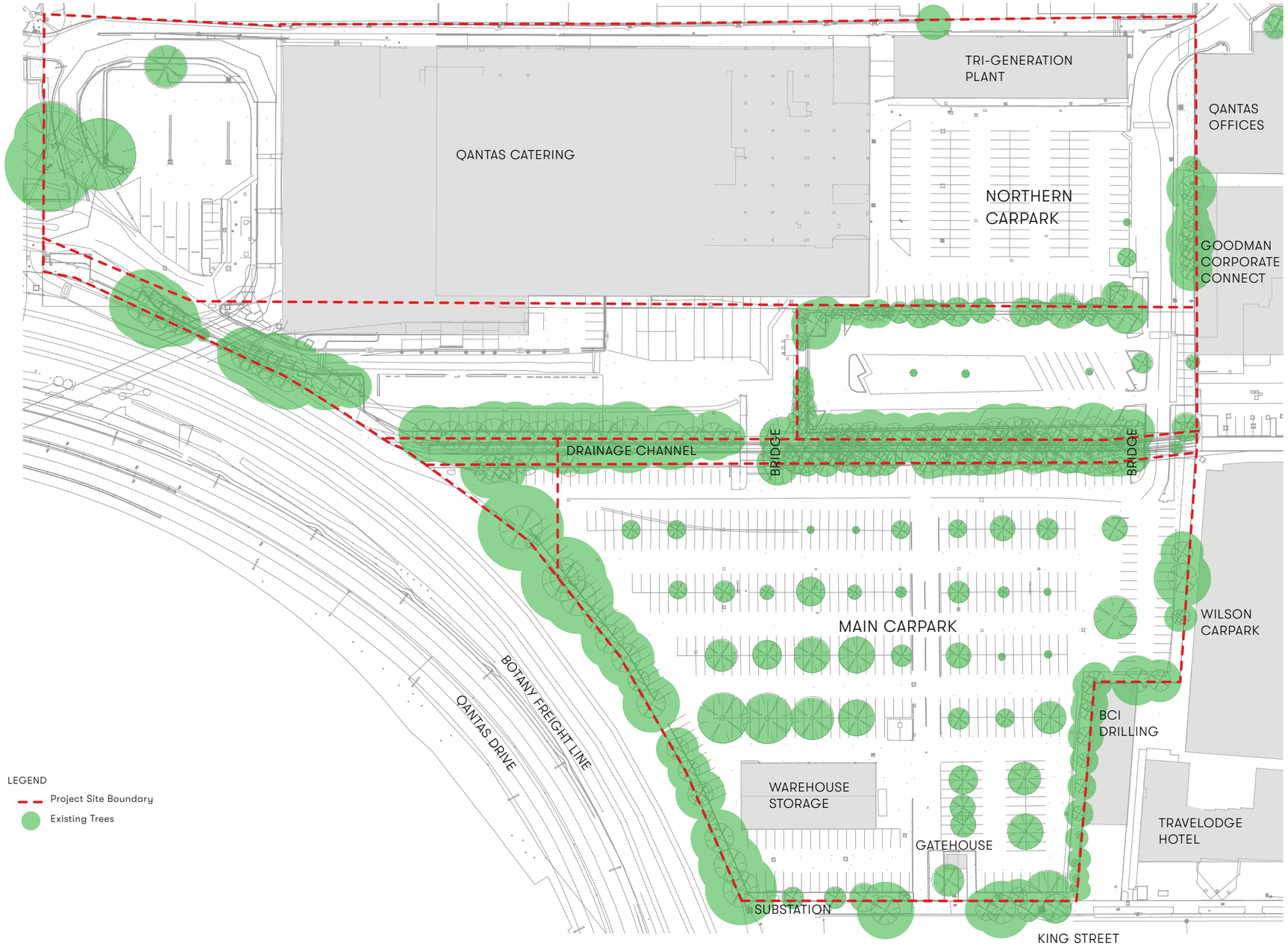

Figure 7 Existing Trees Plan

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LANDSCAPE DESIGN

3.1 LANDSCAPE STRATEGY

The Project will transform what is essentially an unmaintained on grade carpark into a new training facility which will require a higher level of access, safety, functionality and amenity.

The facility itself is largely internally focused functionally. But it is important that the landscape offer a suitable surrounding, that maximises functionality for the facility and continues to contribute to the environmental value of the local area through the provision of landscape.

The landscape strategy for the site is to maximise the impact of the landscape as far as possible through the retention and argumentation of the existing plantings and incorporating new landscape where practical. A number of factors have been considered when determining the extent, location and type of landscape intervention as follows:

+ Functionality of the facility
+ Security of the facilities
+ Safety and security of staff and visitors,
+ Accessibility within the existing constraints of the site
+ Maximising retention of existing trees for their environmental value and screening effects,
+ Minimising visual impacts on surrounding development
+ Enhancing staff and visitor amenity, and
+ Enhanced environmental contribution through incorporation of additional native landscaping

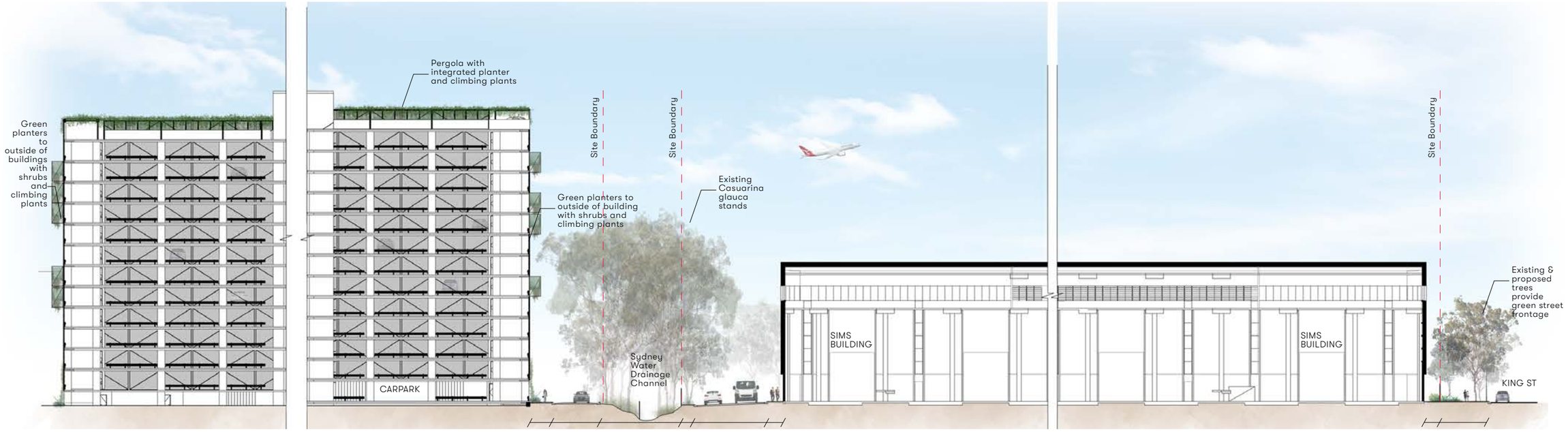
The design takes into consideration the requirements of the Botany Bay Development Control Plan 2013 (Amendment 8) 05/09/2017 (The DCP) including in particular:

+ Part 6 - Employment Zones (as relevant to landscape and site design)
+ Part 3L - Landscaping and Tree Management
+ Landscape Technical Guidelines for Development Sites.

Figure 8 Illustrates the proposed Landscape Site Plan. Following is a description of each of the key landscape areas and treatments.

Figure 8 Landscape Site Plan

North / South Section



East / West Section

Figure 9 Landscape Site Sections

3.2 KEY AREAS & TREATMENTS

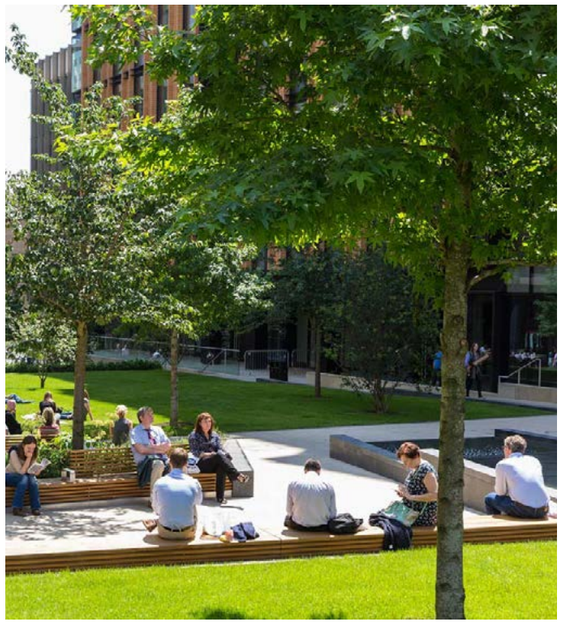
FLIGHT TRAINING CENTRE ENTRY FORECOURT

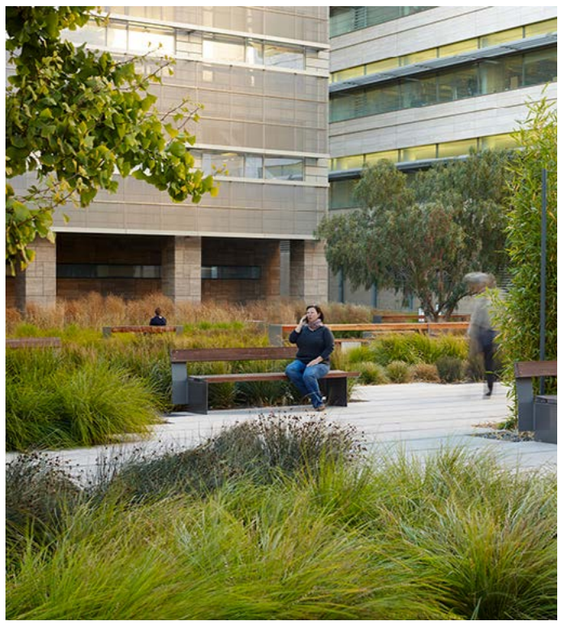
The space adjacent the entry of the Flight Training Centre needs to accommodate a number of functions as follows:

