PerthAirport

Site 6: Large Format Retail Outlet

Airport West Precinct

Final Major Development Plan

December 2018

Contents

Executive *Summary*

This Major Development Plan (MDP) outlines the case for the construction of a large format retail outlet (referred to as Site 6) on the Perth Airport estate. This MDP is presented in accordance with the requirements for MDPs prescribed under the *Airports Act 1996* (Airports Act).

The proposed development includes:

- clearing, site preparation and associated earthworks,
- approximately 14,000 square metres Net Leasable Area (NLA),
- building of a fully automated fuel service station and associated infrastructure,
- at-grade car parking, and
- access for private and service vehicles from Boud Avenue and Dunreath Drive.

The development meets with the intent of the Perth Airport Master Plan 2014 (as approved by the then Minister for Infrastructure and Regional Development on 9 January 2015) as it brings into productive use land that is not required for long-term aviation services, to support economic development and employment creation in Western Australia.

The development will integrate and complement the land uses in the Airport West Precinct, as well as the existing and planned future developments in the adjacent Redcliffe area, within the City of Belmont.

An assessment of the development with respect to its place in the State's Activity Centre hierarchy has determined that the development is appropriate for Perth Airport, which is classified as a 'Specialised Centre', and given the unique nature of the land use and far reaching trade catchment area, the development will have minimal impact on other activity centres in the area.

The development is expected to generate significant employment and impact positively on the Western Australian economy. The proposed development is expected to generate approximately 90 full-time equivalent (FTE) construction jobs, and a further 145 jobs within the economy because of this development upon opening. The proposed development is also

Example only

expected to generate around 330 direct ongoing jobs, representing 250 FTE positions, and a further 225 indirect jobs to contribute to the economy.

Works for the proposed development are expected to be completed by mid-2019 subject to commercial conditions and all relevant approvals.

The proposed project site is approximately 7.09 hectares. Environmental impacts resulting from the proposed project comprise the clearing of 2.88 hectares of Black Cockatoo habitat, as well as clearing of six potential breeding trees. Perth Airport considers this impact not significant to the overall survival of the species.

The project will also impact on approximately 3.67 hectares of vegetation, of which approximately 2.49 hectares is the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed Banksia Woodlands of the Swan Coastal Plain (BWSCP) ecological community. Perth Airport will develop an Offset proposal to mitigate against the loss of the BWSCP in consultation with the Commonwealth Department of the Environment and Energy (DEE) and State Department of Biodiversity, Conservation and Attractions (DBCA). The offset proposal will be submitted for DEE approval prior to the commencement of works

The proposed development will not have any negative impacts on the aviation activities of Perth Airport as there are no risks that could not be adequately mitigated, or are so high as to prevent the construction of the proposed development.

The MDP was released for a 60 business day consultation period between 1 March 2018 and 31 May 2018. Comments received during this time were considered during the development of the MDP that was submitted to the Minister. The Hon. Michael McCormack MP, Minister for Infrastructure, Transport and Regional Development, approved this MDP on 13 November 2018.

This MDP fulfils the requirements under the Act.

1. Introduction

Perth Airport is strategically located 12 kilometres east of Perth's Central Business District (CBD) and integrated with other transport infrastructure including the Kewdale rail freight facility, major highway networks and, via major State roads, the Port of Fremantle. The Perth Airport estate consists of 2,105 hectares and although the primary use of the estate is for aviation purposes, there is land available for non-aviation developments.

This MDP has been prepared by Perth Airport to seek Commonwealth approval for the development of a large format retail outlet on a site referred to as Site 6 on the Perth Airport estate.

Example only

The proposed large format retail concept sees quality, brand name merchandise at substantially lower prices than are typically found at conventional wholesale or retail sources. The development will also incorporate speciality services within the main building itself such as sales and fitting of tyres, an optometrist, hearing centre, cafe and liquor, with a fully automated fuel filling station external to the building. Associated car parking and access ways to service the site will be developed in conjunction with the project.

Section 89(1) (e) of the Airports Act requires that Perth Airport must seek approval via a MDP for the construction of any new building on the estate that is not wholly or principally intended to be used as a passenger terminal and where the cost of construction exceeds $20 million. Additionally, where the proposed development may have a significant impact on the environment, a MDP is also required to seek approval for the development under Section 89(1)(m) of the Airports Act.

The proposed development therefore requires a MDP to be approved by the Commonwealth Minister for Infrastructure and Transport prior to construction commencing as the construction costs are likely to exceed $20 million. The clearing of vegetation to facilitate construction may have a significant impact to the environment. Accordingly, this MDP is presented for approval under the Airports Act.

The required contents of a MDP are set out in Section 91 of the Airports Act and include:

- the objectives of the proposed development,
- an assessment of the extent to which the future needs of civil aviation users of the airport and other users of the airport will be met by the development,
- a detailed outline of the proposed development,
- whether the proposed development is consistent with the airport's lease from the Commonwealth,
- whether the proposed development is consistent with the final master plan,
- if the proposed development could affect flight paths and noise exposure levels at the airport and the extent of relevant consultation with airlines and local government,
- the effect the proposed development will have on traffic flows at the airport and surrounding the airport, employment levels at the airport and the local and regional economy and community, including how the proposed development fits within the local planning schemes for commercial and retail developments in the adjacent area, and
- an assessment of environmental impacts and the plans for dealing with any such impacts.

The contents of a MDP, as prescribed under Section 91 of the Airports Act, are addressed in this MDP document as outlined in Appendix A.

Section 92 of the Airports Act requires that prior to the MDP being published for public comment the proposed document must be drawn to the attention of:

- the Minister of the State in which the airport is situated, with responsibility for town planning or use of land,
- the authority of that State with responsibility for town planning or use of land, and
- each local government body with responsibility for an area surrounding the airport.

Section 92 also outlines the requirement for the MDP to be made available for public comment prior to submitting it to the Commonwealth Minister for Infrastructure and Transport for consideration. The MDP approval process is shown in Figure 1.

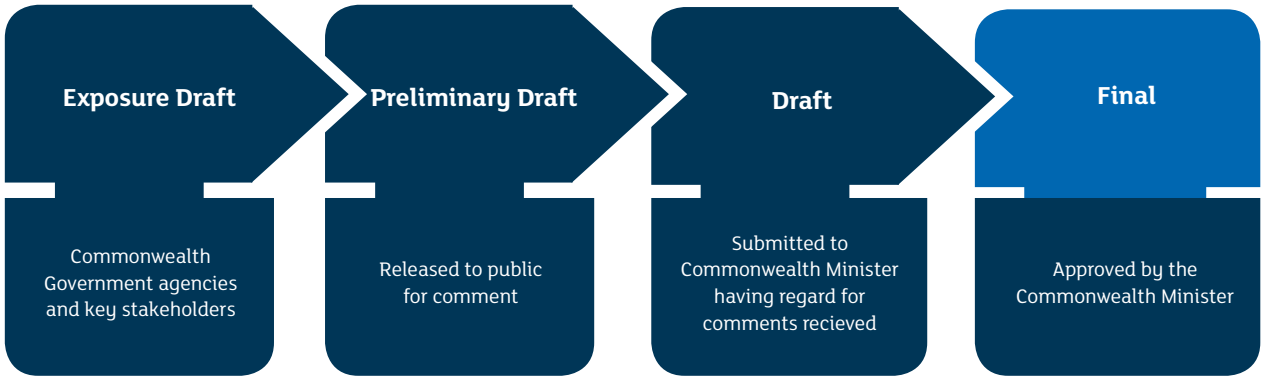

Figure 1 Major Development Plan Process

2. Description of the Development

2.1 Project Justification

Perth Airport's vision is to 'operate an outstanding airport business providing great customer service.' This vision guides the overarching corporate objectives for the management of Perth Airport.

The corporate objectives are:

- ensuring our facilities and services are safe and secure for all,
- helping our airline and other business partners develop their businesses,
- meeting the needs of our customers,
- conducting our business in a commercially astute manner,
- providing our employees with satisfying employment,
- conducting operations in an ecologically sustainable manner,
- identifying and managing risk,
- facilitating travel, trade and industry in Western Australia, and
- ensuring we are a responsible and caring corporate citizen.

Developments at Perth Airport are guided by a set of development objectives which evolve from the Company's vision and corporate objectives.

The proposed development meets the development objective of Perth Airport as it will 'bring land not required for long-term aviation services into productive use to support economic development and employment creation in Western Australia'.

The proposed development will contribute positively to the local Western Australian economy and community and provide other users of the estate (besides those accessing air services) further diversity of product, services and amenities within the Airport West Precinct.

2.2 Site and Land Description

The proposed development site is located to the south west of the existing Terminal 3 (T3) and Terminal 4 (T4) passenger terminals, between Tonkin Highway and Dunreath Drive as shown in Figure 2.

The land is within close proximity to the western boundary of the Perth Airport estate, bounded by Tonkin Highway, the Dunreath Interchange and the Direct Factory Outlet (DFO) development within the Airport West Precinct. Redcliffe is located to the west and north west of the subject site, and is primarily characterised by low density residential development which will over time transition towards a Transit Oriented Development mix of commercial and higher density residential surrounding the under construction Redcliffe Train Station.

The site is accessed from Dunreath Drive, with most visitors to arrive from Tonkin Highway via the Dunreath Interchange.

The site consists of approximately seven hectares of land with approximately 48 per cent previously disturbed by clearing, drainage or development. The remaining land contains vegetation ranging in quality from 'completely degraded' to 'excellent'. The site does not currently contain any built form or infrastructure, except for some redundant services.

Figure 2 Location of Site 6

2.3 Project Scope

This MDP is seeking approval for the construction of a large format members only retail outlet and includes the following components:

- clearing, site preparation and associated earthworks, including the realignment and piping of approximately 280 metres of the Southern Main Drain.
- building of approximately 14,000 square metres Net Leasable Area (NLA), incorporating retail sales, as well as specialty services such as tyre sales and fitting, an optometrist, hearing centre, café and liquor,
- a fully automated fuel service station and associated infrastructure,
- at-grade car parking, and
- accesses for private and service vehicles from Boud Avenue and Dunreath Drive.

Figure 3 identifies the MDP site boundary.

Figure 4 and Figure 5 illustrate the indicative site layout, elevation and artistic impressions of the proposed development. Some changes to the finished floor levels (FFL) as a result of the drainage and site works may occur during the detailed design, however, the potential change in FFL has been considered when assessing building impacts, including the Obstacle Limitation Surface (as discussed in Section 8).

Figure 3 MDP boundary

2.3.1 Retail Outlet Building

The single level retail building of approximately 14,000 square metres NLA will be air conditioned with access from the car park.

The intent of the design is to allow the entrance point to the primary building to be a major focal point of the development, providing a line of sight from both Dunreath Drive and Boud Avenue.

The proposed development, comprising bulky goods retail, tyre sales and fitting, an optometrist, hearing centre, café and liquor sales will meet the future needs of users of the airport, employees in the airport estate and surrounding residents.

2.3.2 Service Station

A fully automated fuel service station on the site will be serviced by fuel delivery vehicles from Boud Avenue. It is expected that the service station will be designed, constructed and operated to meet the requirements of the *New South Wales Environment Protection Authority's Standards and Best Practice Guidelines for Vapour Recovery at Petrol Service Stations and Underground Petroleum Storage Systems: Best practice guide for environmental incident prevention and management documents* (NSW guidelines).

The NSW guidelines provide a more rigorous and specific guide relating to retail underground petroleum storage systems and vapour recovery compared to the Western Australian guidelines.

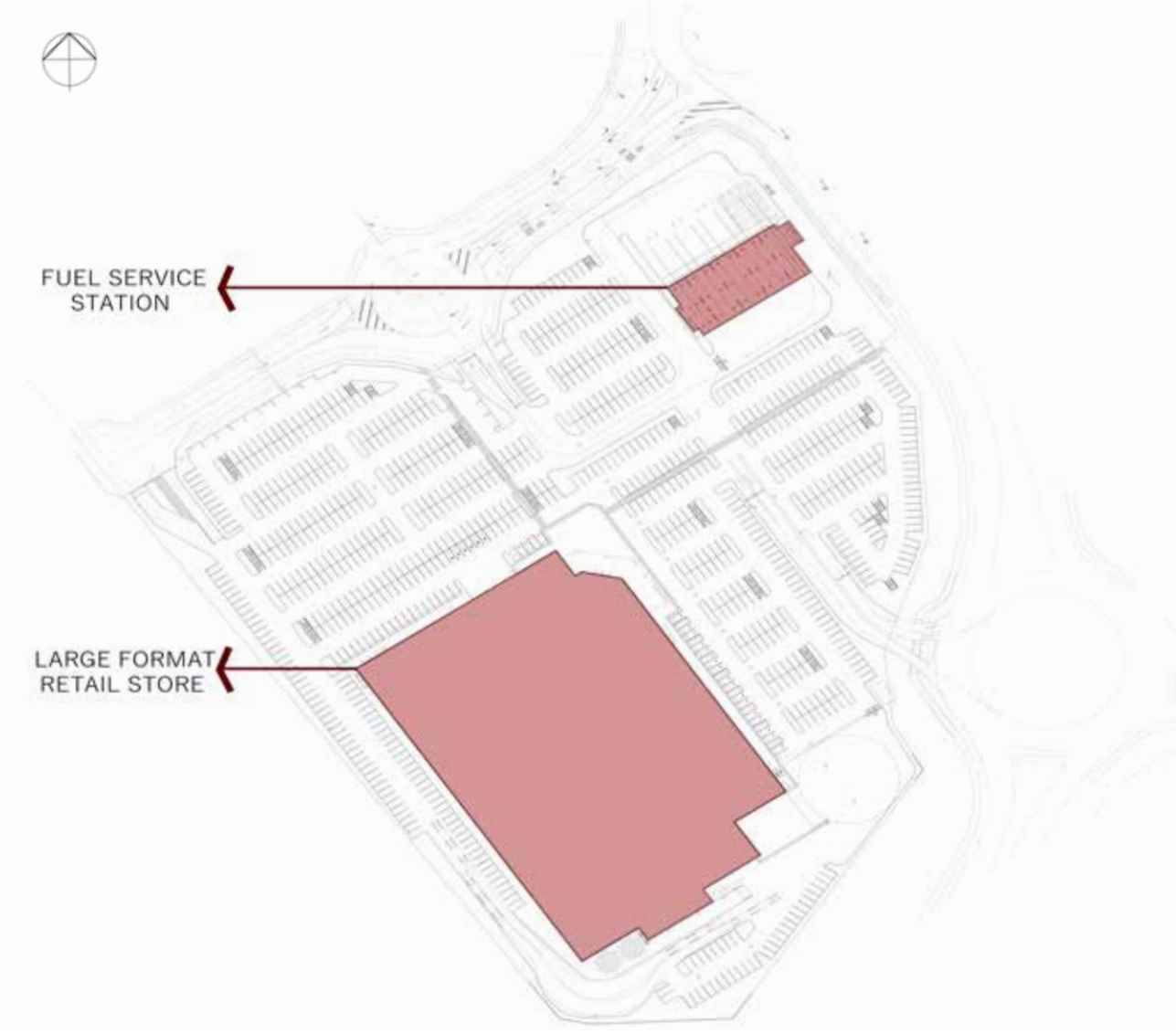

Figure 4 Indicative Site layout

Figure 5 Artistic impressions of the proposed development (East, North and North West) Site elevation

While both guidelines require double skinned tanks and interstitial and external leak monitoring, the NSW guidelines require the approval of procedures for loss monitoring, leak detection and incident management. There is also a requirement for vapour recovery during filling of the fuel tanks to reduce gaseous emissions.