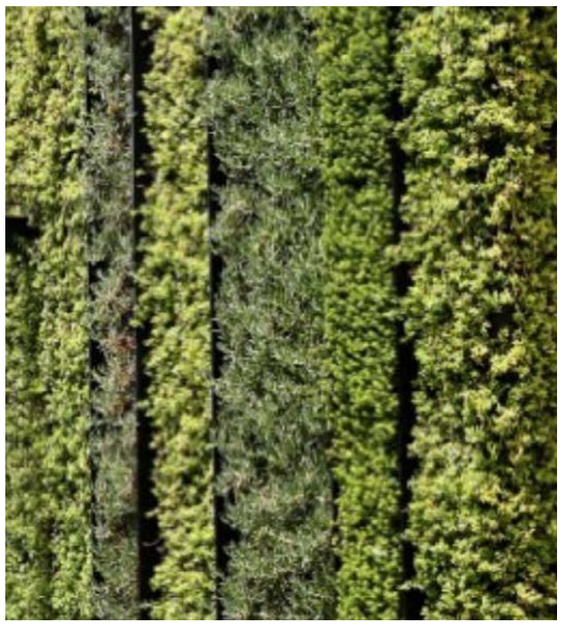
- 2400m fenced forecourt to allow after hours security and the inclusion of an after hours pedestrian gate
- Paved main entry zone with signage and main gate (to remain open during the day). A largely open area providing clear visual connection from the internal street to the entry. In keeping with the Qantas Corporate Headquarters forecourt in Bourke Road a series of stone seats will provide amenity to the entry area. This space must also accommodate access for the removal of the simulators during replacement
- Staff breakout area with fixed benches and shade structure supported against the security fence and the potential for additional movable furniture.
- Landscape provides shade, visual amenity and soft screening from the internal street and of the fence.
- Fire Trainer (Container)
- Access to the cabin training facilities including for replacement of training equipment.
- Internal bus stops (2 directions) with bus shelter structure on the southern side with a green roof
- Car parking related directly to the Flight Training Centre.

Figure 10 Flight Training Centre Entry Forecourt Plan







GREEN FACADE TO SIMS MAIN ENTRANCE

+ Climbing plants to provide arrival green facade at the the SIMS Main Entrance.
+ Plants to grow across stainless steel wires; design inprired by Qantas flight paths from Sydney.

Figure 11 Green facade to Sims Main Entrance

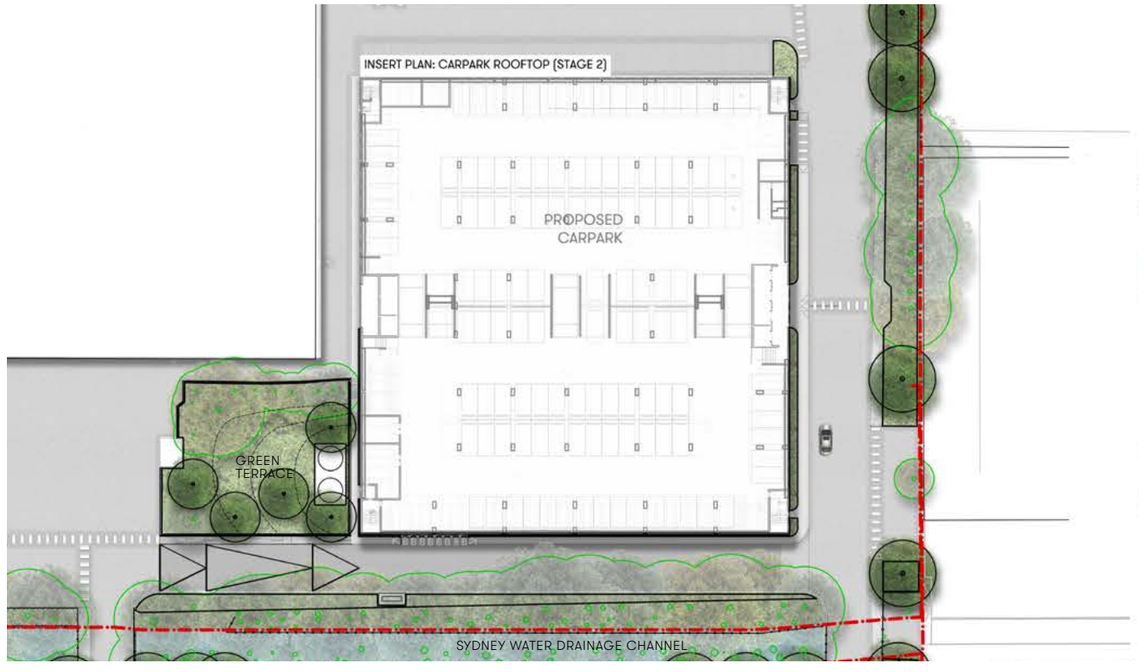
CARPARK LANDSCAPE

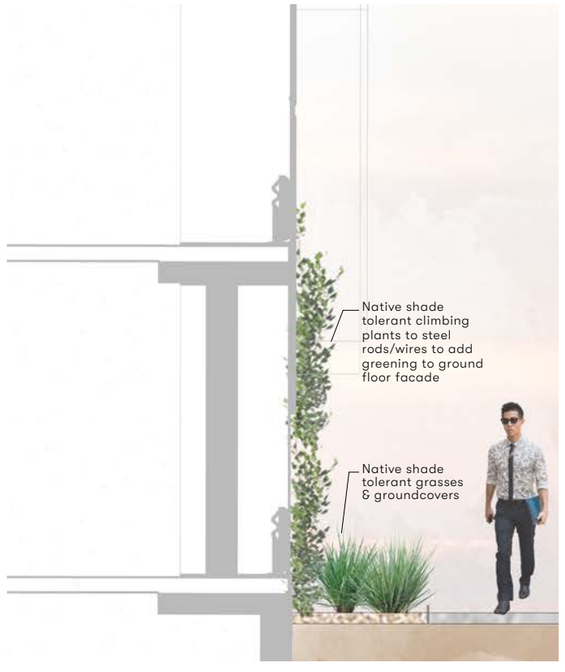
The multi level carpark will incorporate a number of landscape elements to improve its visual quality and add to the landscape character of the site for the amenity of users. These elements are as follows:

+ To the west retain the existing trees and augment with additional landscape green terrace outside the building footprint.
+ To the south along the Sydney Water Chanel, retain and protect the existing growth of *Casuarina* trees.
+ Along the facade to the north, east, south & west of the carpark building, a planter is incorporated outside the building line planted with climbers to grow up the mesh of the facade for the height of the ground floor.
+ On the rooftop level of parking (level 13), a raised planter and pergola structure will accommodate both trailing and climbing plants. This landscaped treatment will perform the duel function of providing shade to the parked cars and visual mitigation for taller surrounding buildings and the public domain where the structure will be visible.
+ Along the northern, eastern and southern facade there are 21 no. facade planters that are sized at approximately 1.5m x 4m in size cantilevered from the building. These provide pockets of green in the carpark facade feature a mix of native shrubs and climbing plants, which provide green visual amenity to the surrounding buildings where the structure will be visible. (Figure 13, 14, 15, 16)

Figure 12 Proposed Multi Level Carpark Ground & Roof Plans

Figure 13 Ground & Rooftop Facade Section





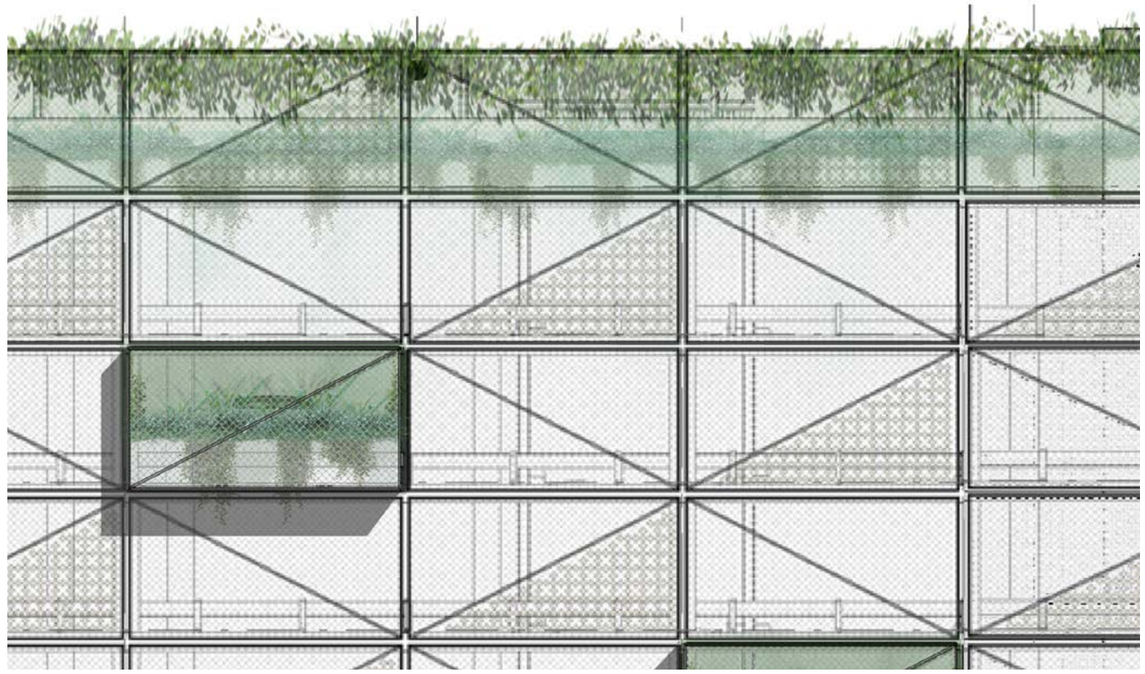


Figure 14 Proposed Multi Level Carpark Facade Planter Detail

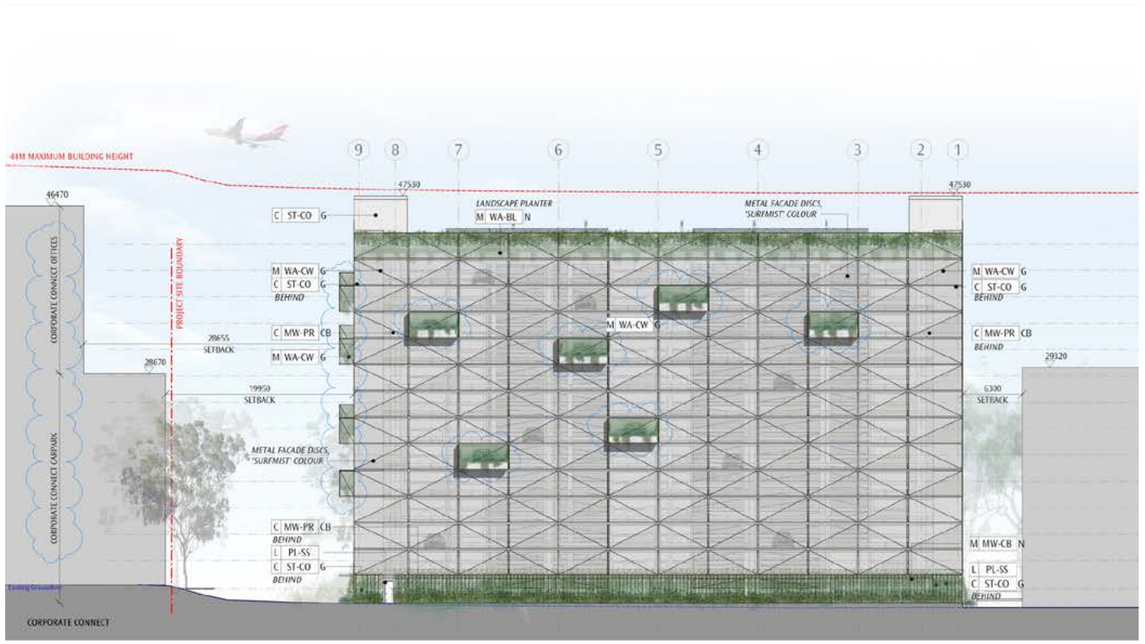
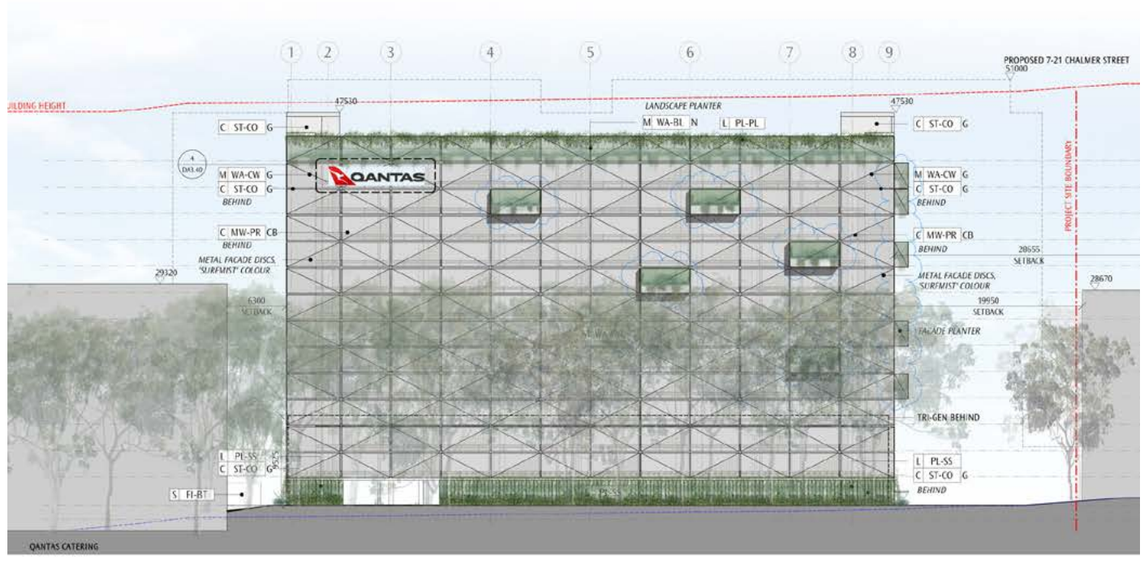
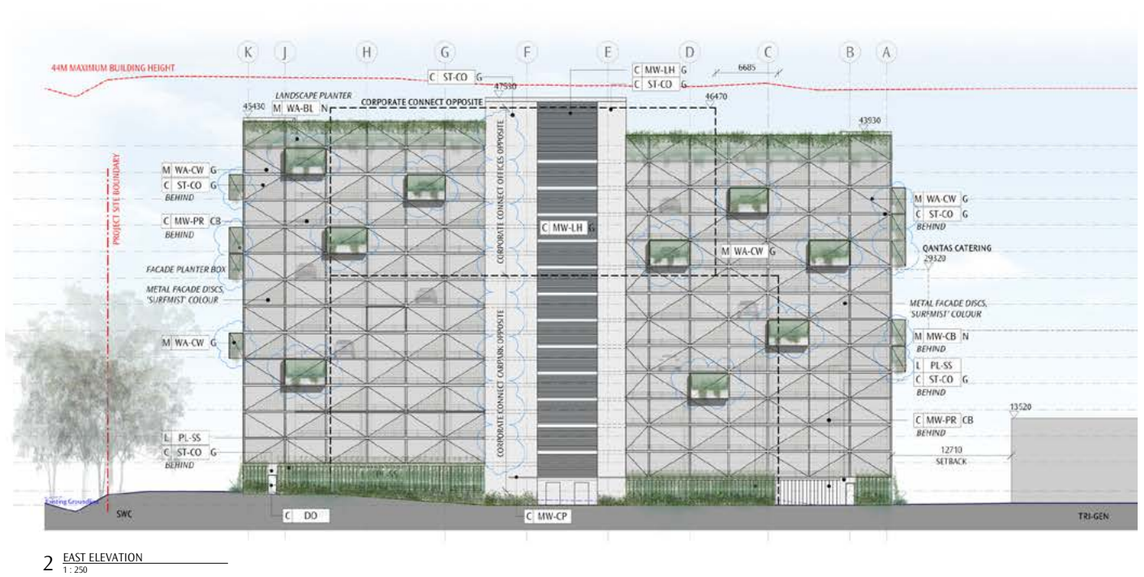


Figure 16 Proposed Multi Level Carpark Northern Elevation



:VATION

Figure 15 Proposed Multi Level Carpark Southern Elevation



2 EAST ELEVATION
1 : 250

Figure 17 Proposed Multi Level Carpark Eastern Elevation

EASTERN BOUNDARY TREATMENT

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

WESTERN BOUNDARY TREATMENT

The trees on the western boundary will be retained and protected, along with the existing under storey planting. Augmentation of the planting will be undertaken where gaps exist.