Therefore, the NSW requirements have been selected to ensure best practice. The monitoring and operation of the station will also be undertaken in compliance with the Airports (Environment Protection) Regulations 1997 (AEPR).

The service station will provide a convenience option for visitors to the proposed development, but also the wider users of the airport estate and surrounding residents. As the surrounding residential population increases and the airport estate is further developed over time the proposed development will meet the needs of a greater number of people.

2.3.3 Car Park

Associated car parking will be constructed between the retail building and Dunreath Drive, to the east and north of the building (see Figure 4). The proposed car park will provide approximately 840 at-grade parking bays, which is equivalent to approximately six bays per 100 square metres of NLA.

2.3.4 Access Arrangements

The main access point into the development for customers will be provided from the southernmost roundabout on Dunreath Drive, to provide direct access into the car park for patrons. Secondary road access and a separate delivery vehicle access point will be constructed off Boud Avenue. The objective in the design of access arrangements is to minimise pedestrian, passenger vehicle and service vehicle conflict. Access to the fuel service station will be from Boud Avenue through the main car park.

The access and service roads will be designed to meet the access requirements of the State Department of Fire and Emergency Services (DFES).

2.3.5 Building Materials

The building is likely to have a steel portal frame with corrugated steel cladding and feature corporate artwork designed to break up the facade.

2.3.6 Environmentally Sustainable Design

Perth Airport considers the use of water and energy efficiency principles in the design of buildings on the estate.

Measures to reduce water in the proposed development that may be considered include:

- water re-use,
- use of native and drought resistant species in broader landscaping,
- use suitable native or introduced species, for street trees and the car park, selected on their basis to provide suitable amenity and shading,
- use of tree cells and permeable parking within car parking areas where appropriate, and
- the inclusion of Water Sensitive Urban Design (WSUD) principles.

The building will be designed having regard to the mandatory performance requirements of the 'deemed to satisfy' provisions of 'Volume 1 Section J – Energy Efficiency' of the Building Code of Australia (BCA) and will satisfy the criteria established for an appropriate class of building.

During the design process, the project will investigate means of adopting energy efficiency techniques in the building design.

2.3.7 Landscaping

Landscaping will meet Perth Airport's objective of maximising the number of local native flora or other appropriate species while recognising aircraft safety by planting species that do not attract birds. The proposed landscaping is to comprise of new areas of drip-irrigated planting, including grass trees, native ground covers, shrubs and succulents. The high quality of the landscaping and public realm environment will add to the visual amenity and ambience of the proposed development and be complementary to the creation of a 'Sense of Place' in the Airport West Precinct in addition to the Redcliffe surrounds.

To ensure a high-quality outcome, landscaping and public realm treatments for the development will be designed to integrate with surrounding streetscapes and the living stream project (refer Section 2.3.13. for further information on the living stream).

2.3.8 Security

Physical and electronic security will be installed at the proposed building with overnight guards and security patrols if required.

2.3.9 Water Supply

The location of the proposed development will allow for direct connection to a water main on Dunreath Drive.

It is anticipated that the building will also require the installation of fire sprinkler systems to meet with fire safety requirements of the BCA, and this may require the installation of pumps and fire water tanks to service the development.

2.3.10 Power

The location of the proposed development will allow for direct connection to the existing underground power on Dunreath Drive.

2.3.11 Gas

The location of the proposed development will allow for direct connection to the existing high pressure gas main located on Dunreath Drive.

2.3.12 Sewerage

The proposed development will feed into the gravity sewer installed on Dunreath Drive. This connects through to the precinct pump station to the east of Dunreath Drive, which discharges into the larger Airport West system.

2.3.13 Stormwater

Perth Airport is currently constructing a 'living stream' drain to the north west of the site adjacent to Tonkin Highway. This living stream project was recently approved as part of the adjoining Direct Factory Outlet (DFO) Minor Variation MDP (approved by the Minister on 5 April 2017). The stream is an important airport infrastructure facility designed to manage surface and ground water quality and off-site stormwater discharge rates from the airport.

Stormwater from the proposed development will be connected into this network. The existing concrete drainage pipe beneath Dunreath Drive will be extended northwards for approximately 280 metres, as shown in Figure 6.

Approximately 8 kilometres of the Southern Main Drain through the airport will ultimately be converted to a living stream. The section proposed to be piped as part of this project was approved under the DFO MDP previously mentioned. This section does not form part of the designed flood storage and has minimal contact with vegetation. It is therefore considered that the proposed development will not have an impact on or compromise the living stream in relation to function, flood storage, water quality (including nutrient stripping) or habitat.

2.3.14 Telecommunications

New communications conduits will be installed in preparation for the proposed development into the selected service provider's network.

2.3.15 Excavation

Prior to any excavation or surface penetrating activities occurring, an excavation permit issued by Perth Airport is required. The excavation permit process details the location, extent and method of proposed excavation or surface penetrating activities and reviews these against the location of all existing subterranean services, including communications cabling and infrastructure, to ensure they will not be disrupted by the proposed works.

2.3.16 Waste Management

It is the intention of Perth Airport that waste management on the site will be managed by a private contractor.

2.3.17 Health requirements for food and beverage tenancies

The proposed development may include internal food and beverage tenancies. It is acknowledged that any food and beverage establishments are required to be registered with the City of Belmont's Health Department. This will be required as part of the Commonwealth Airport Building Controller's permit approval process.

2.3.18 Occupational Health and Safety

Occupational health and safety requirements within the proposed development site will be in accordance with all relevant Perth Airport, Commonwealth and State legislation and subsequent regulations and policy.

2.3.19 Equity of Access

Provisions for mobility impaired people accessing the building will comply with the applicable codes, including the Premises Standards and Disability Access provisions of the BCA.

The display and retail sale of alcohol is proposed as part of the development. An application for a liquor licence will be required to be lodged to, and approved by, the Department of Racing, Gaming and Liquor prior to commencing the sale of alcohol from the site.

2.3.20 Signage

Location and typology of signage for the development will be designed in accordance with the Perth Airport Design Guidelines and will require approval as part of the Perth Airport consent process. Signage provided will be of a high aesthetic value and will align with the over-arching signage strategy for the Airport West Precinct (currently being developed).

2.4 Construction activities

Works for the proposed development are expected to be completed within six to eight months, subject to commercial conditions and all relevant approvals.

All works subject to this MDP will be completed in accordance with the timeframes outlined in Section 94 of the Airports Act.

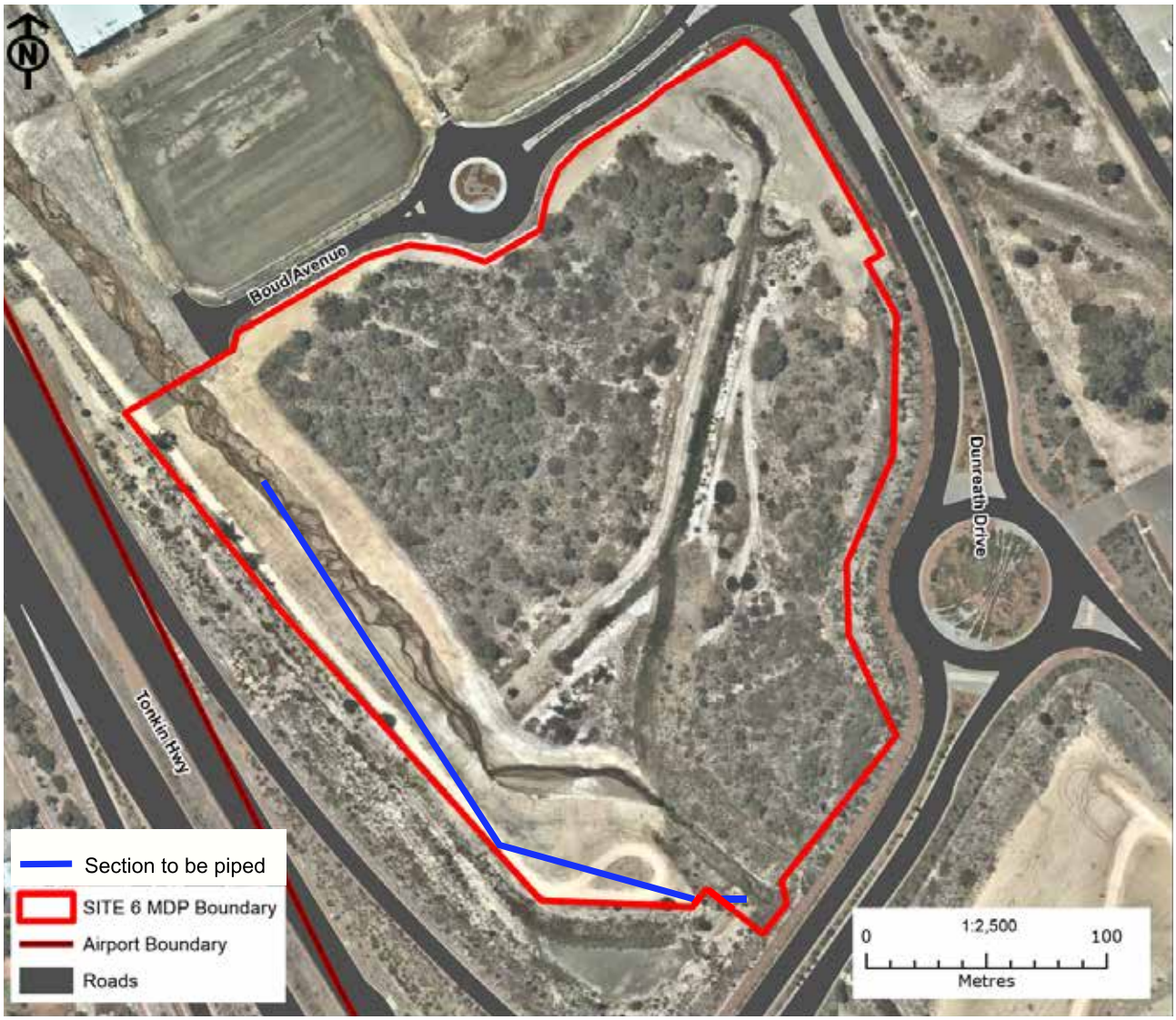

Figure 6 Proposed alignment of Southern Main Drain section to be piped

3. Planning Context

In 1997, the operation and management of Perth Airport was transferred from the Commonwealth of Australia to Westralia Airports Corporation (WAC) under a 50-year lease with a 49-year option for extension. In 2011, WAC changed its trading name to Perth Airport Pty Ltd. Although the day to day management of Australian capital city airports was privatised in the 1990s, the Commonwealth Government continues to play an important regulatory and oversight role through the Airports Act and associated regulations. This statutory regime ensures that the public interest is protected.

Perth Airport is operated by Perth Airport Pty Ltd, a wholly owned subsidiary of Perth Airport Development Group Pty Ltd (PADG). The shareholders of PADG, as at February 2018, are shown in Table 1.

Shareholders of Perth Airport Development Group Pty Ltd	Percentage
Utilities of Australia Pty Ltd ATF Utilities Trust of Australia (UTA	38.26 per cent
The Northern Trust Company (TNTC in its capacity as custodian for Future Fund Investment Company No.3 Pty Ltd (FFIC3), a wholly owned subsidiary of The Future Fund Board of Guardians (FFBG)	30.01 per cent
Utilities of Australia Pty Ltd ATF Perth Airport Property Fund (PAPF)	17.34 per cent
Gardior Pty Ltd as trustee for The Infrastructure Fund	7.19 per cent
Australian Super Pty Ltd	5.25 per cent
Sunsuper Pty Ltd	1.95 per cent

Table 1 Perth Airport Ownership

3.1 Perth Airport Lease

Perth Airport Pty Ltd is the lessee of the 155 lots of land which make up the estate. The lease with the Commonwealth of Australia was executed on 1 July 1997. The term of the lease is for a period of 50 years, with an option of a further 49 years exercisable by the lessee.

The lease outlines that the lessee has obligations to develop the site and that the site must be operated as an airport site. In doing so the airport should have regard to:

- the actual and anticipated future growth in, and pattern of, traffic demand for the airport site,
- the quality standards reasonably expected of such an airport in Australia, and good business practice.

Section 91(1) (ca) of the Airports Act requires that a major development is consistent with the airport lease. The proposed Site 6 development as outlined in this MDP is consistent with the Perth Airport lease, which permits the land comprising Perth Airport to be used for lawful purposes that are not inconsistent with its use as an airport. The lease also requires that any development is in accordance with an approved master plan. As discussed in Section 3.2, the proposed development is consistent with the Perth Airport Master Plan 2014 in terms of the nominated land uses for the precinct.

3.1.1 Pre-existing interests at Perth Airport

There are several pre-existing interests that provide for access and use of land within the airport estate which existed when the operation and management of Perth Airport was transferred from the Commonwealth to WAC on 2 July 1997. They are described in full in the approved Master Plan 2014.

In accordance with Section 91(3) of the Airports Act and Section 5.04 of the Airports Regulations 1997 Perth Airport is required to address any obligations on the company from pre-existing interests in the airport. None of the pre-existing interests as outlined in the approved Master Plan 2014 exist on the proposed development site.

3.2 Perth Airport Master Plan 2014

Under Section 70 (1) of the Airports Act, Perth Airport is required to produce a final master plan. The final master plan is one that has been submitted to the Minister as a draft master plan and is approved. Prior to submitting a draft master plan to the Minister, the airport is required to consider public comments. Subsequent developments at the airport must be consistent with the final master plan. Section 70 of the Airports Act states that the purposes of a final master plan for an airport are to:

- establish the strategic direction for efficient and economic development at the airport over the planning period of the plan,
- provide for the development of additional uses of the airport site,
- indicate to the public the intended uses of the airport site,

- reduce potential conflicts between uses of the airport site, and to ensure that the uses of the airport site are compatible with the areas surrounding the airport,
- ensure that all operations at the airport are undertaken in accordance with relevant environmental legislation and standards,
- establish a framework for assessing compliance at the airport with relevant environmental legislation and standards, and
- promote the continual improvement of environmental management at the airport.

The Master Plan 2014, including an Environment Strategy and Ground Transport Plan, was approved by the [then] Commonwealth Minister for Infrastructure and Regional Development, the Hon Warren Truss on 9 January 2015 and is available at perthairport.com.au.

Section 91(1A) (b) of the Airports Act requires that an MDP is consistent with the final master plan for the airport.

As outlined in the Master Plan 2014, Perth Airport has undertaken significant investment in commercial and industrial property development. Perth Airport hosts more than 120 individual tenants, with the potential for further expansion. The Master Plan 2014 also outlines that Perth Airport is recognised as a prime location for transport, logistics and resource-sector companies because it gives efficient access to multiple transport modes, coupled with high safety and security standards.

The proximity of the airport estate to the Perth CBD is attractive to current and potential tenants, and has resulted in growth in non-aviation related business.

Section 2 of the Master Plan 2014 outlines that the total number of non-aviation related full-time employees is estimated to be approximately 5,230 contributing approximately $690 million to the Gross Regional Product (GRP) in 2014 (see Figure 7). Taking into consideration the proposed developments over the 20 years of the Master Plan 2014, including the Site 6 development, it is forecast that by 2034, the total (direct and indirect) number of non-aviation related full-time employees will be approximately 20,020, contributing approximately $3.01 billion to the GRP.