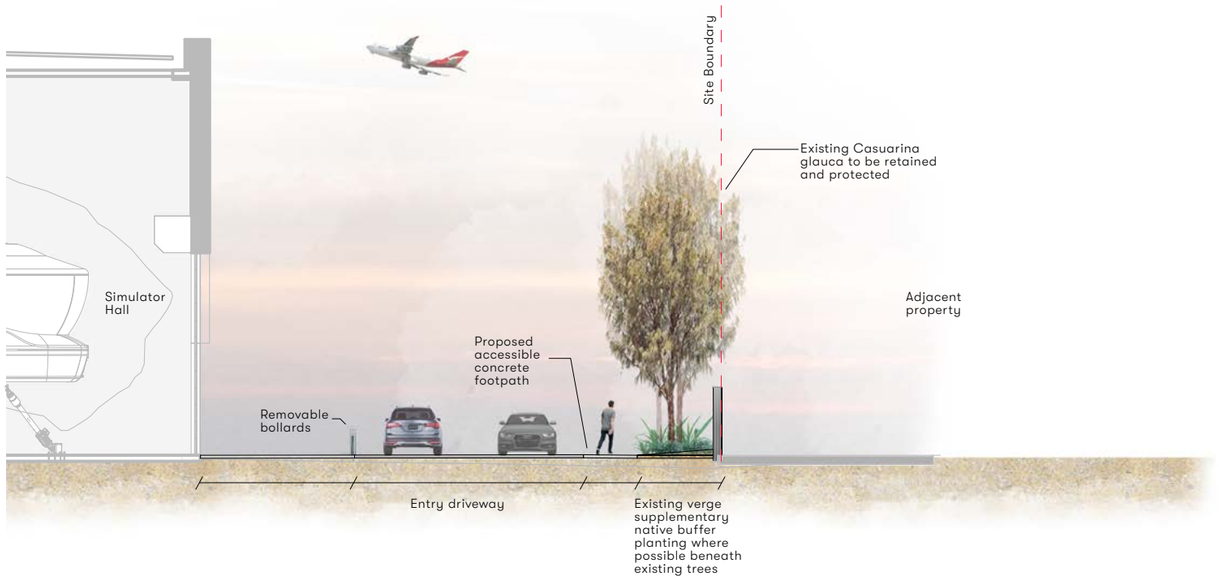


Figure 18 Eastern Boundary Typical Section

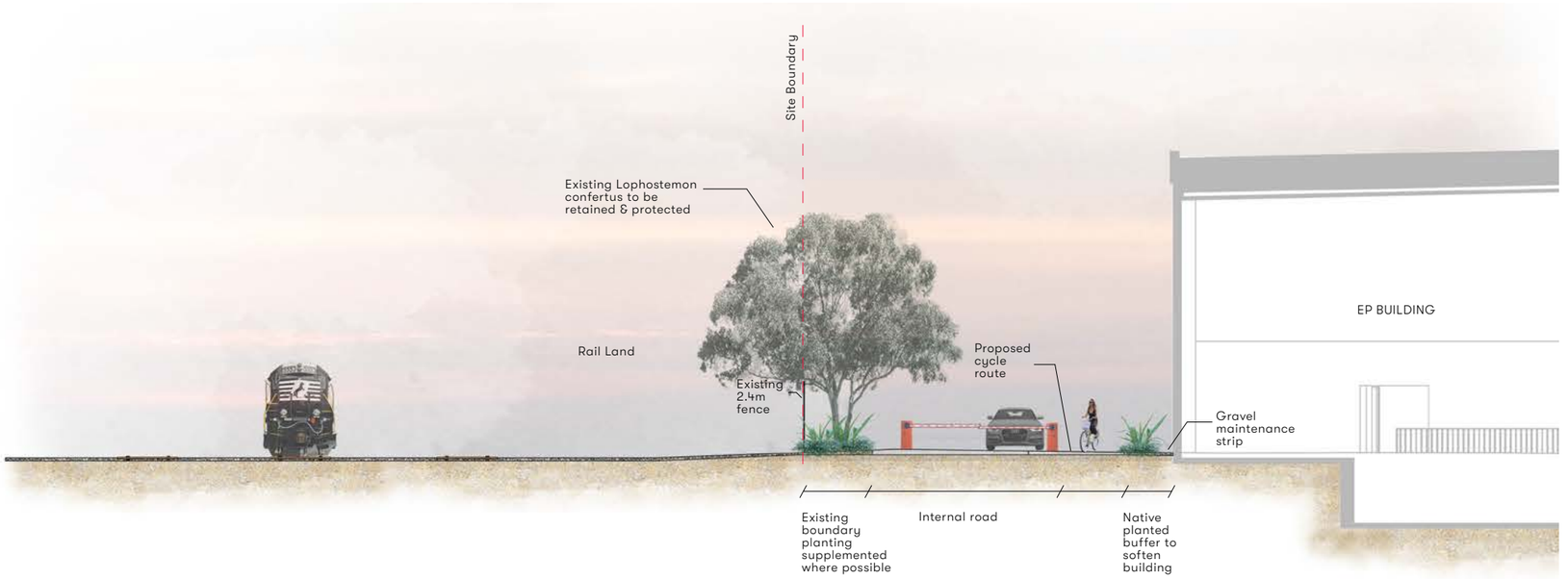


Figure 19 Western Boundary Typical Section

KING STREET FRONTAGE

The frontage to King Street offers the only major interface to the public domain. For security reasons the site will be fenced along this frontage with two vehicular gates to be open during the day (with boom gate access) and closed at night with a pedestrian access gate. Landscape planting will be incorporated along the fence line to soften it visually including small trees with clear trunks and lower level planting to ensure passive surveillance is maintained.

Three of the existing street trees will be removed to allow the new eastern site entry, two *Eucalyptus scoparia* and one *Agonis flexuosa*. The public verge will be reinstated including turf and 4 additional Eucalyptus haematoma to compliment the existing Eucalypt trees. A no fines porous concrete footpath 1.2m wide shall provide pedestrian access along King Street. The porous concrete shall have minimal disturbance to the the existing tree root zone and allow water to percolate down.

Signage will be incorporated to provide orientation to the facility entries.

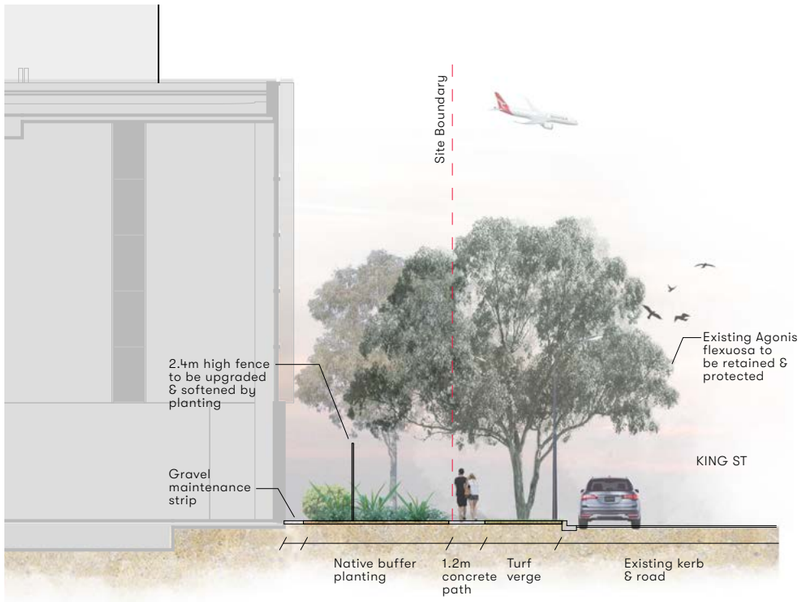


Figure 20 King Street Frontage Typical Section East

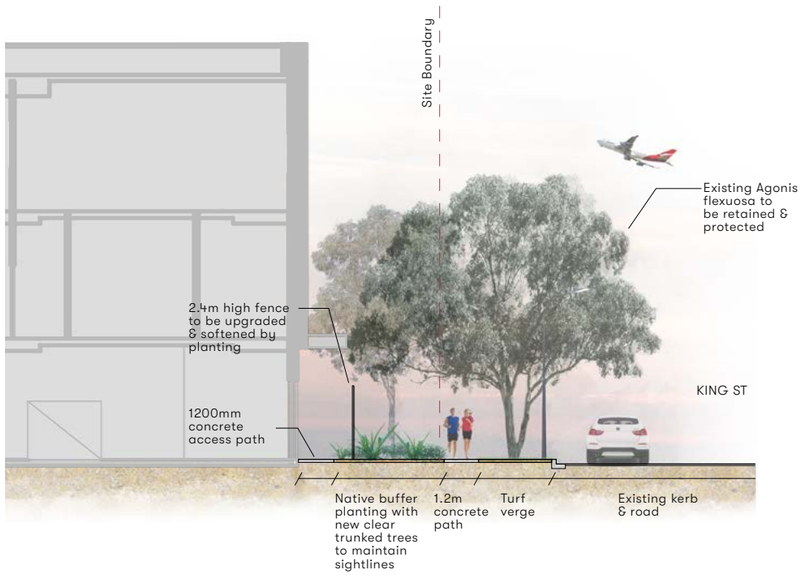


Figure 21 King Street Frontage Typical Section West

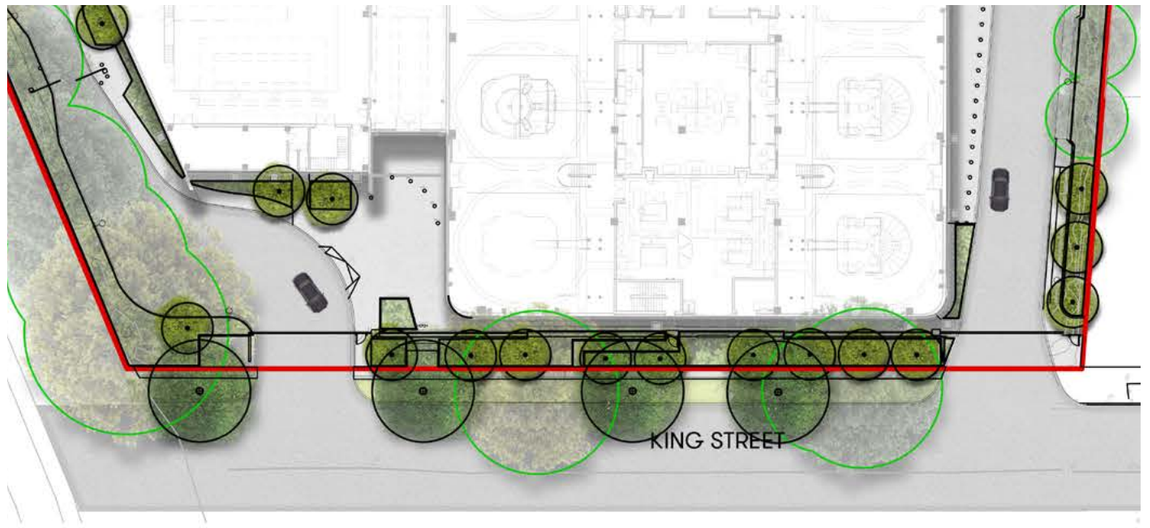


Figure 22 King Street Frontage Streetscape & Public Domain

FLIGHT TRAINING CENTRE SURROUNDS & SERVICE AREAS

Planting and soft landscape will be incorporated wherever possible around the building, in residual areas and to screen service areas. Areas of paving are provided where building, maintenance or equipment replacement access is required.

Where fencing can be avoided bollards are used to restrict vehicular access for building security and to allow periodic access.

SYDNEY WATER CHANNEL

No works will be undertaken within the Sydney Water land and the existing fence will be retained. The areas adjacent to the channel will be weeded, also native planting provided to visually soften the fence line where area is available. Planting will also be added where possible outside critical root zones of the existing trees to be retained. New trees are incorporated within these areas to increase the site canopy cover including within bays of the carparking.

3.3 ACCESSIBILITY & SAFETY

ACCESSIBILITY

The facility will be accessible by car, internal Qantas bus, on foot and by bicycle. Pedestrian and cycle access will be provided from the Qantas Corporate Headquarters through to King Street. While the carpark and Flight Training Centre buildings and surrounds will be equitably accessible, existing constraints will mean access between the Qantas Corporate Headquarters and across the Sydney Water channel (via two existing bridges) will not accommodate for disabled access. However an accessible walkway will be provided from King Street to the new facility & accessible carparking is provided on site.