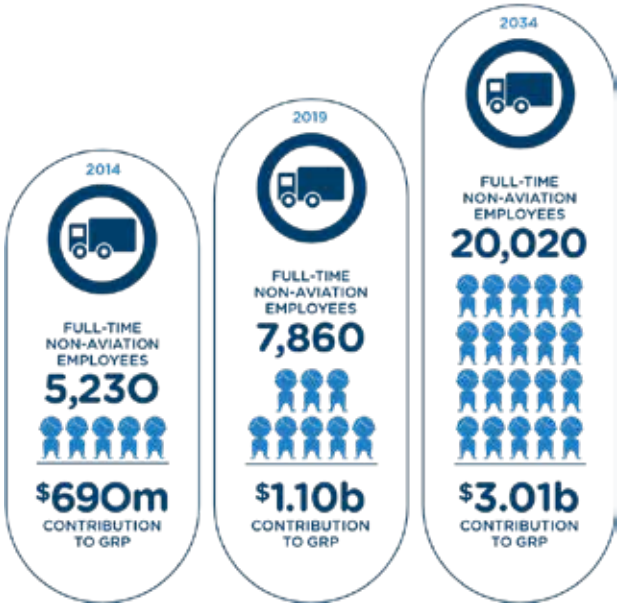

Figure 7 Impact of Non-Aviation Employment

Section 5 of the Master Plan 2014 outlines Perth Airport's non-aviation development plan that supports the development of land not required for aviation purposes and outlines that the plan takes into consideration:

- compatibility with aviation activities,
- complementary development with surrounding land uses in consultation with government authorities,
- demand for non-aviation facilities,
- demand from industries that see a benefit to their operations in being located on the airport estate,
- proximity and connectivity to the CBD and regional road network,
- location in relation to freight hubs, and
- existing large vacant land parcels on the airport estate.

The Master Plan 2014 also outlines that the non-aviation development plan for the Airport West Precinct sees an extension of the office park development with larger lot bulky good uses within the next five years. It is intended that this type of development would be focused around the Dunreath Drive access to the airport from Tonkin Highway that formed part of the Gateway WA project.

The Master Plan 2014 also outlines that the State Government's planned introduction of a rail station and associated public transport interchange and station facilities in Redcliffe (on State-controlled land), adjacent to the Airport West Precinct, by

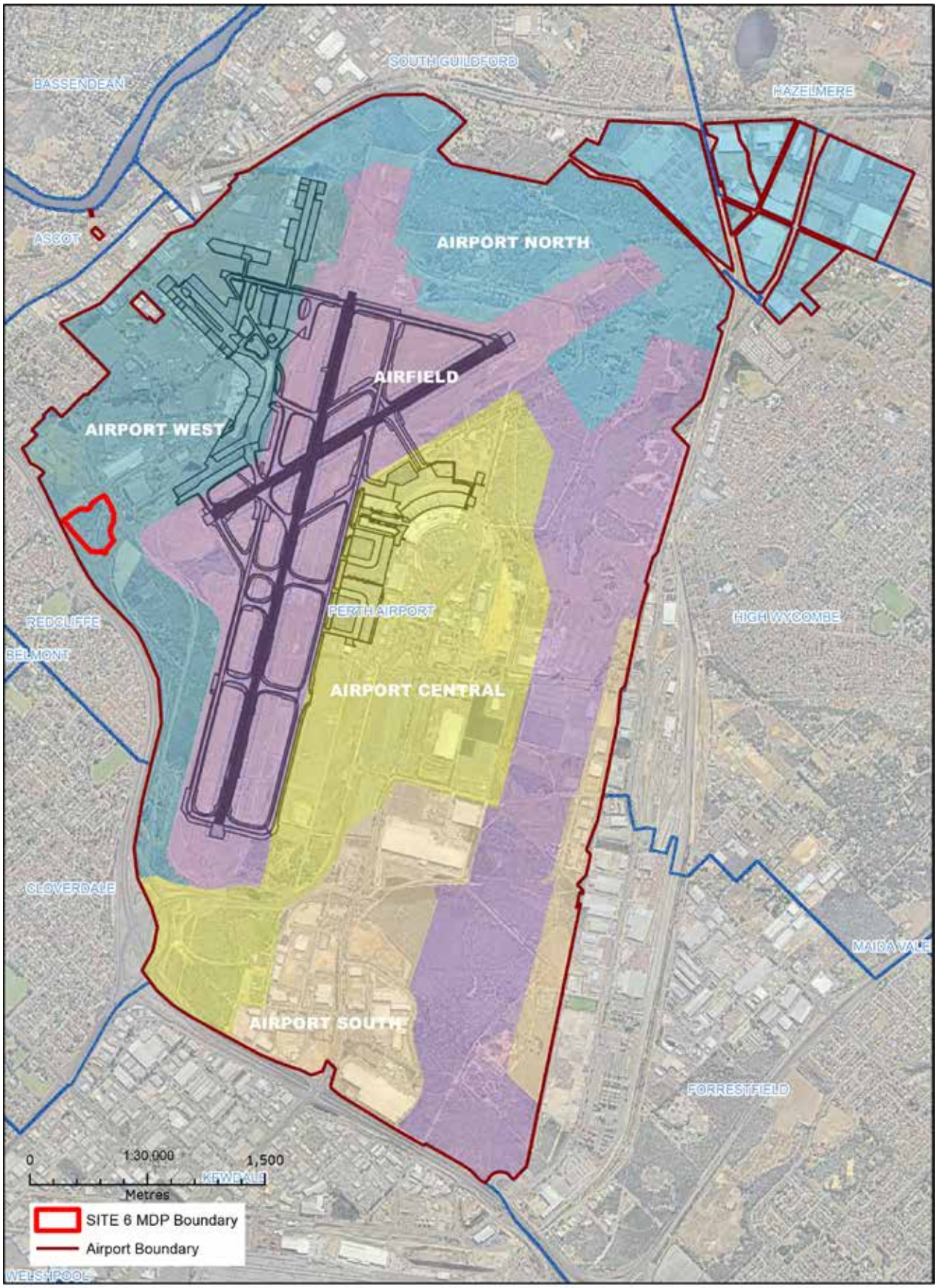

Figure 8 Perth Airports Precincts and Zones

2020 may provide future opportunity for potential development and activity that integrates with the new public transport access.

Although this development does not rely on public access from the rail station, the proposed development is compatible and will contribute positively to the State Government's vision of a Transit Oriented Development. Perth Airport continues to work with State and Local governments to ensure short to medium term planning, such as for the proposed development, aligns with a longer-term vision for this precinct.

3.2.1 Perth Airport Land Use Plan

As outlined in Section 3 of the Master Plan 2014, the Perth Airport Land Use Plan safeguards the long-term airfield, terminal and aviation support configuration while also ensuring an appropriate level of flexibility to respond to operational requirements, both aviation and non-aviation market developments and business expectations.

The Land Use Plan ensures that:

- aviation requirements are prioritised in terms of land use,
- non-aviation developments are complementary to the delivery of aviation services,
- land use zoning is consistent with surrounding land uses, and
- where required and after consideration of alternative options, a combination of onsite and offsite environmental offsets (in accordance with Commonwealth and State regulations and policies) will be applied to enable development of land, consistent with the Master Plan 2014.

Perth Airport is comprised of 2,105 hectares of land, and under the Land Use Plan, is divided into five land use precincts, akin to suburbs. These include:

- Airport Central,
- Airport West,
- Airport North
- Airport South, and
- Airfield.

The proposed development is located within the Airport West Precinct (see Figure 8). The primary purpose of the Airport West Precinct is to provide a range of aviation support and associated ground transport facilities as well as complementary non-aviation commercial developments.

Within the five precincts, there are four different zonings which dictate the desired land uses for each of the defined areas, similar to the way Local Planning Schemes manage land use planning for Local Government areas. The four zones overlayed across the estate comprise of Airfield, Commercial, Airport Services, and Terminal and have an applicable 'Land Use Table' that details the land uses that can be considered within each zone.

The proposed development will be located within the 'commercial zone', and is consistent with Perth Airport's definition of 'bulky goods / large format retail' in accordance with the zoning table from the Master Plan 2014 (reproduced in Table 2). This development fits within the latter of the two typologies, being retail in a large format. It should be noted that although the development does not fit within the category of 'shop' with regards to the size of the retail floor-space calculations, possible economic impacts to other activity centres in the vicinity have been considered in Section 4.

In addition, the development incorporates an ancillary tyre sales and fitting centre which is located within the building itself. This is consistent with the intent of the Master Plan 2014, falling within the use class of 'motor vehicle repair', which is a discretionary land use within the 'commercial zone'.

A small portion of the internal floor area is intended to be used for the display and retail sale of alcohol. This is an incidental component of the overall quantity of retail goods being displayed and offered for sale as part of the development, and is consistent with the commercial zoning of the land.

The proposed development meets with the objectives of the 'commercial zone', in enabling an integrated mix of land uses for the precinct which currently consists primarily of office, logistics and aviation related development. In addition, the development is sensitive to the balance of built form and landscape, contributes positively towards employment generation, while providing a buffer between the more industrial natured land-uses of the airport estate and the adjoining residential locality in Redcliffe.

Objectives
• To enable an integrated mix of land uses for each Precinct, as per the primary purposes identified for each respective Precinct • To enable appropriate land uses to provide a suitable integration and interface between the airport boundary and the surrounding areas, • To create a sense of balance of built form and landscape, • To provide employment generating development opportunities, and • To integrate environmental outcomes in accordance with the EPBC Act Environmental Offset Policy (2012).

Discretional Uses			
• animal establishment • aviation support facilities • bulky goods/large format retail • car park • child care premises • community purpose • conservation • consulting rooms • convenience store • driver training and education • vocational training • exhibition centre	• fast food/take away • funeral parlour • hotel • hostel • industry - general^ • industry – light^ • industry – service^ • logistics centre • lunch bar • market • medical centre • motel	• motor vehicle, boat or caravan sales motor vehicle repair • motor vehicle wash • navigational aids • office • place of worship • reception centre • recreation – private • rental cars • restaurant • service station • serviced apartments	• shop • shopping centre • showroom • storage facilities • tavern • trade display • telecommunications • transport depot^ • utilities and infrastructure • veterinary centre • warehouse^ • workshop^

Note: ^not desirable uses will be minimised within the immediate pedestrian area surrounding the proposed rail station located in Redcliffe.

Table 2 Commercial Zone Land Use Table
Source: Perth Airport Master Plan 2014

3.2.2 Airport West Precinct Planning

Guided by the approved Master Plan 2014, planning has been undertaken for the Airport West Precinct to establish a high-level concept plan for future developments. Future land uses and timing will be dependent on commercial conditions and capacity of the road network while Qantas operations remains from Terminal 3 and Terminal 4. Figure 9 demonstrates a possible future subdivision scenario and the road network, as a guide for Perth Airport in the assessment of development opportunities as they arise.

3.3 Consistency with State and Local Planning Schemes

Perth Airport is governed by Commonwealth legislation. While State planning laws do not apply to the Perth Airport lease area, the Airports Act and subsidiary regulations require that the Master Plan 2014, where possible, describes proposals for land use planning and zoning in a format consistent with that used by the State or Territory in which the airport is located.

Perth Airport is committed to working with the State Government and the adjoining Local Governments to minimise conflict and inappropriate development. To achieve this outcome, Perth Airport works with the neighbouring Local and State authorities through the Perth Airport Planning Coordination Forum and the Perth Airports Municipalities Group, in addition to regular liaison with surrounding Local Governments on local issues and interfaces.

3.3.1 State Planning Policy Overview

State Government planning is controlled by the Western Australian Planning Commission (WAPC) which administers the State Planning Framework and the Metropolitan Region Scheme (MRS) and disseminates policies and strategies on a wide range of planning matters. The planning policies and strategies set the strategic context in which the MRS operates.

3.3.1.1 Directions 2031 and Beyond (2010)

Directions 2031 and Beyond (Directions 2031) is the State Government's high level spatial framework and strategic plan that establishes a vision for future growth in the metropolitan Perth and Peel regions. It provides a framework for the detailed planning and delivery of housing, infrastructure and services necessary to accommodate various growth scenarios,

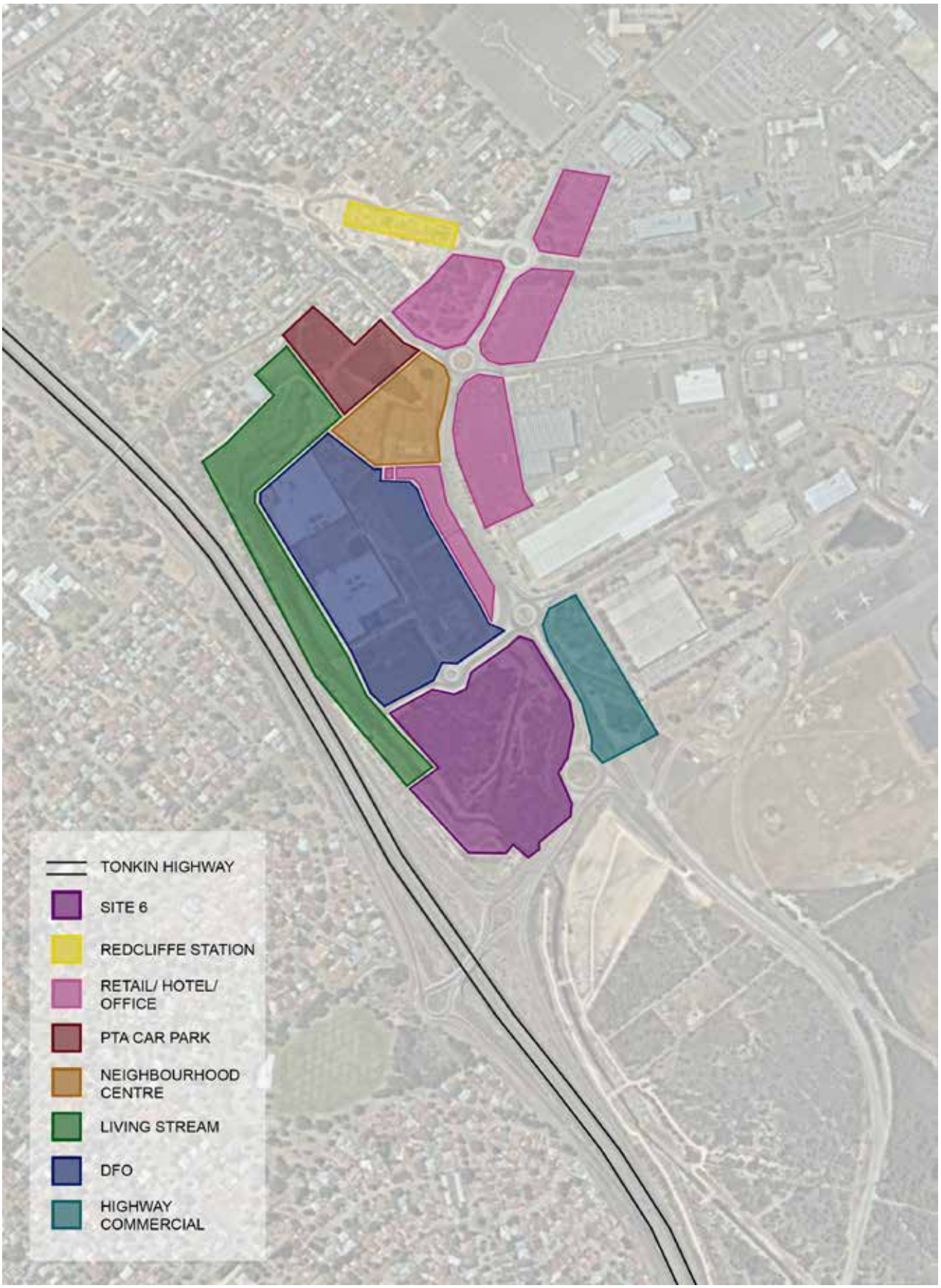

Figure 9 Airport West Precinct Concept Plan

and places emphasis on the consolidation of development around existing key pieces of transport infrastructure and strategically identified centres in order to provide increased opportunities for local employment. The proposed development on Site 6 aligns with the objectives of Directions 2031 to locate development around key pieces of transport infrastructure; in this case the Perth Airport, but also the Redcliffe Station as part of the Forrestfield-Airport Link project (detail on this project is provided in Section 6.7.1).