Paving materials, inclusion of tactiles and other relevant measures will be implemented as part of the landscape works for compliance with the relevant standards.

An Access Report has been prepared by City Plan as part of this application.

SAFETY & CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

The proposal has considered the principles of Crime Prevention Through Environmental Design (CPTED) and the enhancement of personal safety throughout the site.

Places of concealment have been minimised and clear signage / way-finding will be incorporated. The main lobby is clearly visible, addressed from the internal road. The internal reception will have a direct view to this entry area.

Planting treatments will maintain clear sight lines through the use of clear trunked trees and lower level understory species where visibility for safety is required.

A safe lighting level will be incorporated to encourage surveillance and enhance safety. This will include the service areas which will also be appropriately lit for safety.

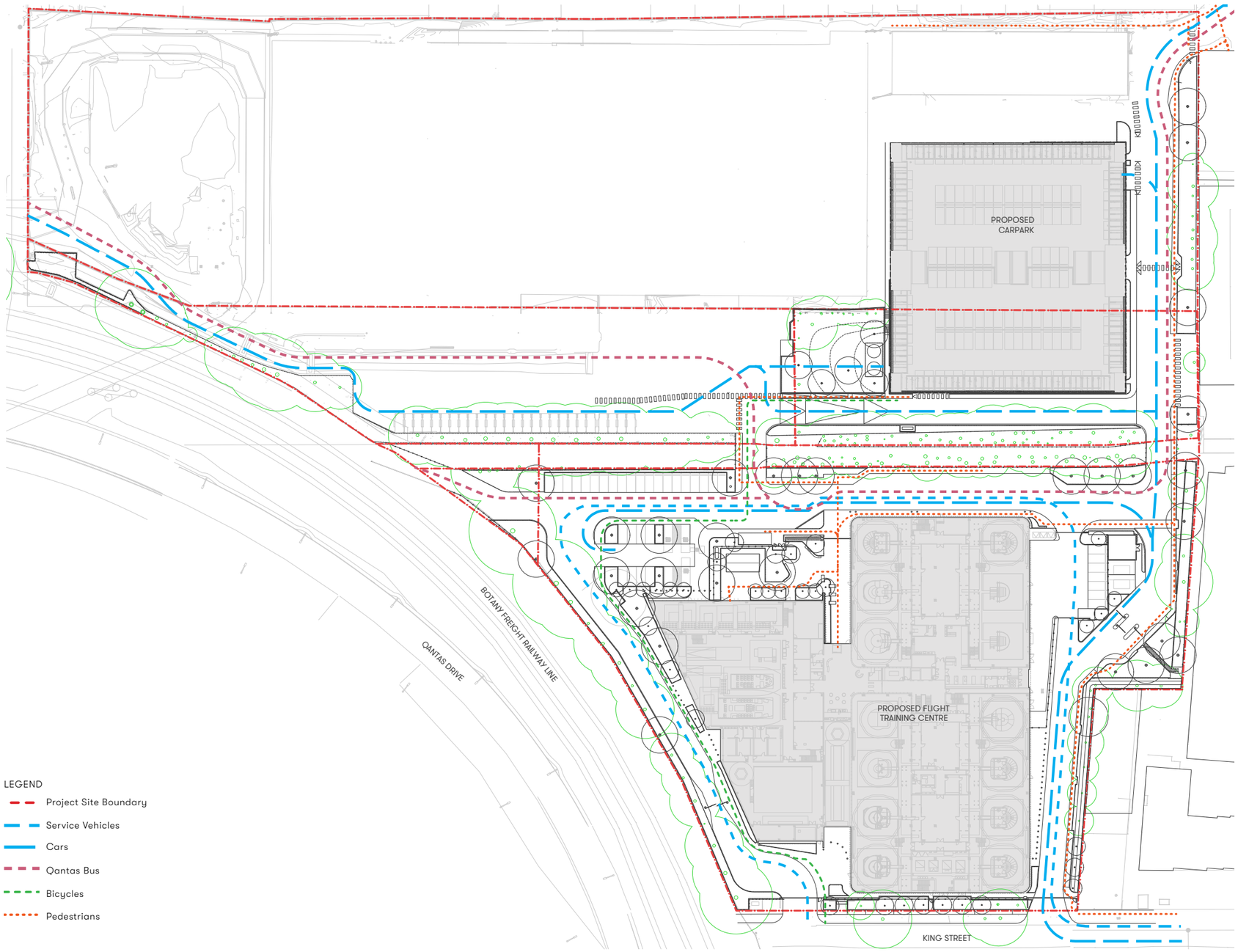


Figure 23 Access Diagram

3.4 TREE REMOVAL, RETENTION & REPLACEMENT

TREE REMOVAL, RETENTION AND REPLACEMENT

The proposal will require the removal of a significant number of the existing trees on site in order to accommodate the Flight Training Centre and Carpark buildings. Most of these trees are in poor health and are not identified as having high retention value as individual specimens.

The remainder of the trees, located to the perimeter of the site and adjacent the Sydney Water channel, will be retained and protected during the works. The trees proposed for removal and retention are illustrated in Figure 18 opposite.

The details of the measures required to protect these trees during the works are provided in the Arborist's Report by The Ents Tree Consultancy.

The trees to be removed will have 1:1 ratio replacement by the proposed trees. The trees numbers are as follows:

Trees to be removed: 86

Proposed trees: 92

All proposed trees shall be native and/or endemic where possible*. All proposed trees shall also have 200L container size*. Refer to Planting Schedule for more details on tree species.

* dependent of nursery availability

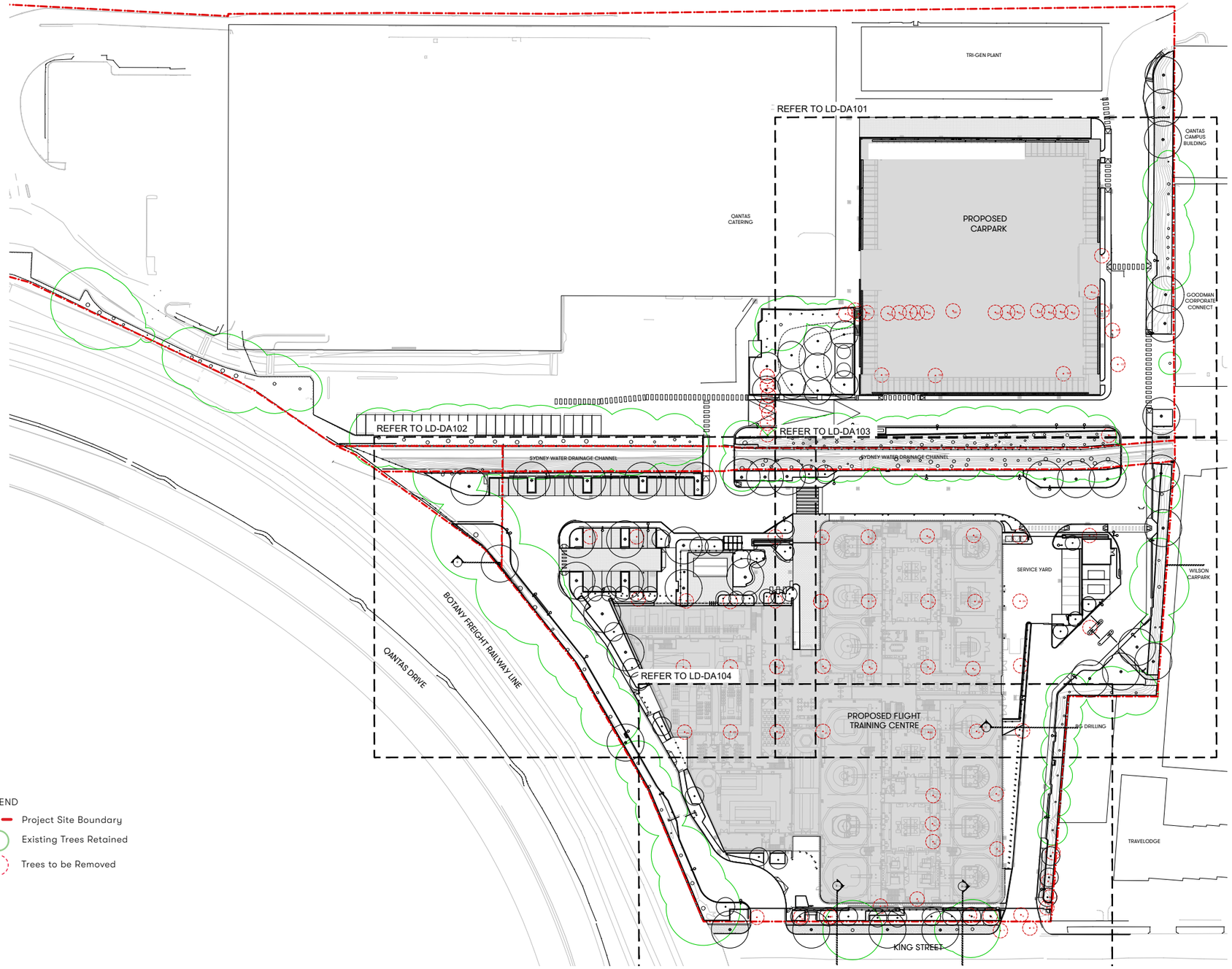


Figure 24 Tree Removal, Retention & Replacement Plan

3.5 CANOPY COVER

CANOPY COVER

Canopy cover has an important role to play in the reduction of urban heat island effect and human comfort. The Greater Sydney Commission has set a target to increase the current 23% canopy cover to 40%.

The site, including the Sydney Water land currently has a canopy area of 9096m2. Immediately following the site's development, 3228m2 of this cover will be removed. The additional planting of canopy trees will result at maturity in a future canopy cover of 9729m2, without assuming any further growth of the existing trees retained, which will further increase this figure.

In addition, to compliment this, it is proposed that the bus stop shelter shall have a green roof and the car park shall have a green pergola.

The existing and additional proposed canopy cover is illustrated opposite in Figure 19.

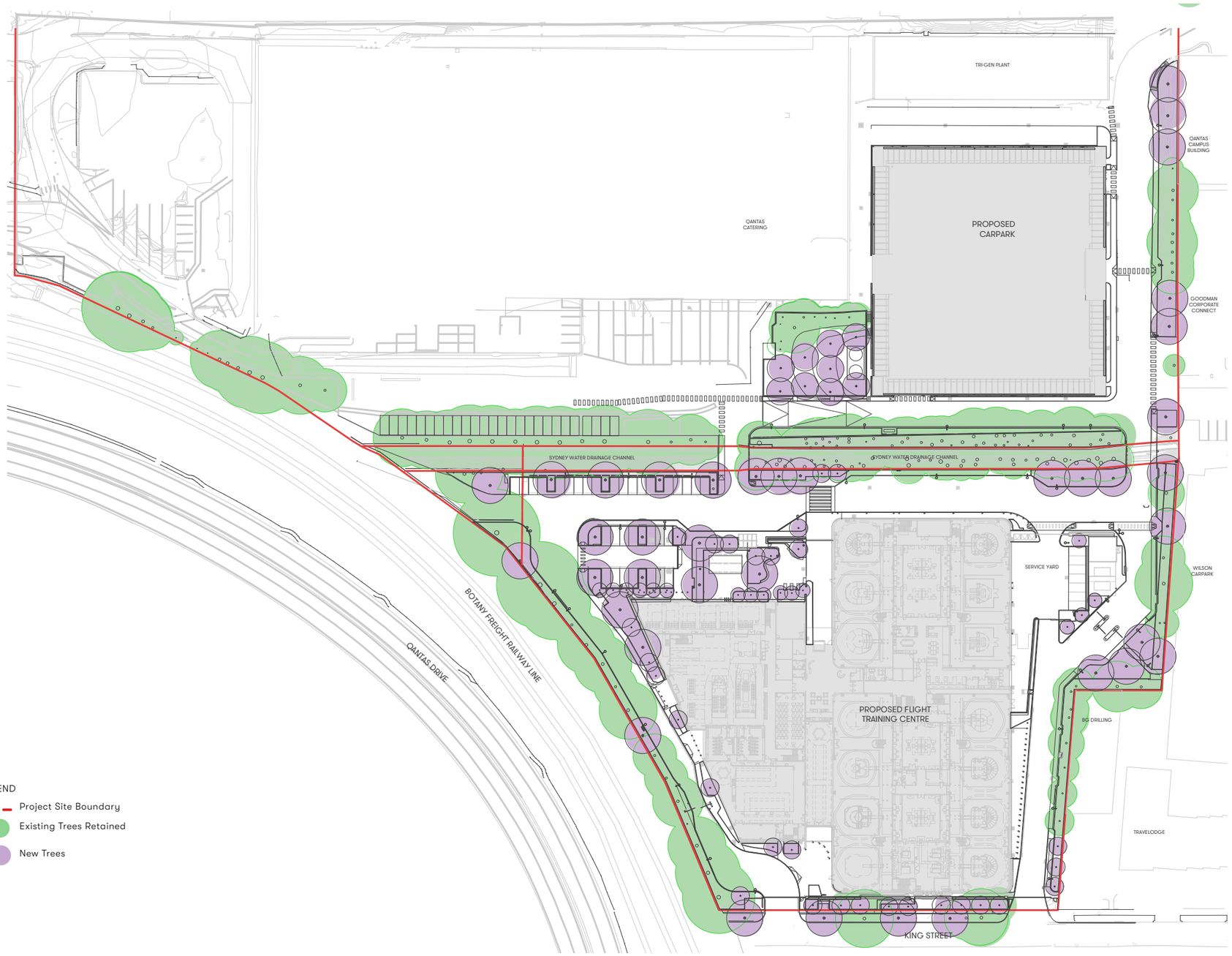


Figure 25 Canopy Cover Plan

3.6 LANDSCAPE AREA PROVISION

The DCP calls for a minimum of 10% of a site to be landscaped. The front setback on King Street has to be excluded form this calculation in accordance with the DCP part 6.3.5. On the ground floor the landscape area has been maximised where possible while considering access, servicing and maintenance access. In particular the periodic replacement of the simulators requires significant hard stand access. Additional landscape area is achieved by providing planting above ground to including a green roof to the bus shelter, 21 no. facade planters to the car park and rooftop planters to the perimeter if the carpark rooftop.

The site which has a total area of 52,570m2 achieves a soft landscaped area of **4845m2** or **9.21**%.

In addition to this a vertical landscape area has been calculated to show the extent of facade that will be covered in climbing plants, this area amounts to approximately **1049m2** or **1.99%** of the site. In total the landscape area including vertical area is **5894m2** or **11.21 %.**

DEEP SOIL

There is no % requirement for deep soil in employment zone in the DCP. Along with the landscape area, deep soil zone has been maximised where possible. According to the DCP setbacks are included in the deep soil calculation.

The site which has a total area of 52,570m2 achieves a deep soil area of **4739m2** or **9.01**%.

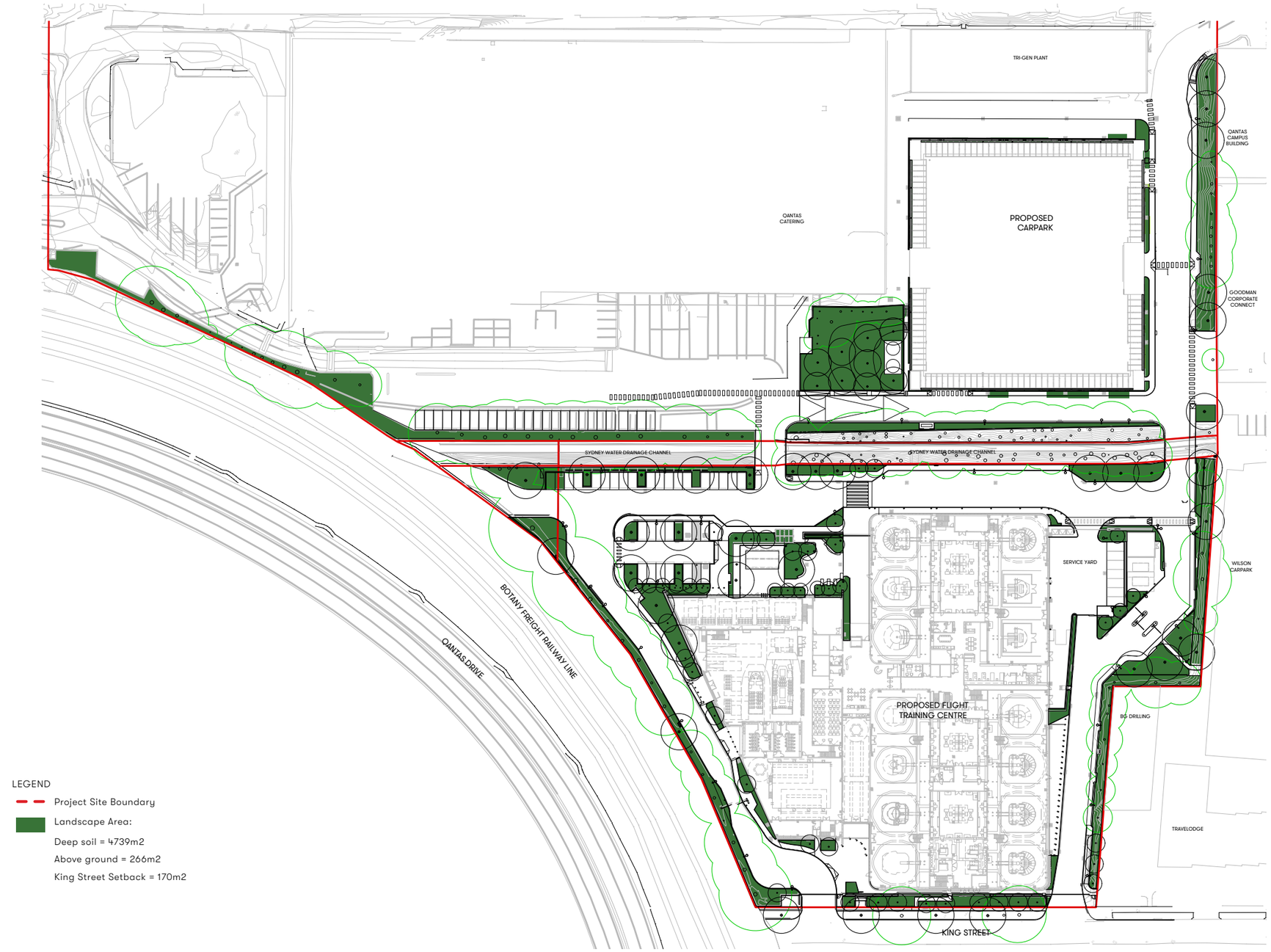


Figure 26 Landscape Provision Plan

3.7 PLANTING STRATEGY

The planting provides a diverse palette of native species selected from those which would have been found around the site naturally, as well as those identified in Part 10 of Council's Landscaping Guidelines for Development Sites as species which perform well in the local area.

The overall character of the planting is to be dense and lush assisting to provide relief from the scale of the building at the level which people will interact with it.

Tree planting has been incorporated where space allows to provide shade and further visual softening, being native these species are evergreen species. The selection of the locations of various species and the openness of their canopies has been made based on the use of each area and the function the trees are performing.

Species for the climbing and rooftop planting have been selected for their tolerance to the harsh solar and wind exposure which they will experience at various times.

Irrigation will be provided in key areas, connected to the rain water detention tank, but the species have also been selected for there relatively low water needs as well as their aesthetic qualities.