In Directions 2031, Perth Airport is identified as a 'Specialised Centre' (as shown in Figure 10) and recognised as critical to supporting the growth in the Western Australian resource sector, as well as providing Western Australia's primary link to the rest of Australia and the world. Directions 2031 provides for significant growth in the resident population and workforce of the Perth Metropolitan Region, which will support the growth of the airport as a specialised centre and employment hub. The proposed development is consistent with Directions 2031 in that it is located at a key centre, where it will support the amenity needs of, and provide employment opportunities for, the expected increased residential population in surrounding areas.

3.3.1.2 Draft Perth and Peel @ 3.5 million

The WAPC has prepared the Draft Perth and Peel @ 3.5 million document, introducing the next layer of detail to underpin the high level strategic vision that has been set through the State Planning Policy and Direction's 2031. The plan and associated sub-regional structure plans provide the guidance necessary to define the long term spatial plan for Perth.

Perth Airport is referenced in the Central, North East and South Sub Regional Planning Frameworks, which designate the estate as a 'Specialised Activity Centre' in line with other Western Australian State Policy. Perth Airport is referenced as a key employment node with importance in the diversification of the economy, particularly within the central sub region where Perth Airport is the focus of employment and major contributor to productivity, and facilitator of business clustering and agglomeration.

The proposed development will strengthen the airport's status as a 'key employment node,' both during and post construction, thereby demonstrating strong consistency with Perth and Peel @ 3.5 million outcomes. Project research has been undertaken and estimated 90 direct and 145 indirect construction jobs will be created over the 12-month construction period, and 250 full-time equivalent positions and 225 indirect positions when developed. Employment benefits are explained in further detail in Section 5.1.

3.3.1.3 State Planning Policy 4.2 - Activity Centres for Perth and Peel

State of Planning Policy 4.2 (SPP 4.2) provides for an activity centre hierarchy across the Perth metropolitan region that is designed to ensure equitable access to a range of community goods, services and employment opportunities. The key objectives of the policy include the following:

- ensure activity centres provide sufficient development intensity and land use mix to support high frequency public transport,
- plan activity centres to support a wide range of retail and commercial premises and promote a competitive retail and commercial market,
- increase the range of employment in activity centres and contribute to the achievement of subregional employment self-sufficiency targets, and
- increase the density and diversity of housing in and around activity centres to improve land efficiency, housing variety and support centre facilities.

SPP 4.2 designates Perth Airport as a 'Specialised Activity Centre', and supports the development of a range of land uses that complement the primary function of Perth Airport on a scale that will not detract from other centres in the hierarchy. While the policy acknowledges that Perth Airport is outside of the realms of the policy provisions and subject to Commonwealth legislation, the proposed development has been assessed in accordance with the provisions of SPP 4.2 as outlined in Section 4.

Retail, in addition of speciality services such as optometry and hearing services, proposed in the development of Site 6 aligns with the key objective of SPP 4.2 to provide 'a wide range of retail and commercial premises.' In addition, the increased employment options that will become available at Site 6 further demonstrates the proposed development is consistent with SPP 4.2.

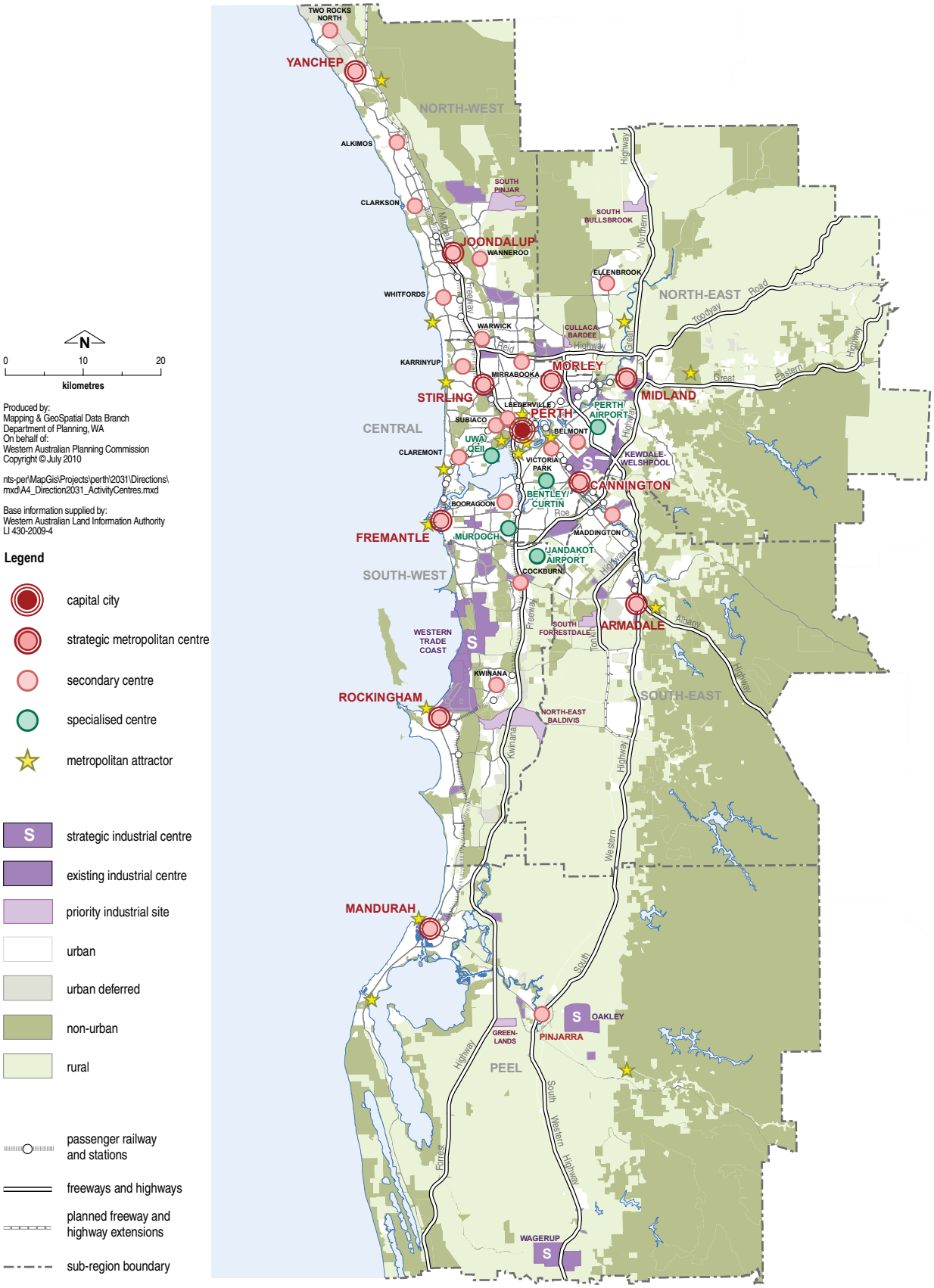

Figure 10 Perth and Peel regions: strategic centres and areas of future urban development

Source: Directions 2031 and Beyond: Metropolitan Planning Beyond the Horizon, Department of Planning & Western Australia Planning Commission, August 2010

3.3.1.4 Metropolitan Region Scheme

The Metropolitan Region Scheme (MRS) is prepared and administered by the WAPC as the principal planning scheme for the Perth metropolitan region. The MRS considers generalised broad-scale land uses and sets out regional reservations.

The subject land for the proposed development is reserved for 'Public Purposes: Commonwealth Government'. The MRS does not place any limitations on permissible land uses for reserved land.

The proposed development is consistent with the Western Australian State Planning system and policies, and aligns with the State's vision for Perth Airport as a 'Specialised Centre'.

3.3.2 Local Planning Overview

Perth Airport is located across the three local government areas of the City of Belmont, the City of Swan and the City of Kalamunda, as is demonstrated in Figure 11.

The proposed development is located wholly within the City of Belmont local government area, adjacent to the locality of Redcliffe.

3.3.2.1 City of Belmont Local Planning Scheme No. 15

The City of Belmont Local Planning Scheme No. 15 (LPS 15) provides for 'industrial' and 'residential' land zonings adjacent to the airport estate, including the major Kewdale industrial area and the residential suburbs of Redcliffe and Cloverdale. It is these residential zoned areas that are in close proximity to the proposed site.

LPS 15 and the associated Local Housing Strategy provides the planning framework for further residential infill opportunities within the City of Belmont. This includes Development Area 6 (DA6), which is located in Redcliffe, to the north of the site.

Perth Airport considers the provisions of LPS 15 in the planning and design of new developments on the estate to ensure consistency between adjacent land uses and to minimise conflicts between the airport and surrounding localities. The proposed development is consistent with the development requirements of LPS 15 and has been designed to integrate with the surrounding locality and future vision for the area at key points of interface.

3.3.2.2 City of Belmont Development Area 6

In 2013, the City of Belmont and Perth Airport undertook a joint planning exercise with the community and relevant State and Local authorities to establish a vision for the future urban regeneration of Development Area 6 (DA6). This resulted in the preparation of a Vision Plan that was focused on ensuring that the urban structure, built form scale, land use configuration and interfaces are designed to achieve the best outcomes for DA6. A Local Planning Policy (LPP 14) was subsequently endorsed by the City of Belmont to implement the vision.

Following the announcement of the Forrestfield-Airport Link rail project by the State Government, the City of Belmont commenced a review of the DA6 Vision Plan and the associated LPP 14. The review ensured appropriate consideration and planning powers are provided towards the desired long term vision of a Transit Oriented Development around the planned Redcliffe Train Station.

As part of the review, the City of Belmont has worked closely with Perth Airport, Public Transport Authority (PTA), State Department of Planning and other State Government authorities, including Main Roads Western Australia and Transperth, to ensure the design of the station, traffic and access arrangements and associated infrastructure in Redcliffe will be effectively integrated with the surrounding locality.

Given the nature of the 'super-regional' catchment from which patronage will be drawn, the proposed development will complement this vision with minimal impact to traffic and access within the DA6 area.

The proposed development will support the City of Belmont and State Government vision for a Transit Oriented Development within the DA6 area, and provide long-term development opportunities for additional commercial and high density residential land uses. The proposal is consistent with surrounding local government scheme provisions and land use zones, and will assist to increase employment-generating land uses in the vicinity. This is in line with the State Government's intent to achieve the activity centre objectives, specifically regarding the future vision for a Transit Oriented Development surrounding the future train station within Redcliffe.

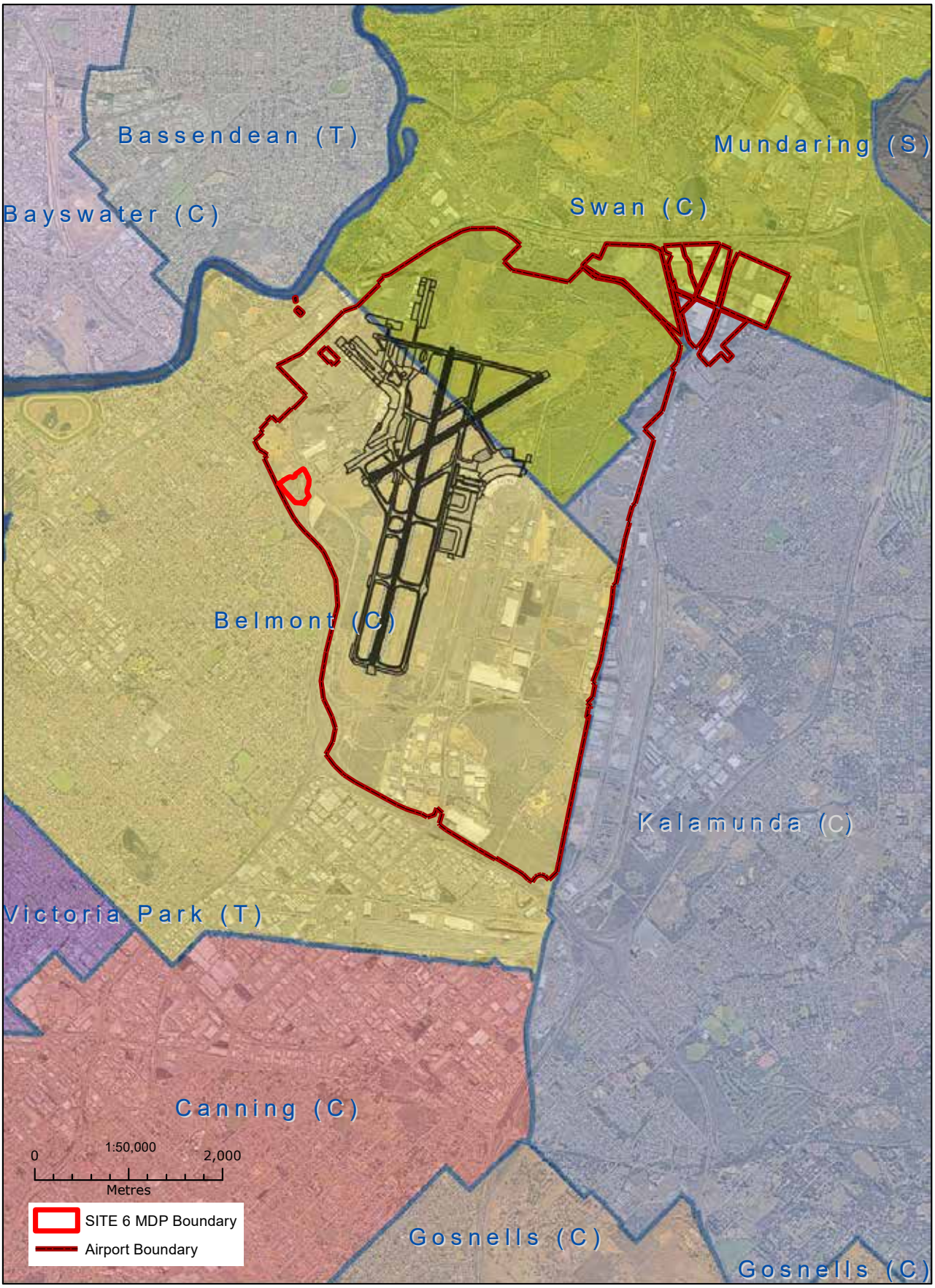

Figure 11 Location of Perth Airport

Source: State Department of Local Government

4. Retail Sustainability Assessment

Section 91 (ga)(iii) of the Airports Act requires a MDP to outline the likely effect of the proposed development on the local and regional economy and community, including an analysis of how the proposed development fits within the local planning scheme for commercial and retail development in the adjacent area. Section 3 outlined how this proposal is consistent with both State and Local governments planning policies and visions. Section 5 outlines the socio-economic impacts. This section provides an overview of the retail sustainability impacts to the adjacent areas.

As outlined in Section 3, although Perth Airport is outside the realms of State policy provisions, the proposed development has been assessed in accordance with the provisions of the State Planning Policy 4.2 (SPP 4.2).

SPP 4.2 provides objectives that support economic and social sustainability throughout the Perth metropolitan region's activity centre network.

Given the location of the development on the estate, which is self-sufficient in the provision of services and infrastructure, the cost imposed on public authorities by the development is nil. However, to assess the impact of retail turnover of activity centres within the catchment, Pracsys was engaged by Perth Airport to undertake a Retail Sustainability Assessment (RSA) in line with the Guidelines of the WAPC. This study identified the trade catchment area for the development, and then completed gravity modelling based on the standard operating model for a development of this type to determine possible economic impacts on other centres.

The assessment was based on 14,000 square metres NLA as is proposed with this MDP.

4.1 Trade Area

A large format retail development differs from typical retail (fashion and specialty) shopping due to the unique consumer behaviour attracting shoppers looking for a destination, with many customers purchasing goods in bulk. Compared to traditional retail, the business model means less trips and higher average basket size and value. Retail catchments generally range from one kilometre to ten kilometres. The proposed development will attract customers from a regional catchment, with minimal expenditure extracted from the local catchment.

The catchment for the Perth Airport retail development is shown in Figure 12.

As shown, the expected trade area covers a large portion of the Perth Metropolitan Area. The trade area covers the east, as well as the majority of the central sub region and extends to the west, past Claremont. In addition to its main catchment, the proposed development's airport location may allow it to capture passing and incidental trade from airport users.

The consumer behaviour that drives this large trade area is particularly relevant to a retail sustainability assessment. This means that any impact the centre has will be spread thinly across the entire network as it draws a smaller proportion of expenditure across a greater number of households.

4.2 Trade Area Population

The WAPC released projected population figures in their 2015 document, "Western Australia Tomorrow". As shown in Table 3, the number of households within the trade area is expected to grow from 598,000 to 720,000 between 2015 and 2026.

20 kilometre catchment	2015	2026	Growth	Per cent Growth
Households	598,000	720,000	122,000	21 per cent

Table 3 Trade Area Catchment
Source: Pracsys 2015, WA Tomorrow Band C (2015), ABS Census (2011)

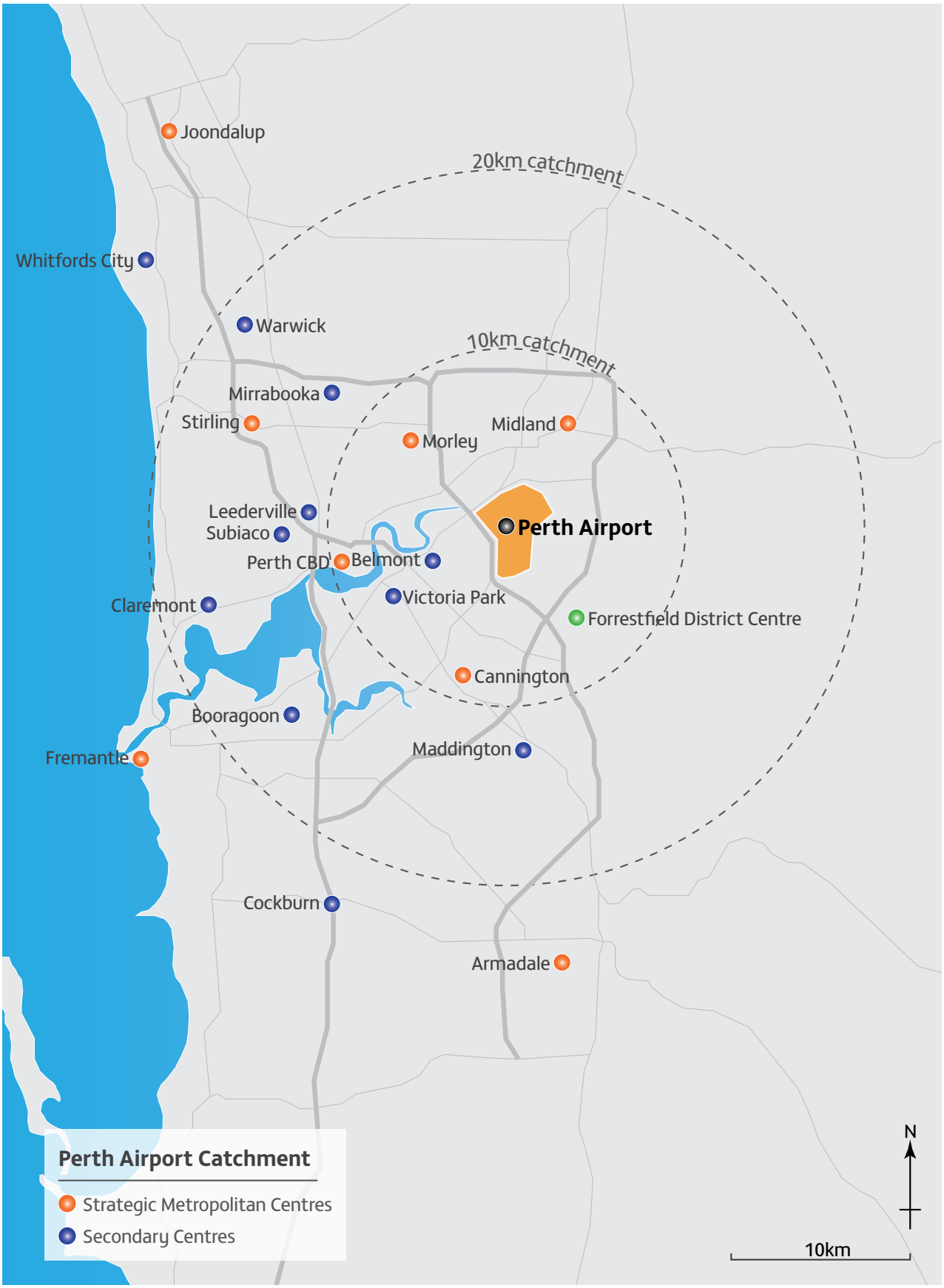

Figure 12 Perth Airport Retail Development Catchment

Source: Pracsys 2015, WAPC 2010 SPP4.2 Activity Centres for Perth and Peel

4.3 Gravity Modelling Impacts

Gravity modelling was used to review the turnover impacts on centres throughout the network under assumptions around retail expansion and population growth. For example, if a shopping centre expands it is possible to estimate the potential loss of trade that competing centres would lose from such an expansion. The model accounts for income and population growth in the network to determine current and future levels of turnover at the centres in question.

In accordance with the SPP 4.2 the sustainability of a centre is typically considered significantly impacted when their profitability is reduced by more than ten per cent. The results found the difference in retail floor space productivity for the proposed development at 14,000 square metres NLA in 2019 as compared to not developing the site are negligible on surrounding centres and in most cases less than one per cent.

The low impact is due to both the relatively small retail development that the proposed devlopment presents and the large catchment the impact is spread across. In addition, the size and scope of the retail development is relatively small and any impact can be expected to be minimal.

4.4 Conclusion

Analysis indicates the proposed development is not likely to significantly or negatively impact the Perth and Peel metropolitan retail network. Impact modelling has shown that the estimated impacts are well below the ten per cent defined by the WAPC within SPP 4.2 as 'significant'. Many factors contribute to this finding, including:

- a wide but "thin" trade from across the catchment,
- the unique consumer behaviour that the development attracts,
- a relatively small development, particularly in the context of other planned expansions,
- strong population growth, and
- a profitable competitive environment.

While the risks and impacts of the development are low, the benefits are high, representing a significantly positive risk reward trade-off for the Perth economy. The proposed development is not a traditional retail shopping centre development but is rather a 'destination' based land use, based on the regional catchment of customers it will attract. The development is expected to inject millions of dollars into the State's economy while simultaneously providing construction and ongoing jobs for the Perth population.

5. Socio-economic Assessment

The proposed development is expected to result in many benefits to the greater Perth community and economy. These are likely to include:

- increased employment,
- improved economic output,
- expenditure capture, and
- improved accessibility and equity of access benefits to the community.

Employment and economic output can be split into two categories:

- construction, and
- operations.

5.1 Employment benefit

The employment generated by the construction of the proposed development has been estimated based on the cost of construction and nature of the development. As shown in Table 4, the proposed development is expected to generate approximately 90 full-time equivalent (FTE) jobs directly through its construction (assuming a one year construction period). Indirectly, a further 145 jobs are expected to be created within the economy because of this development.

Construction Employment	Direct Employment	Direct, Indirect and Induced Employment
Proposed Development	90	145

Table 4 Construction Employment
Source: Pracsys (2017), ABS National Accounts (2015), Clements and Qiang (1998)

An important benefit of the proposed development is its ongoing contribution to local employment. As shown in Table 5, the development is expected to support around 330 direct ongoing jobs, representing 250 FTE positions, and a further contribution to the economy of 225 indirect jobs as a result of the ongoing operations of the development. The development will significantly contribute to the State economy on an annual basis and will have a positive impact on both the local and wider community.

Development	Direct Employment	Indirect Employment
25,000m2	375 (250 FTE)	225

Table 5 Economic Impacts
Source: Essential Economics (2017)

5.2 Economic Output to the Economy

In addition to the economic impact associated with the generation of employment, the construction of the proposed development is expected to generate significant economic output within the Western Australian economy. As shown in Table 6, on top of the construction cost of approximately $45 million the development is expected to leverage a further $102 million output in the broader economy through flow-on effects.

Construction Output	Construction Cost	Indirect and Induced Effect (Cumulative)
Proposed Development	$45,000,000	$102,000,000

Table 6 Construction Output
Source: Pracsys (2015), ABS National Accounts (2015), Clements and Qiang (1998)

5.3 Accessibility and Equity of Access for the Community

The proposed development will provide benefit to the immediate and wider community through the development of a retail shopping opportunity that is unique to Western Australia, allowing equitable access to products and experiences that are available to those living in other states and internationally. It is expected that the development will contribute to competition in the traditional retail market which may drive down prices as a result of its low-cost model.

5.4 Conclusion

The proposed development will contribute positively to the local Western Australian economy and community. Significant local employment will be generated through both the construction phase and the ongoing operations, having an estimated cumulative impact on the economy of around $139 million. The nature of the development is likely to result in competitive pricing amongst major traditional retailers in addition to affording the local community of Redcliffe and the wider Perth metropolitan area benefit from equitable access to goods and experiences available to other cities.

6. Traffic Assessment

Section 91 (ga) of the Airports Act requires that a MDP address the likely effect that the proposed development will have on traffic flows.

Section 6 of the Master Plan 2014 outlines the vision for ground transport at Perth Airport; this development is consistent with this vision.

The Airport West Precinct is serviced by Fauntleroy Avenue and the Dunreath Drive interchange from Tonkin Highway as shown in Figure 13. The construction of the new Dunreath Drive intersection into the precinct allowed the partial closure of Brearley Avenue (by Main Roads WA) in January 2017 for the construction of the Forrestfield-Airport Link. Dunreath Drive now forms the main route into the precinct, with Fauntleroy Avenue continuing as the secondary access point.

The Ground Transport Plan for the Airport West Precinct is premised on the current importance of the precinct to support the commercial air services using T3 and T4. Perth Airport is working with Qantas Group on the consolidation of all commercial passenger services to the Airport Central Precinct by 2025, subject to commercial agreement when new facilities are constructed for the Qantas Group operations.

The domestic operations of the Qantas Group currently generate most of the traffic entering the precinct and traffic modelling for the precinct has been progressed on the worst-case assumption that the Qantas Group will not relocate from the precinct until 2025. If the relocation of the Qantas Group to Airport Central is delayed past 2025, the existing road network could continue to support both the operations of terminal traffic to T3 and T4 and the commercial developments, however at some time after this point, the capacity of the road network would be reached and the level of service experienced by road users within the estate would gradually decline.

Traffic modelling has been carried out using the passenger growth figures calculated by Tourism Futures International (TFI) as detailed in the Master Plan 2014. Since these figures were released, passenger numbers have decreased and the TFI growth forecasts have been downgraded. The Master Plan 2014 forecast a growth in passenger numbers between 2014 and 2017, whereas actual numbers have showed a decline from 2014. Consequently, the passenger volumes used in the traffic model are now not forecast to be reached until after 2025. The traffic model is therefore considered to represent a conservative assessment of the development and that the Qantas Group will relocate before the modelled traffic volumes are reached. Once the Qantas Group relocates, the traffic volumes to and from the Airport West Precinct will substantially decline. Until this occurs, the proposed road and development access design has been developed with the aim that traffic accessing the terminals is the priority vehicle flow.

The proposed development on Site 6 has been assessed to determine the impact on the existing road network with respect to trip generation and distribution, as well as in relation to the level of service of the road network both now and into the future.

6.1 Trip Generation and Distribution

The peak number of vehicles and the likely timing for this volume of traffic generation on Site 6 (referred to as trip generation) was benchmarked with similar large format retail concept stores in Sydney and trip generation rates sourced from the United States Institute of Transportation Engineers (ITE) Trip Generation Handbook. This gives the following trip generation rates:

Measured Sydney Trip Generation	
Thursday Evening	4.7 trips per 100 m^2
Saturday Mid Day	7.8 trips per 100 m^2

Table 7 Measured Sydney Trip Generation

US ITE Rates	
Weekday Morning	0.7 trips per 100 m^2
Weekday Afternoon	5.12 trips per 100 m^2
Weekend Peak	6.95 trips per 100 m^2

Table 8 US ITE Rates

These trip generation figures include an allowance for a member only on-site petrol station and tyre fitting facility associated with the retail outlet that is not generally open to access by passing traffic. Continuing with the conservative approach to the traffic modelling, the highest trip generation rate for each time period has been adopted and used to calculate the anticipated peak hour demands for the development.

Figure 13 Perth Airport external and internal road network

Table 9 summarises the calculated traffic for this development based on a net leasable area of 14,000 metres square.

Time	Trip Generation Rate (trips per 100 m2 NLA)	Hourly Traffic Volume
Weekday PM Peak (5pm – 8pm)	5.12	717
Weekend Midday Peak	7.80	1092

Table 9 Calculated traffic

As detailed in the ITE Handbook, it has been assumed that this traffic will be split 50/50 between vehicles accessing and egressing the development, resulting in 358 vehicles per hour entering and 358 exiting the development in the weekday, evening peak and 546 vehicles per hour each way in the Saturday midday peak.

6.2 Traffic Capacity Analysis

6.2.1 Traffic Volume

The peak terminal traffic associated with T3 and T4 occurs between 5.00am and 7.00am on weekdays, with the estimated average daily traffic profile for the precinct in 2025 as shown in Figure 14. Daily Qantas Group passenger volumes in the precinct are significantly reduced on the weekend when compared to the weekday volumes. The time schedules for the international flights have yet to be finalised, however they are anticipated to be in off peak times, with the direct Perth to London flight currently scheduled for early evening.

The typical traffic peaks for aviation users of the precinct, the wider metropolitan road network and those of the retail developments do not align, with peak terminal traffic occurring between 5.00am and 7.00am and the weekday peak retail development traffic occurring between 12.00pm and 1.00pm. The predicted cumulative impacts of the terminal traffic and all of the proposed retail development traffic in the precinct in 2025 is shown in Figure 15 (weekday) and Figure 16 (weekend). The figures show that weekdays will experience more overall traffic than on weekends and that the peak number of vehicles per hour accessing the estate is modelled to occur between 12.00pm and 1.00pm on a weekday.

The proposed development will be adjacent to the approved DFO development that is under construction. While the DFO's typical retail traffic profile generates a weekday peak traffic volume in the early afternoon, peak weekday traffic generation for the large format retail will typically occur in the evening, creating a sustained and manageable traffic level throughout the afternoon. Both land uses generate a higher Saturday peak than the weekday peak, but with the reduced weekend volume of terminal traffic, the overall volume of traffic on the roads at the weekend peak will be lower than the weekday peaks. Analysis of the results from the traffic modelling indicates that overall traffic volumes lie within the capacity of the airport road network. Table 10, taken from the Austroads Guide to Traffic Management, further demonstrates this, as when adding the cumulative traffic generation for the commercial developments abutting Dunreath Drive to the baseline terminal traffic flows in 2025, the hourly peak traffic volume (approximately 3,500 vehicles per hour) falls within the nominated capacity of 1900 vehicles per hour in each direction on Dunreath Drive, (a dual carriageway with two lanes in each direction).