Corymbia maculata

Elaeocarpus eumundi

Elaeocarpus reticulatus

Hymenosporum flavrum

Ceratopetalum gummifera

Livistona australis

Botanic Name	Common Name	Mature Size	Endemic/ Native/Exotic	Pot Size	Spacing
Trees					
Angophora costata	Red Gum	20m x 12m	Native	200L	As Shown
Corymbia citriodora	Lemon Scented Gum	35m x 20m	Native	200L	As Shown
Corymbia maculata	Red Bloodwood	20m x 10m	Endemic	200L	As Shown
Elaeocarpus eumundi	Broad Leafed Quondong	7m x 2m	Native	200L	As Shown
Elaeocarpus reticulatus	Blueberry Ash	15m x 5m	Native	200L	As Shown
Eucalyptus haemastoma	Scribbly Gum	10m x 8m	Native	200L	As Shown
Livistona australis	Cabbage-tree Palm	30m x 1m	Native	200L	As Shown
Lophostemon confertus	Brush Box	15m x 10m	Native	200L	As Shown
Pyrus calleryana	Callery Pear	15m x 6m	Exotic	200L	As Shown
Pyrus ussuriensis	Ussuriensis Pear	12m x 7m	Exotic	200L	As Shown
Waterhousia floribunda	Weeping Lilly Pilly	10m x 5m	Native	200L	As Shown
Shrubs					
Asplenium australasicum	Birds Nest Fern	2m x 2m	Native	200mm	1/m2
Actinotus helianthi	Flannel Flower	1m x 1m	Endemic	200mm	2/m2
Banksia spinulosa	Hairpin Banksia	2m x 2m	Natrive	200mm	2/m2
Banksia serrata	Old Man Banksia	0.3m x 2m	Endemic	200mm	2/m2
Callistemon viminalis 'Captain Cook'	Weeping bottlebrush	2m x 1.5m	Native	200mm	1/m2
Ceratopetalum gummifera	Christmas Bush	4m x 3m	Endemic	300mm	1/m2
Doryanthes excelsa	Gymea lily	3m x 3m	Native	200mm	1/m2
Eriostemon australasius	Pink Wax Flower	1m x 1m	Endemic	200mm	2/m2
Macrozamia communis	Burrawang	3m x 3m	Native	300mm	2/m2
Syzygium elegance	Lilly Pilly	2m x 2m	Native	300mm	1-2/m2
Westringia fructicosa 'Grey Box'	Coastal Rosemary	1m x 1m	Native	200mm	2/m2
Xanthorrhoea resinosa	Grass Tree	1m x 1m	Endemic	200mm	2/m2
Climbers, Grasses & Ground Covers					
Banksia integrifolia	Coast Banksia	0.2m x 2.5m	Endemic	200mm	2/m2
Cissus antarctica	Kangaroo Vine	0.5(spreads)	Native	200mm	2/lm2
Dianella caerulea	Blue Flax-Lily	1m x 1m	Endemic	150mm	2/lm2
Dichondra repens	Kidney weed	Ground cover	Native	150mm	4/m2
Doodia aspera	Rasp Fern	0.4(spreads)	Native	150mm	2/lm2
Ficus pumila	Creeping fig	Climber	Exotic	150mm	2/lm2
Hardenbergia violacea	False sarsaparill	Climber	Native	200mm	4/m2
Hibbertia scandens	Guinea Flower	Climber	Native	200mm	4/m2
Lomandra longifolia	Spiny-head Mat-rush	0.5m x 0.6m	Native	150mm	2/lm2
Lomandra tanika	Tanika	0.5m x 0.6m	Native	150mm	4/m2
Pandorea jasminoides	Bower vine	Climber	Native	200mm	2/m2
Viola hederacea	Native violets	0.2m x 1m	Native	150mm	4/m2

Macrozamia Communis

Cyathea australis

Doryanthes excelsa

Asplenium australasicum

Doodia aspera

Dianella caerulea

3.8 MATERIALS & FURNITURE

MATERIALS & QUALITY

The design strategy is to provide a durable and high quality landscaped building setting with a consistency of quality and treatments across the site selected to compliment the character of the architecture.

Consideration has been given to durability and practicality for ongoing maintenance.

Feature bluestone paving is provided to the main entry and staff recreation area. The remainder of the paving is simple insitu natural concrete, saw cut and lightly washed. Gravel is used for maintenance access zones around the building and in service areas.

Paving in the public domain will be in accordance Council's standards for public domain works.

Material, finishes, furniture and fixtures will be selected with consideration to whole of life costs, detailed and installed to minimise ongoing maintenance needs.

FURNITURE

Furniture will be a mix of off quality off the shelf items and custom elements.

Security fencing is required in some areas around the site. This fencing will be a simple black slat style with a flat top. Where fencing can be avoided bollards are used to limit vehicle access.

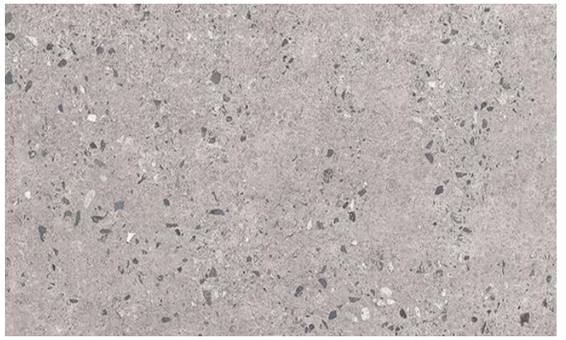
Two seat types are utilised. At the bus stops and staff amenity area timber seating with curved forms provides a visual softness and tactility. At the main entry bluestone block seats reflect those used at the headquarters building forecourt on Bourke Road.

Matching shelters for the bus stop and staff area are cantilevered steel structures supported off the fence line with green roofs.

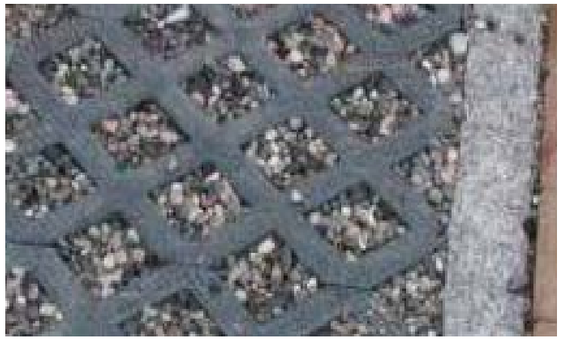
Furniture proposed will be durable, easily cleaned and include anti-graffiti coatings where necessary to reduce vandalism. Tactiles and other pedestrian safety devices will be installed as required by the relevant standards.

800x400x80mm Granite Paving

400x200x80mm Granite Paving



Natural Concrete, exposed aggreagte; liightly washed



Porous Paving

Feature Seat - Granite Block & Timber Bench Seat

Gravel

Fencing - 2400MM high Black Slat with flat top

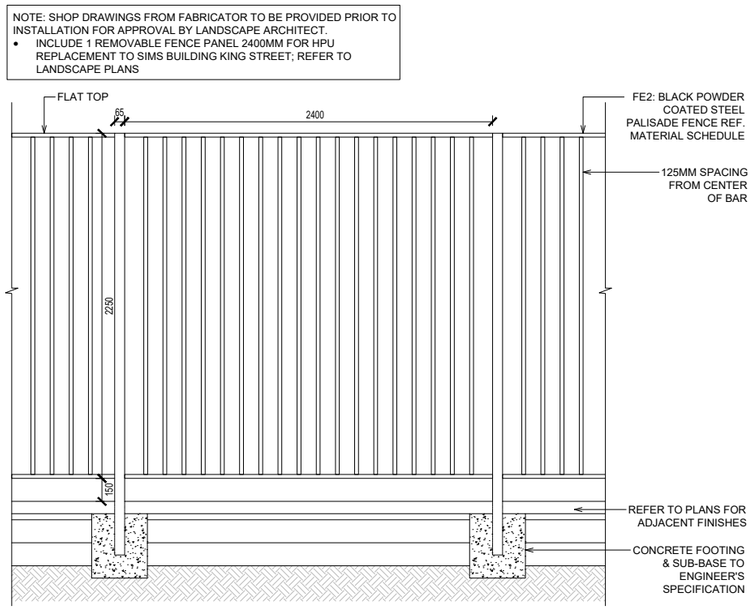
Shelters - Cantilevered steel structure with green roof