This traffic analysis and resultant volumes represents the maximum values anticipated before Qantas relocates to the Airport Central Precinct in 2025, after which traffic volumes will be significantly reduced.

Type of Lane	One-way Mid-block Capacity (vehicle per hour)
Median or inner lane	
Divided road	1000
Undivided road	900
Middle lane (of a 3 lane carriageway)	
Divided road	900
Undivided road	1000
Kerb lane	
Adjacent to parking lane	900
Occasional parked vehicles	600
Clearway conditions	900

Table 10 Typical mid - block road capacity
Source: Austroads Guide to Traffic Management Part 3 (2009)

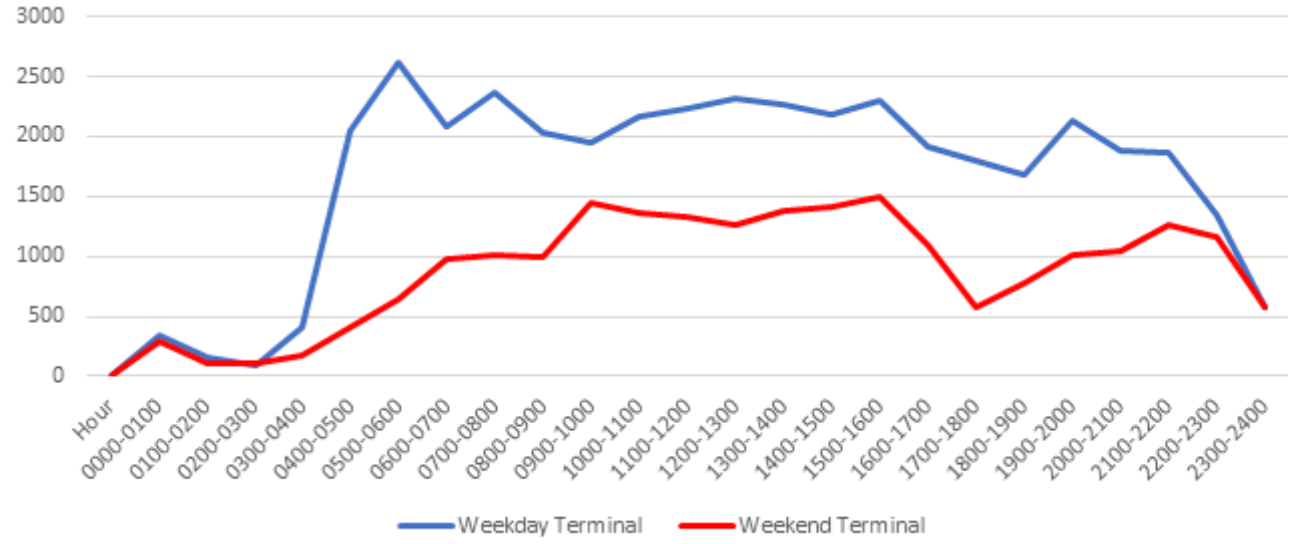

Figure 14 Dunreath Drive Predicted Traffic Profile

Figure 15 Predicted Weekday Traffic with Developments

Figure 16 Predicted Weekend Traffic with Developments

6.2.2 Intersection Level of Service

When assessing road capacity, in addition to the capacity of the road lanes, another factor to consider is the level of service of the road network and intersections. Level of service is an industry accepted measure of the performance of a road network. In assessing the impact of the proposed development on the level of service, a volume to capacity ratio is used to provide guidance on network operation in the form of average vehicle delay.

Level of Service	Average Vehicle Delay[1]	Description
A to C	Less than or equal to 20 seconds per vehicle	Posted speed is maintained and at or near free flow conditions
C to E	Between 20 seconds and 50 seconds per vehicle	Approaching flow breakdown. Speeds decreased, freedom to manoeuvre is limited
E	Between 50 seconds and 70 seconds per vehicle	Unstable flow operating at capacity. Changing lanes will disrupt traffic
Greater than F	Greater than 70 seconds per vehicle	Breakdown of traffic flows and travel times cannot be predicted

1 – Roundabout control
Table 11 Description of Traffic Operation Levels of Service
Source: SIDRA

Table 11 provides detail of the level of service classifications in terms of average vehicle delay and associated descriptions and demonstrates the industry standard. Levels of service A to C means that the intersection is operating with a delay of less than or equal to 20 seconds per vehicle and that the posted speed is maintained and the road network is functioning at a near free flow condition. Generally, Perth Airport considers new road infrastructure should be investigated when roads and intersections are operating at level of service E. Level of service E is when there is 50 to 70 seconds of average delay per vehicle and when the road is operating at capacity and manoeuvres such as changing lanes will disrupt traffic flows.

To determine whether there will be any impacts to the level of service provided to users, analysis of the traffic modelling was carried out focussing on two key elements of road infrastructure being:

- the capacity of Dunreath Drive and internal roads, and
- the capacity of the Tonkin Highway and Dunreath Drive Interchange, as the principle access point.

6.2.2.1 Dunreath Drive and Internal Roads

The key internal intersections providing access to the proposed development as shown in Figure 17 are:

- Dunreath Drive / Old Dunreath Drive (existing roundabout), and
- Boud Avenue / Dunreath Drive (recently constructed roundabout).

The regional nature of the catchment will dictate the use of the access points into the large format retail development, with Tonkin Highway considered to be the primary access route. Traffic modelling has been carried out on the assumption that 80 per cent of all traffic accessing the development will use the existing Dunreath Drive / Old Dunreath Drive roundabout and 20 per cent the Boud Avenue / Dunreath Drive roundabout in the morning peak periods and with a 70/30 per cent split in the afternoon / evening peak.

6.2.2.2 Dunreath Drive / Old Dunreath Drive

The existing roundabout at Dunreath Drive is located to the east of Tonkin Highway. General customer traffic will use this intersection to access and egress Site 6. Additionally, terminal traffic, retail and other general traffic and all service vehicles will traverse this intersection.

Traffic modelling indicates that the intersection is forecast to operate at a level of service A in the morning peak and level of service A, but with slightly longer delays in the afternoon peak. The modelling showed that there will be less than three seconds' delay for traffic travelling to the airport terminals, with minor delays of up to 18.8 seconds occurring for vehicles travelling from the terminal / out of the precinct southbound on Dunreath Drive towards the Tonkin Highway interchange.

6.2.2.3 Dunreath Drive and Boud Avenue

The recently constructed roundabout at the intersection of Dunreath Drive and Boud Avenue, is located north of the existing Dunreath Drive roundabout. Traffic will use this intersection to gain access to the site from the shared access road with the DFO, including both passenger vehicles and service vehicles.

Figure 17 Key internal intersections and access

The traffic modelling indicates that the intersection is projected to continue to operate at a level of service A with an average vehicle delay of 5.7 seconds. In the afternoon peak period, the delays will increase, but remain within the guidelines for A with an average vehicle delay of 10.4 seconds for southbound Dunreath Drive traffic. It is expected that from day of opening, until the Qantas Group relocates, when considering the entire daily traffic stream, the intersection will operate at an overall level of service A.

6.2.2.4 Tonkin Highway and Dunreath Drive Interchange

Traffic to and from Site 6 will mainly access the surrounding major road network through the Tonkin Highway and Dunreath Drive Interchange. Tonkin Highway forms part of the arterial road network providing access to the Perth metropolitan area. As detailed in Section 4, the retail sustainability assessment for the development, the expected catchment is anticipated to cover the eastern metropolitan region, as well as much of the central sub region, north towards Joondalup, south towards Armadale and as far west as Claremont as a consequence of the good level of connectivity to the arterial road network.

Modelling carried out for Site 6 has shown that the adjacent arterial road network, has sufficient overall capacity to accommodate the terminal traffic and the total volume of traffic generated by the Site 6 development and other major commercial developments in the precinct until the Qantas Group relocates. The volumes generated by development are not a major component of the overall traffic using the arterial road network. In addition, as the peak periods from the retail developments do not coincide with the terminal or the metropolitan commuter peaks, the impact of the entire Airport West Precinct on the arterial network is likely to spread out over the course of the day. The intersection of Tonkin Highway and Dunreath Drive does currently approach capacity on the southbound Tonkin Highway exit slip lane in the early morning (5.00am-6.00am) Terminal peak under pre-development traffic conditions. Traffic generated by the on airport commercial developments will not impact this early morning peak, but will require the intersection to be operating at a similar capacity at other times during the day. The traffic model also indicates that the northbound Tonkin Highway exit slip lane will approach capacity in the evening commuter peak (5.00pm-6.00pm) prior to the relocation of Qantas, anticipated in 2025. Modelling carried out as part of the Gateway WA

project however, indicated sufficient capacity at the interchange beyond 2031.

Perth Airport is working with Main Roads WA to develop and implement an upgrade to the intersection to increase its capacity to address the current constraints and those that will be generated by the additional development traffic, to ensure that this traffic does not have a detrimental impact on the flow of traffic on the Tonkin Highway.

The external road network will be further complemented by State Government road upgrades such as the $1.2 billion Northlink WA project, which will link to the Gateway WA upgrades and provide a strategic transport link for both commuters and freight between Muchea and Morley. Further detail of this project can be accessed at project.mainroads.wa.gov.au/northlinkwa.

It is not anticipated that the Site 6 development will have any long-term impacts on freight movements to Perth's major intermodal freight hubs at Kewdale and Forrestfield.

6.2.2.5 Intersection Summary

In conclusion, the traffic modelling has shown that the capacity of Dunreath Drive and associated approach roads and intersections will be sufficient to cater for the demand of both the retail developments and terminal traffic from day of opening until the Qantas Group relocate to Airport Central.

Any delay to the relocation of the Qantas Group to Airport Central to a date after 2025 would not cause an immediate failure of the road network on the estate, but would result in a gradual decrease in the level of service experienced by road users at peak times. The existing road network would continue to support both the operations of terminal traffic to T3 and T4 and the commercial developments.

6.3 Vehicle Site Access

Vehicle access to the car parking associated with the development will be via the two roundabouts on Dunreath Drive as shown in Figure 17.

It is anticipated that these points of access are provided from:

- the south-eastern boundary of the site via a new access leg on the Dunreath Drive / Old Dunreath Drive roundabout providing the primary access point for customer vehicles entering the precinct from the Dunreath Interchange,
- the northern boundary of the site, providing a central entry into the customer car park and for fuel trucks to access the fuel station from the roundabout on Boud Avenue, and
- the extension of Boud Avenue and along the western boundary of the site providing the service vehicle access.

Figure 18 Site Access Plan

The Boud Avenue extension has recently been constructed.

In the event of an airfield emergency requiring the restriction of traffic movement at the roundabout to allow unrestricted use of the emergency access gate, traffic will be able to enter and exit the airport using Dunreath Drive and Fauntleroy Avenue.

6.4 Service Vehicle Access

It is anticipated that all service access to the retail store will be via the western access way from the Boud Avenue extension, to the rear of main building, as shown in Figure 18. Conflict with passenger vehicles and pedestrians is minimised with no retail service vehicle access through the public car parking areas.

Access for fuel tankers to the fuel filling station will also be via Boud Avenue and through a small segment of the car park. Car parking spaces with direct access onto this route will be minimised to reduce potential conflict points. Fuel delivery will likely be carried out daily and be scheduled during off peak trading periods.

To ensure appropriate design of the access points and intersections an assessment of the vehicle manoeuvring required for a 19-metre articulated vehicle has been undertaken for the fuel facility and for a 27.5 metre B-Double combination vehicle for the retail outlet. Dunreath Drive is endorsed by Perth Airport and Main Roads WA for use by B-Double restricted access vehicles and the Boud Avenue extension has been designed to also accommodate them and will be endorsed for B-Double use prior to the opening of Site 6.

6.5 Car Parking

The proposed development provides for approximately 840 at-grade car parking bays, which is adequate to support the development from a commercial perspective. The most comparable land use under the City of Belmont LSP15 is that of a 'shop' which requires six parking spaces per 100 square metres of NLA. As shown in Table 12, the proposed development meets this requirement.

The DFO adjacent to this site, which has a different trading profile, has supplied parking bays based on 6.6 bays per 100 metres square of NLA. The ITE Parking Generation handbook recommends a range of car parking spaces up to 5.9 spaces per 100 square metres of gross floor area (GFA) of the development. A comparison of the recommended number of car parking spaces is shown in Table 12.

The proposed parking supply is therefore considered to be consistent with both the requirements of the local Town Planning Scheme and national industry standard. Detailed design of the car parking layout will ensure that:

- the design, including internal circulation, will meet Australian engineering standards,
- provide safe and efficient access between the car parking areas, and
- provide a safe environment for visitors arriving by non-car transit, such as the future adjacent Redcliffe train station.

The unique location of the proposed development within proximity to T3 and T4 will necessitate the requirement for a car parking management strategy to avoid aviation users occupying bays within Site 6 that are required for shoppers, which will be developed through the detailed design.

It is considered that the regional nature of the catchment and the volume and size of the goods sold at the Site 6 development will generally support access to the site by motor vehicle, however the proximity of the Redcliffe Train Station will provide increased options for casual visitors and staff working at the site and the wider estate.

	Floor Area (m^2)	Car parking spaces per 100m2	Recommended Supply
Retail proposal	14,000 (NLA)	6.0 per 100 m^2 (NLA)	840
Bulky Goods (ITE)[1]	Average 11,334 (GFA)[2]	Range up to 5.9 (GFA)	Maximum 826 (GFA)
City of Belmont	14,000 (NLA)	6 per 100 m^2 NLA	840

Table 12 Minimum level of off-street parking for shopping centres
1 Based on ITE Parking Generation, 4th Edition
2 (GFA) – calculation based on Gross Floor Area not Net Leasable Area

6.6 Pedestrian and Cyclists

The airport shared path network runs past the site along Dunreath Drive. This provides a route between the Site 6 development, the Tonkin Highway Principal Shared Path, the Redcliffe Train Station and the Great Eastern Highway shared path. The design of the car park and internal access roads will provide a safe connection from the retail store to the main path network (see Figure 20).

Appropriate end of trip facilities and cycle parking will be incorporated within the development.

6.7 Public Transport

6.7.1 Rail

In 2014, the State Government announced that a new rail link would be constructed from Bayswater to Forrestfield via the airport estate, now referred to as the Forrestfield-Airport Link project. The Forrestfield-Airport Link, as shown in Figure 19, is an 8.5 kilometre extension of the Perth rail network from Bayswater to Forrestfield of which 3.8 kilometres is located within the estate. Construction works for the project commenced in 2016.

The Forrestfield-Airport Link project will provide three new stations as summarised below:

- Redcliffe Station – located outside the western boundary of the airport estate within the former Brearley Avenue road reserve on State land in the locality of Redcliffe. This station will be approximately 800 metres from the development,
- Airport Central Station – located near the current International Terminal (T1) within the estate, and
- Forrestfield Station – located adjacent to Dundas Road in High Wycombe on State land.

It is anticipated that the rail project will be operational at the end of 2020. Further detail can be found at forrestfieldairportlink.wa.gov.au.

The Redcliffe Station will also incorporate a bus interchange with the local bus routes diverted to link into the rail network. This will provide an alternate means of transport to the development although it is still expected that most visitors will arrive by private vehicle.

Although the development does not rely on the rail station being constructed, the combination of both additional bus services and the provision of rail makes public transport a viable mode for staff and visitors to the site.