Bollards

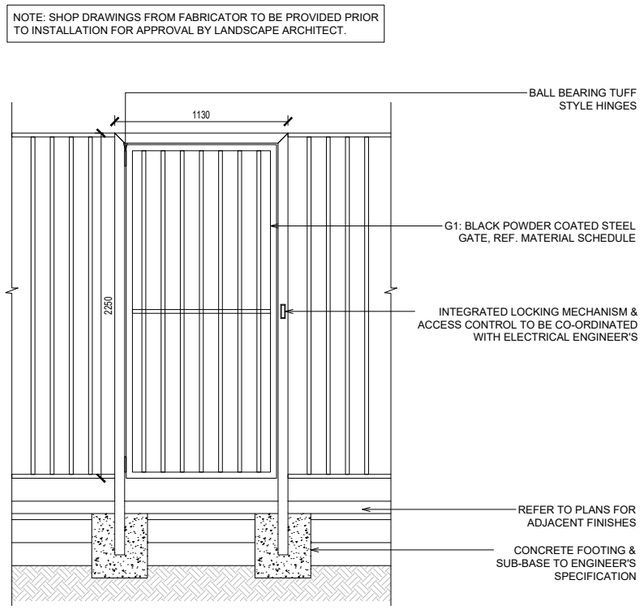
Bike Racks

Figure 27 Landscape Materials Palette

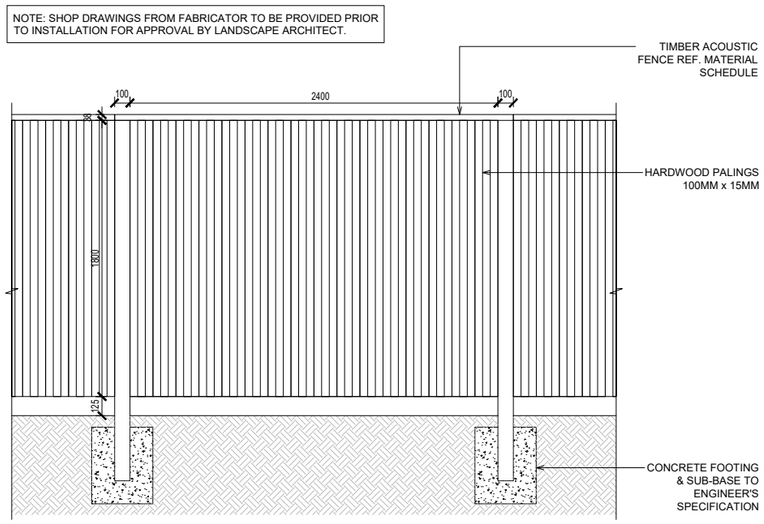
3.9 - FENCING DETAILS



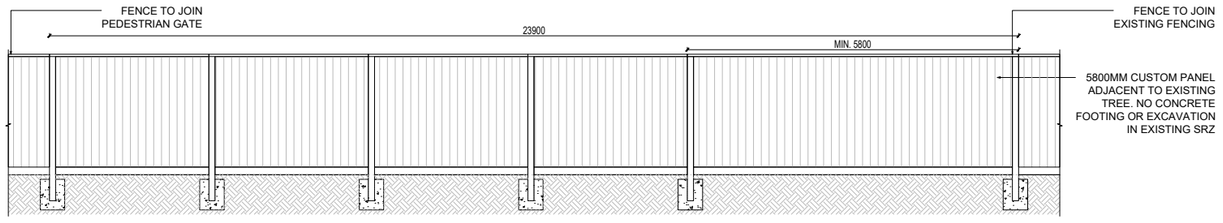
1 FE2 - TYPICAL SECURITY FENCE DETAIL
1:20



2 G1 - TYPICAL PEDESTRIAN GATE DETAIL
1:20



3 FE3 - TYPICAL ACOUSTIC FENCE DETAIL
1:20



4 FE3 - TYPICAL ACOUSTIC FENCE EASTERN ELEVATION
1:50

3.10 MAINTENANCE

MINIMISING MAINTENANCE NEEDS

The maintenance of the landscape will be important to its success both in the critical establishment phase (the first 12 months) and ongoing for its life span.

The reduction and practicality of ongoing maintenance requirements has been intrinsic in the design with key considerations as follows:

+ No use of turf.
+ Use of endemic and native species and those known to do well in the local area.
+ Selection of species by their size and habit, which do not require frequent pruning to maintain their form as a hedge or to contain then within the desired planting zone.
+ Species selected for each area determined based on the micro-climatic conditions, particularly in respect to sun and shade conditions.
+ Selection of low water plants to reduce the need for additional watering.
+ Irrigation provided only to key areas; Front Entry Forecourt, Carpark ground level planters for climbers, Carpark roof level planters, green roofs of shelters.
+ Roof water to be collected for use in irrigation to reduce the need for the use of potable water for this purpose.
+ In rooftop location, selection of species known to perform well in the conditions experienced in these installations.
+ Build in suitable access arrangements for the Carpark rooftop landscaping in the form of hook on points for abseiling workers to maintain the cascading plants from the outside.
+ Provide a maintenance access strip between the Flight Training Centre building and adjacent planted areas.

MAINTENANCE SCHEDULE

The maintenance of the landscape will be undertaken by the contractor for the first 12 months to ensure successful establishment. Following this the maintenance will be taken over by the Qantas campus management.

The maintenance to be undertaken will be detailed in the landscape specification in the form of a Landscape Maintenance Plan. The Landscape Maintenance Plan will ensure the necessary scope and level of maintenance is achieved to ensure the plants remain healthy and other landscape elements are maintained in a safe, functional and attractive condition and will include the following:

Shrub Pruning & Trimming

+ Tip prune shrubs and groundcovers to encourage density in spring and winter. Length removed depending on vigour of previous plant growth.
+ Pruning should reflect the natural growth, flowering and regrowth habit of the individual species. Generally prune after flowering.
+ Inspect for failed or dying plants requiring replacement monthly and record probable cause.
+ All plants that have died or failed (lost more than 50% of their normal foliage cover) shall be replaced with the same species and commercially available size as the plant to be replaced.
+ Generally plant material shall be uniformly high quality stock equal to best available for ‘retail sale’. The root systems shall be balanced in relation to the size of the plant. Plants shall be healthy well grown, hardened off specimens of good shape and free from pests and diseases and in accordance with ‘Specifying Trees: a guide to assessment of tree quality’ (Clark 2006). Should the contractor believe that alternative species should be utilised a proposal is to be put to Qantas management to approve this variation.

Tree Maintenance

+ Inspect trees monthly during the first 12 months and annually thereafter. Ensure trees are not showing any signs of stress, adjust watering as required to ensure good health and top up mulch to specified depths as required.
+ Avoid unnecessary pruning during the first three years. Prune only critical branches and remove damaged or dead wood. Remove branches that limit public access or present a safety risk.
+ Lift the crown of the trees to maintain clear site lines where required to a level of 2.5m.
+ Structural tree work including the removal of large branches should be undertaken by a qualified Arborist with appropriate applications for the works made to Council.

Fertilising, Soil Improvement & Pest Control

+ Soil testing is to be undertaken at the commencement of the maintenance contract and shall include taking samples from a cross section of planting areas. Slow release fertiliser selected to take into account the soil testing results and the insitu plants should be applied annually in spring and in accordance with the manufacturer’s recommended rate. Prior approval required for fertiliser use.
+ Check for incidence of fungal and insect attack monthly.
+ Apply appropriate treatment for fungal and insect attack if necessary subject to approval.
+ Avoid use of chemical sprays. If chemical control is considered necessary, these should be mixed and applied in strict accordance with manufacturer’s directions. Do not spray in windy or extreme weather. Make allowance for spraying outside of operational hours of the Centre. Prior approval required of chemical to be applied.
+ Do not remove leaf litter from planted areas unless depth of litter is impacting on plant growth.

Mulching & Weeding

+ Prevent reproduction of weeds by removal of seedlings and established weeds before seed set. This work should be carried out regularly so that the planted and mulched areas are weed free when observed at monthly intervals.
+ Weed garden areas manually or with approved herbicide monthly. Prior approval required for Herbicide use. Approved Herbicide use to be in accordance with regulation rates and manufacturer’s recommendation. Protect plants from overspray and avoid if rain is likely within 12 hour period
+ Surface mulch is to be replenished as required, at least annually in spring, to maintain a consistent depth as specified at installation. Mulching materials to be consistent with those specified at installation.
+ Plant and other litter to be removed from paths and garden areas where required.

Adjustment of Tree Stakes & Ties

+ Inspect stakes and ties monthly, replace as required. Check the straps during spring and autumn, ensuring they are loose around the tree to prevent damage to the trunk.
+ Remove all stakes and ties at the completion of the 12 month establishment period.

Irrigation

Automatic irrigation system to be inspected monthly as per manufacturers specifications. The following are to be checked:

+ Controller and soil moisture senor
+ Cabinets clean / clear
+ Wiring condition and electrical connections
+ Back flow prevention device
+ Battery replacement
+ Valve covers, valve boxes
+ Heads missing, clogged, leaking, broken, tilted or misdirected
+ Drip emitters connected to flex line, flex line connected to riser, micro adjustment nozzles connected
+ Service filter strainer
+ Automatic flush valves
+ Operational pressures
+ Frequency adjusted to maintain healthy plant growth.

Planting areas not covered by the irrigation system will be covered by the provision of hose cocks at regular intervals which will allow for hose watering as required during establishment and during particularly dry conditions to ensure healthy plant growth.

Maintenance of Hard Landscape Elements

+ Sweep paved areas, particularly in high use ares monthly. Oil stains in any key areas to be removed using a mild dishwashing liquid and warm water solution.
+ Inspect paving and walls for areas of moss or mold and remove if found using a mild ammonia solution.
+ Weeds are to be removal from all landscape walls, paving and gravel areas monthly.
+ Leaf Litter to be removed from all paving areas, paths and gravel areas monthly.
+ Drainage pits are to be cleared of mulch and other material regularly so that all pits are cleared when observed at monthly intervals or after significant storm events.
+ Inspect seats, benches, tables and other furniture monthly. Undertake any repairs or replacement as required.
+ Inspect garden bed edges between soft surfaces annually. Repair any damage or replace as specified.
+ Inspect all retaining and planter walls annually. Should any cracking, settling or displacement be observed notify Qantas management and determine required rectification actions to be undertaken.
+ Inspect all pergolas, mesh screens, climbing structures and shelters annually. Should any rust, damage or structural issues be identified notify Qantas management and determine required rectification actions to be undertaken.

Carpark Rooftop Planter Boxes and Ground Level Climbers and Green Roofs to Shelters

+ Undertake all maintenance activities using installed safety systems as required by WorkCover NSW and all relevant Acts/Regulations/Codes of Practice and Australian Standards.
+ Inspect climbers, trailing plants and planter boxes monthly, train leaders onto frame or mesh as required.
+ Prune long leaders which cannot be reattached to climbing frame or mesh supports in summer.
+ Prune excessive or dead growth annually in winter.
+ Green roofs to be inspected monthly and maintained as per the specification of the specialist green roof suppler.

RECORD KEEPING

A log book will be required to be kept detailing the maintenance works undertaken. The records shall include details of materials and procedures used as well as time and method of application. A record of inclement weather should also be kept to verify inability to carry out work within the specified time frames.

Monthly and annual maintenance reports will be prepared to track the results of the maintenance and detail any future changes required in the plan over time.

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