6.7.2 Bus

The State Government, through the Public Transport Authority (PTA), is responsible for public transport. The Airport West Precinct is currently serviced by two bus routes, being Bus 40 and Bus 935. The routes of these services through the precinct are shown in Figure 21. These routes traverse Dunreath Drive and Snook Road, with existing bus stops under 800 metres (10 minute walk) of the proposed site. The bus services connect to the Perth CBD and operate at 15 minute intervals during the peak commuter periods. These services are likely to be re-routed following the development of the Forrestfield-Airport Link, with Redcliffe Station operating as a bus / train interchange. Perth Airport will continue to work with PTA to ensure adequate public transport options to Perth Airport.

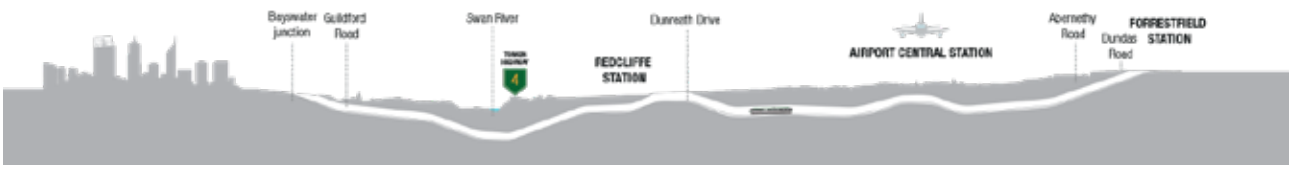

Figure 19 Forrestfield – Airport Rail Link Project
Source: PTA

Figure 20 Perth Airport Shared Path Network

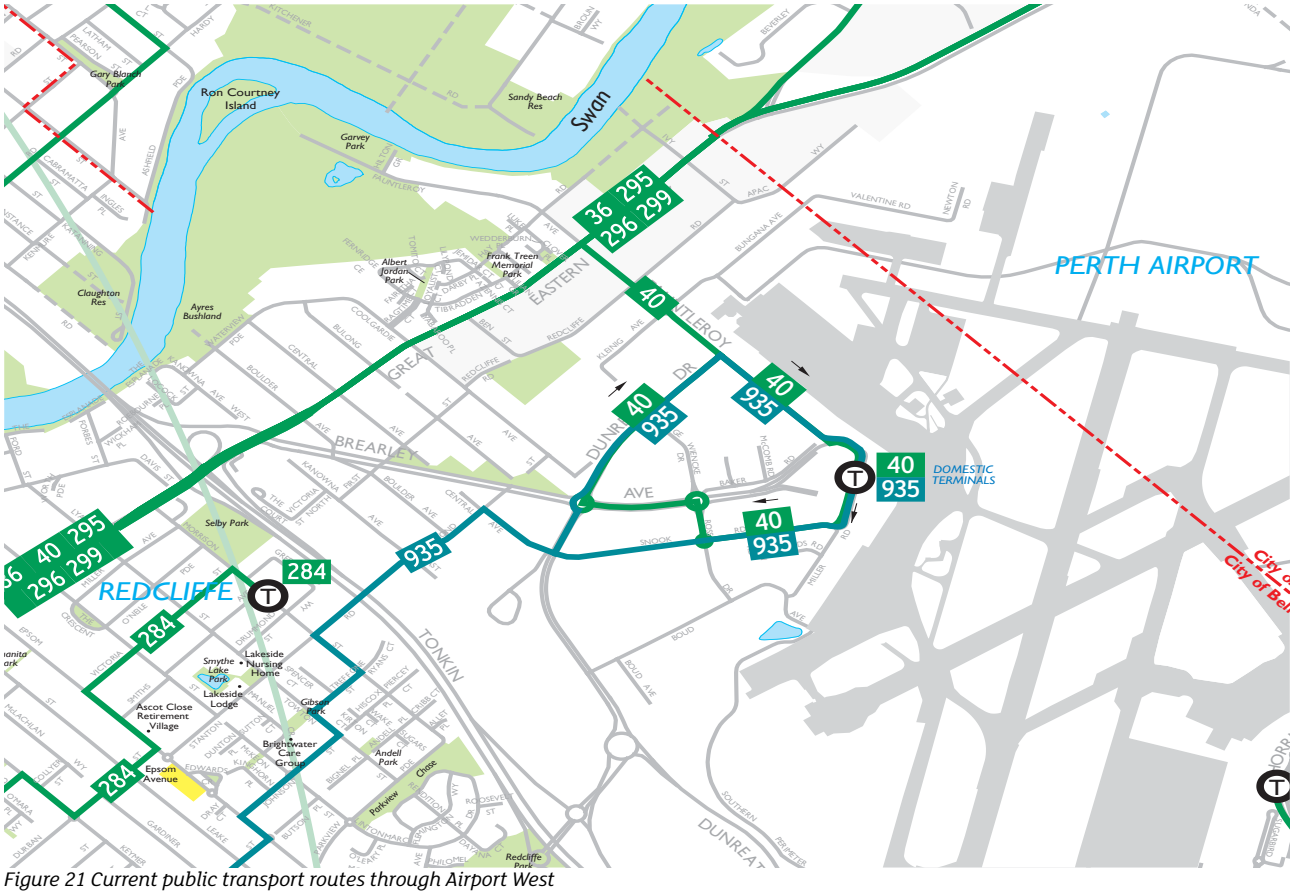

Figure 21 Current public transport routes through Airport West
Source: Transperth

6.8 Construction

The site will be cleared and levelled as part of the project. Topsoil will be stored on site for re-use in the adjacent road verges, or used elsewhere within the estate. Cleared vegetation will be chipped for use in landscaped areas within the estate where possible.

To achieve a site with minimal level changes and the necessary clearances to the one in 100 year flood levels in the adjacent Southern Main Drain, it may be necessary to import up to 40,000 metre cube of fill. This will be either sourced from elsewhere within the estate or imported as clean fill from external sources. If imported, Tonkin Highway and Dunreath Drive will be used to access the site.

Traffic generation through construction of the buildings and car parking will be significantly less than the traffic generated during operations. Construction traffic will be managed through a Traffic Management Plan required at the time of Perth Airport consent.

6.9 Day of Opening

It is anticipated that on opening, the development will see a surge in vehicle traffic movement as people visit the site for the first time. A Traffic Management Plan will be put in place to cater for this surge and overflow parking will be considered and made available. This will ensure no impact to traffic entering the estate to access T3, T4 and General Aviation areas or the external road network and access points.

6.10 Conclusion

Aviation users are the priority for access within the Airport West Precinct, until such time that Qantas relocates its operations to the Airport Central Precinct, planned to be by 2025. For the period that Qantas operations remain in Airport West, it is integral that minimal disruption to service on the roads is provided to vehicles accessing the T3 / T4 passenger terminals.

An assessment of trip generation and distribution and traffic capacity in 2025 has demonstrated that the peak times for the operation of the large format retail development are largely outside of the peak periods for the terminals. Even at the busiest times of the day, Dunreath Drive has sufficient capacity to support the proposed development in addition to the traffic generated by the terminals, and there will be only minimal delays primarily to southbound traffic – i.e. those exiting the precinct back on to Tonkin Highway. The traffic model incorporating the traffic generated by this development shows that the road network has capacity to accommodate the additional traffic. This traffic model is overstating the likely traffic volumes due to the reduced passenger numbers since the passenger traffic forecasts were prepared for the Master Plan 2014.

Perth Airport recognises that the road network on the estate must be designed so that it integrates with the surrounding regional road network. The development will not have an impact on the external road network, including Tonkin Highway. Perth Airport will continue to work closely with Main Roads WA to ensure that this is achieved.

7. Environment and Heritage Assessment

A review of the environmental and heritage impacts associated with the construction and operation of the proposed Site 6 development has been completed. The key areas identified were:

- legislative environment,
- climate conditions,
- geology and soil conditions, including Acid Sulfate Soils,
- groundwater,
- surface hydrology,
- contaminated sites,
- vegetation and flora (including EPBC Act listed species and Threatened Ecological Communities (TECs)),
- fauna, and
- heritage sites.

The environmental values are based on data attained by site investigations and information obtained over the short and long term. Based on the information available, the environmental values of the proposed project area are described and defined by Commonwealth and State legislation, policy and guidance. Where relevant, a whole of estate context on relative values is also provided.

Environmental impacts as a result of the Site 6 development will be described in this section by first describing the existing environment in the project footprint and any potential impacts as a result of the project, followed by proposed mitigation and/or management measures.

Overall environmental management of the project during construction will be detailed in a Construction Environment Management Plan (CEMP). Following construction, an Environment Management Plan (EMP) for the operation will be implemented, if required.

Minor issues of environmental management to be addressed by the CEMP include:

- dust management, and
- waste management.

More significant matters of environmental management to be addressed by the CEMP are addressed in the subsequent sections.

Additional investigations will be undertaken and, if required, management strategies will be developed as the details of the proposed development are finalised.

The CEMP will be prepared by the construction contractor. Perth Airport will provide a copy of the document to the Airport Environment Officer (AEO) for comment prior to finalisation. The operator of the premises will be responsible for the preparation of the EMP (if required).

7.1 Legislative Context

Perth Airport is located on Commonwealth land and developments on the estate are subject to approval and assessment under Commonwealth legislation. However, State legislation may apply under the provisions of the Commonwealth Places (Application of Laws) Act 1970. This is typically for activities for which Commonwealth legislation does not exist, such as for bush fire and Aboriginal heritage management. Where State and Commonwealth legislation conflicts, Commonwealth legislation takes precedence.

For this proposed development, the applicable Commonwealth legislation are the:

- *Environment Protection and Biodiversity Conservation Act 1999,* and
- *Airports Act 1996*.

The interaction between these two pieces of legislation and their requirements for compliance through this MDP is discussed in the following section.

7.1.1 *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The EPBC Act is the Commonwealth Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, defined in the EPBC Act as matters of national environmental significance.

The nine matters of national environmental significance to which the EPBC Act applies are:

- listed threatened species and communities,
- listed migratory species,
- Ramsar wetlands of international importance,
- Commonwealth marine environment,
- world heritage properties,
- national heritage places,
- the Great Barrier Reef Marine Park,
- nuclear actions, and

- a water resource, in relation to coal seam gas development and large coal mining development.

In addition, the EPBC Act confers jurisdiction over actions that have a significant impact on the environment where the actions affect, or are taken on, Commonwealth land or are carried out by a Commonwealth agency (even if that significant impact is not one of the nine matters of national environmental significance). Collectively these are termed Protected Matters.

The EPBC Act is triggered where an action is likely to have a significant impact on a Protected Matter. A significant impact as defined by the EPBC Act is an impact which is 'important, notable, or of consequence, having regard to its context or intensity'. Significant impact guidelines assist in the determination of whether an action is significant for a Protected Matter. For some species, referral guidelines have been developed, providing specific advice on when an action should be referred for assessment.

Referral guidelines were released by the (then) Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPC), now DEE, for three Black Cockatoo species in 2012. The Referral guidelines for the Banksia Woodlands of the Swan Coastal Plain ecological community (BWSCP), titled *Banksia Woodlands of the Swan Coastal Plain: a nationally protected ecological community,* was published by DEE on 23 December 2016. The conservation advice for the BWSCP listing and referral guidelines have both been referred to for impact assessment and identification of environmental significance.

This MDP will be referred to DEE for comment under Section 160 of the EPBC Act as the proposed action is likely to have a significant impact on the environment.

Under Part 13 Section 201 of the EPBC Act, a permit to kill, injure, take, trade, keep or move a listed species or ecological community, a listed migratory species, or a listed marine species in a Commonwealth Area is required. Therefore, as this project will impact on the BWSCP (discussed in Section 7.5), a Part 13 permit will be required to allow clearing of BWSCP. Perth Airport seeks to apply for the Part 13 permit concurrently with the MDP approval process.

7.1.2 *Airports Act 1996* (Airports Act)

The Airports Act outlines that environmental impacts on a federally leased airport are considered via the Airports Act's MDP process.

There are three different ways in which the environmental elements of a MDP can be assessed:

- Department of the Environment and Energy (DEE) assessment under Section 160 of the EPBC Act,
- DEE accreditation of the Department of Infrastructure, Regional Development and Cities (DoIRDaC) assessment process or of DoIRDaC as an assessment body, or
- DEE accreditation of the DoIRDaC assessment with the MDP referred to the DEE for comment once submitted to the Commonwealth Minister for Infrastructure and Transport.

A combined assessment under the Airports Act and EPBC Act can be undertaken, with two processes available:

- DEE accreditation of DoIRDaC's assessment process or of DoIRDaC as an assessment body, or
- DEE assessment under Section 160 of EPBC Act and advice provided to the Commonwealth Minister for Infrastructure and Transport.

Where the number and complexity of environmental impacts of a proposed major development is low and locally confined, and can be predicted with a high degree of confidence, the Commonwealth Minister for the Environment will accredit the MDP process under the Airports Act for the EPBC Act assessment. This means that the Draft MDP is not subject to separate assessment requirements under the EPBC Act. Instead, in preparing advice for the Commonwealth Minister for the Environment to provide to the Commonwealth Minister for Infrastructure and Transport, DEE will draw on the outcome of the assessment by the DoIRDaC of the Draft MDP after it has been submitted by the airport.

Perth Airport submits that through the MDP and Part 13 processes, it will have fulfilled its statutory environmental obligations in accordance with both the Airports Act and the EPBC Act.

The commitments made as part of this MDP are enforceable under the relevant legislation including the:

- *Airports Act 1996*, and
- Airports (Environmental Protection) Regulations 1997 (AEPR).

This MDP is also consistent with developments and commitments outlined in Section 9 (Environment Strategy) of the Master Plan 2014.

In addition, the Airport Environment Officer (AEO), who is employed by the DoIRDaC and is independent to Perth Airport, is located onsite to monitor, report and take preventative action against any environmental impacts or pollutants.

7.2 Climate

7.2.1 Existing Environment

Climatic conditions assist in understanding the environment of the project area as well as influencing the development of construction management measures.

The Perth region has a Mediterranean climate, experiencing hot, dry summers and mild, wet winters.

The annual average rainfall is 769.5 millimetres, with most of the rain falling between May and August, with mean daily minimum temperatures rangeing between 8.0°C and 17.5°C. From December to March the climate is typically dry and hot. Mean daily maximum temperatures range between 17.9°C in winter and 32°C in summer. Historical annual averages from the Bureau of Meteorology station located at Perth Airport are summarised in Figure 22.

Winds and the seasonality of rainfall in the Perth region is a factor that influences stormwater, dust control and sediment, and erosion control management strategies. The Perth region experiences strong westerly winds or gales in winter and strong easterly winds and south-westerly sea breezes in summer.

7.2.2 Impacts and Mitigation

Perth Airport considers there will be no significant impact to climate or weather conditions because of this development. The CEMP will include mitigation measures related to erosion and sedimentation and dust control during construction to mitigate the influence of weather on these factors.

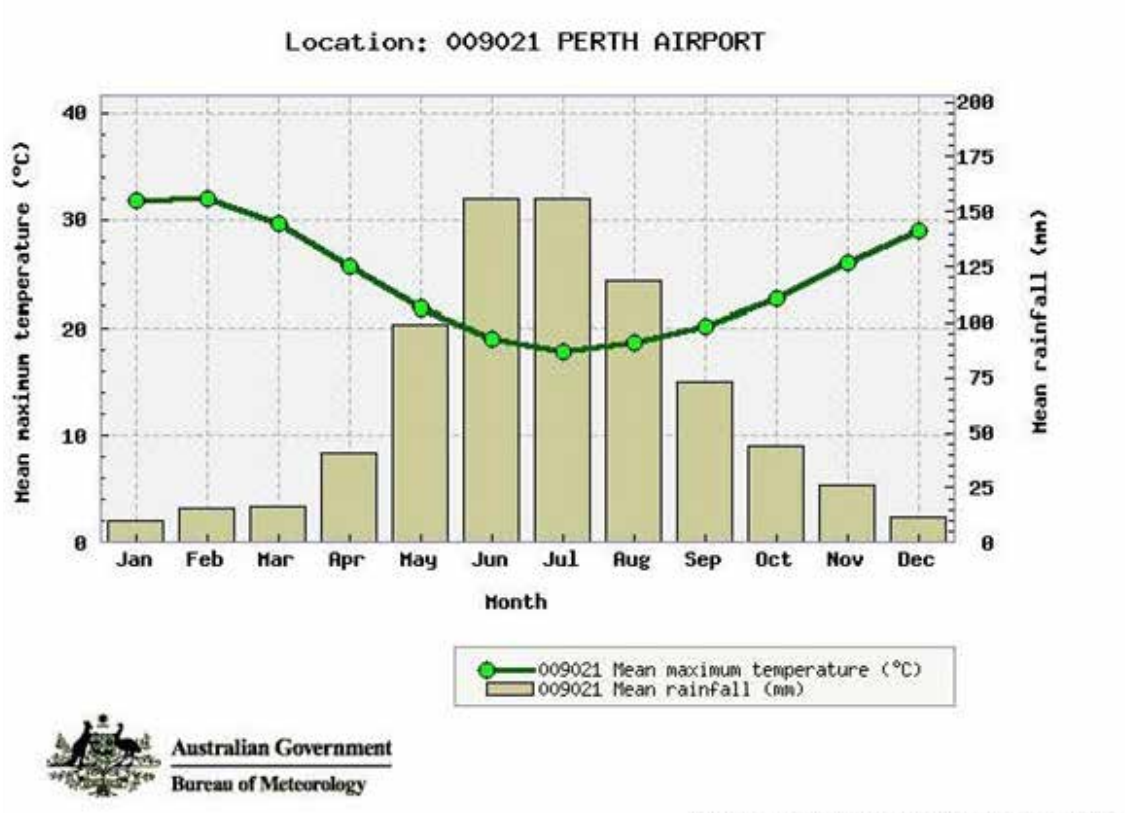

Figure 22 Climate Data for Perth Airport
Source: Bureau of Meteorology

7.3 Geology and Soils

7.3.1 Existing Environment

The airport estate, including the project area, is situated at the base of the Darling Escarpment and is underlain by superficial formations of quaternary age comprising of swamp deposits, sands and clays.

The area upon which the estate was developed is located within the Bassendean Dune System of the Swan Coastal Plain. Bassendean Dunes typically consist of low relief sand hills with seasonal wetlands frequently occurring in the swales. The site is generally low-lying and gently undulating.

The surface soils of the site consist of Bassendean Sands on the dunes and some peaty swamp deposits in the intervening swales. Bassendean Sands typically consist of light grey, fine to medium grained quartz sand with an iron cemented layer commonly encountered at water table depth.

Ground conditions within the project area are generally flat, with minimal observed undulation, and sandy top soils.

7.3.1.1 Acid Sulfate Soils

Acid Sulfate Soils are naturally occurring soils containing iron sulfide minerals (notably pyrite) formed under saturated anoxic conditions. In an undisturbed state below the water table, these soils are benign and non-acidic. However, if the soils are exposed to the atmosphere through activities such as drainage, excavation or dewatering, the sulfides may react with oxygen to form sulfuric acid.

Acid Sulfate Soils can be present in the form of:

- Potential Acid Sulfate Soils (PASS) – soil that contains unoxidised iron sulphides. When exposed to oxygen through drainage or disturbance these soils produce sulphuric acid, and
- Actual Acid Sulfate Soils (AASS) – PASS that has been exposed to oxygen and water and has generated acidity.

An assessment of the State Department of Water and Environment Regulation's (DWER) Acid Sulfate Soils mapping indicates that there is 'moderate to low risk of Acid Sulfate Soils occurring within three metres of the natural soil surface' in the project area (see Figure 23).

A detailed site investigation of the project area was undertaken in September 2016. A number of test pits were excavated to obtain samples (see Figure 24). Based on the laboratory results, Acid Sulfate Soils were only encountered at test pit TP103 at a depth of 2.0 metres. Investigations undertaken on the site adjacent to the project area encountered Acid Sulfate Soils within soils described as brown cemented sand, i.e. 'coffee rock'. Coffee rock was encountered at Site 6 as well, at test pit locations TP101 (between 2.45 metres to 2.6 metres), TP103 (between 1.2 metres and 1.6 metres), TP29 (between 2.2 metres and at least 3.0 metres) and TP33 (between 2.8 metres and at least 3.0 metres).

However, based on the laboratory results, samples collected at Site 6 within this soil profile (TP101/2.5 metres, TP103 1.5 metres) were below the adopted assessment criteria and were not indicative of Acid Sulfate Soils. Based on the limited soil sampling and analysis, all soils excavated below the water table may be considered as Acid Sulfate Soils.

7.3.2 Impacts and Mitigation

7.3.2.1 Acid Sulfate Soils

The project area has a moderate to low risk of containing Acid Sulfate Soils. Following the finalisation of the development design, a review of any proposed excavations with respect to the anticipated water table depth and further Acid Sulfate Soil investigations will be undertaken based on the proposed final design levels. If deemed appropriate as a result of further investigations, an Acid Sulfate Soils and Dewatering Management Plan will be developed. The Construction Environmental Management Plan (CEMP) will need to either refer to the Acid Sulfate Soils and Dewatering Management Plan or include mitigation actions for Acid Sulfate Soils and dewatering management and monitoring. The CEMP will be reviewed and approved by Perth Airport prior to any excavation and/or dewatering activities being undertaken in the project area.

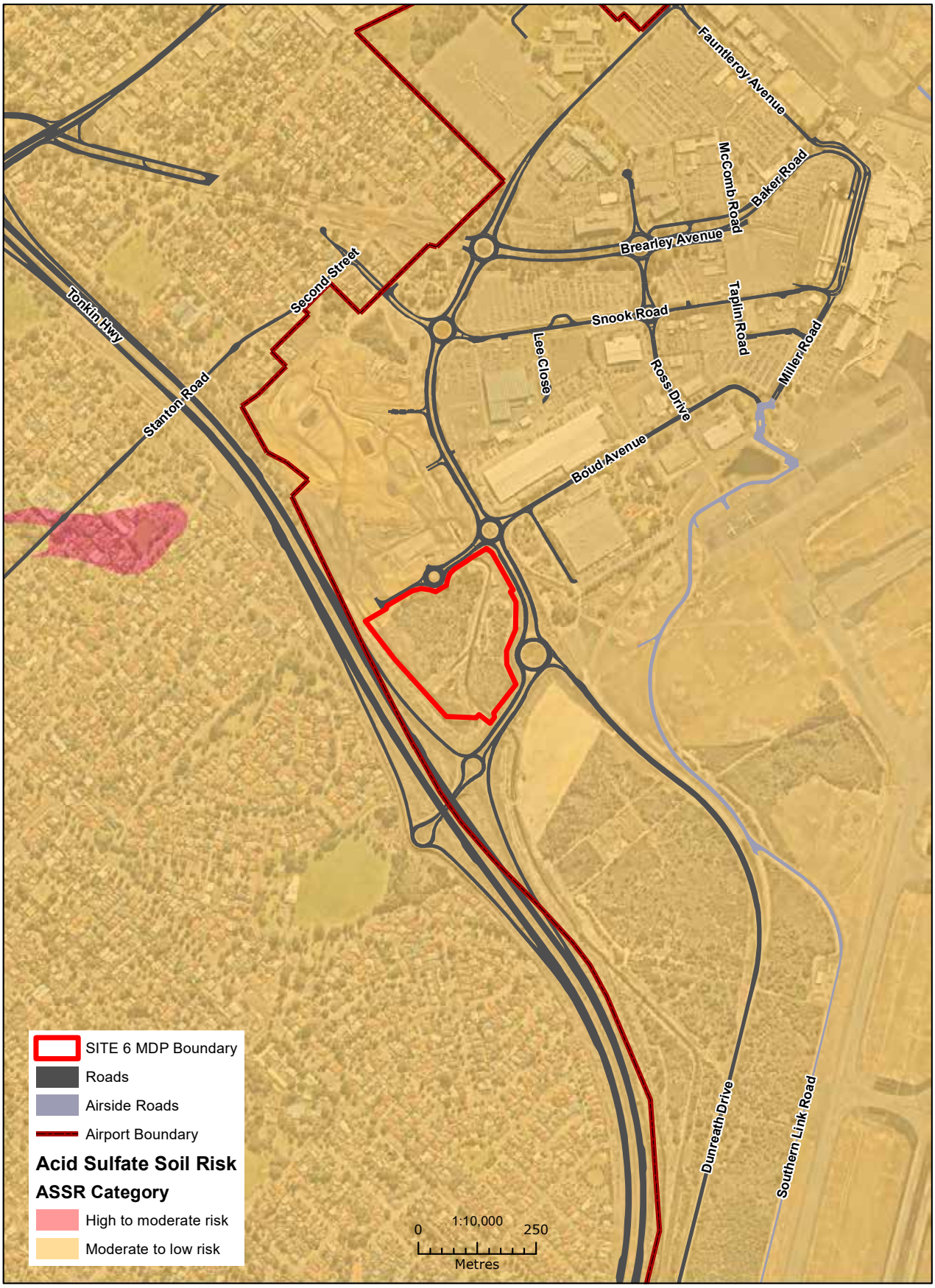

Figure 23 Acid Sulfate Soil Risk

Figure 24 Test pit locations

7.4 Hydrology

7.4.1 Existing Environment

7.4.1.1 Groundwater

The estate is located on the Swan Coastal Plain, is relatively flat, and near the base of the Darling Scarp, extending to within 500 metres of the Swan River. Groundwater beneath the estate sits at a shallow depth (surface to four metres below ground level) as an unconfined water table within the highly permeable sands of the Bassendean Dunes and as a semi-confined aquifer in the Guildford Formation. Groundwater flows generally in a north-westerly direction across the estate.

Detailed groundwater quality monitoring has been undertaken on the estate since 2000, and this information will be used to assess impacts on surrounding groundwater quality that could potentially result from the project. Monitoring bore labelled 'PAPL Well' is primarily used for sampling and is located within the MDP boundary as shown in Figure 25. During the recent detailed site investigation, additional groundwater monitoring bore MW100 was constructed to obtain groundwater quality data for the site. Sampling results were compared against the accepted limits of concentrations outlined in Schedule 2 of the Airports (Environment Protection) Regulations 1997 (AEPR). Recent monitoring results from these bores are presented in Table 13 and indicate that there were no exceedances of the accepted limits for fresh water as outlined in the AEPR.

Dewatering is unlikely to be required as part of the works associated with the project. Should dewatering be required, dewatering impacts will be managed via a detailed Dewatering Management Plan within the CEMP, which will be developed prior to commencement of works.

7.4.1.2 Surface Hydrology

The key hydrological features within the estate, are:

- Munday Swamp in the north-east corner of the estate, and
- the drainage network within the estate (Northern Main Drain (NMD) and Southern Main Drain (SMD)).

Surface water flows through the estate via two main drains; the NMD and the SMD. These drains generally flow east to west and have been constructed as extensions and modifications to naturally-occurring watercourses. Both drains discharge into the Swan River.

The SMD provides stormwater management along the southern portion of the estate and runs along the south side of the Site 6 area.

The Swan River Trust publication Healthy Rivers Action Plan 2008-2013 outlined several sources of nutrient loads reaching rivers, including:

- pollutants from urban drainage,
- littering by the public in foreshore areas,
- nutrient run-off from excess fertilisers in agricultural land and urban gardens,
- erosion, and
- sedimentation.

The document highlighted items such as nutrient stripping vegetation areas that may be implemented to combat nutrients. It is important to note that water flowing onto the estate is generally higher in nutrients than water flowing off the estate towards the Swan River. The airport estate plays a role in controlling and remediating water quality before it intersects the river.

There are no Ramsar wetlands located within the project area.

7.4.2.1 Impacts and Mitigation

The Perth Airport Master Drainage Strategy, incorporating the living stream, provides for the management of hydrological values on the estate in anticipation of the ultimate development articulated by the Master Plan 2014. The Master Drainage Strategy is an integrated ground and surface water management approach providing opportunities for infiltration of surface water to groundwater, flood management and water quality improvements.

The drainage network conveying stormwater from the project area will flow into the SMD.

Treatment of the stormwater will be provided by the SMD and Living Stream water quality management features, which will improve the capacity for stormwater retention, general amenity in the area and the environmental performance of the main storm water system that passes through the estate before it is discharged into the Swan River.

Water and sediment management methodologies during construction will also be defined by the CEMP. Sediment controls will be provided along the SMD and other minor drainage lines that are active during construction, to ensure that construction activities do not result in an increase in suspended solids in the drainage network.

If dewatering is required, dewater effluent will be infiltrated on site through an infiltration basin, after the water is first contained within a settlement pond. Groundwater and dewater effluent will be sampled regularly.

To ensure that operation of the proposed development, particularly the service station, does not impact on groundwater or surface water quality, regular monitoring will be undertaken.

Analyte Group / Analyte	Unit	PQL	AEPR Assessment Criteria	MW100	PAPL Well
Nutrients					
Total Nitrogen	mg/L	0.1	0.1	1.1	0.9
Total Phosphorus	mg/L	0.5	0.01	<0.05	<0.05
Dissolved Metals					
Arsenic	mg/L	0.001	0.050	<0.001	0.001
Cadmium	mg/L	0.0001	0.0002	<0.0001	<0.0001
Chromium	mg/L	0.001	0.010	0.003	0.002
Copper	mg/L	0.001	0.002	<0.001	<0.001
Lead	mg/L	0.00	0.001	<0.001	<0.001
Mercury	mg/L	0.00005	0.0001	<0.00005	<0.00005
Nickel	mg/L	0.001	0.015	<0.001	0.003
Zinc	mg/L	0.001	0.005	0.003	<0.001
Total Recoverable Hydrocarbons					
TRH C6-C9	µg/L	10	150	<10	<10
TRH C10 – C14	µg/L	50	600	<50	<50
TRH C15-C28	µg/L	100	600	<100	<100
TRH C29-C36	µg/L	100	600	<100	<100
Monocyclic Aromatic Hydrocarbons					
Benzene	µg/L	1	300	<1	<1
Toulene	µg/L	1	300	<1	<1
Ethyl-benzene	µg/L	1	140	<1	<1
Polycyclic Aromatic Hydrocarbon					
Total +ve PAH's	µg/L	-	3	No +ve PAH's	No +ve PAH's

Table 13 Recent Groundwater Monitoring Results

Figure 25 Groundwater monitoring sites
Source: Perth Airport Pty Ltd

7.5 Vegetation and Flora

7.5.1 Existing Environment

Numerous comprehensive flora and vegetation surveys have been undertaken across the estate dating back to 1994.

The most recent botanical surveys undertaken included:

- Bamford (2012) Perth Airport Black-Cockatoo Habitat Study. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA,
- Bamford (2013) Perth Airport Black-Cockatoo Habitat Survey. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA,
- Ecologia Environment (2013) Perth Airport Flora and Vegetation Survey. Unpublished report prepared for Perth Airport Pty Ltd,
- Bamford (2014) Fauna Surveys of the Perth Airport Bushland 2008 and 2014. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA,
- Mattiske Consulting (2014) Review of Macarthuria keigheryi on Perth Airport Areas. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA,
- Biologic (2015). Perth Airport Targeted Fauna and Flora Survey. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA,
- Mattiske Consulting (2015) Targeted Level 2 Flora and Vegetation Survey of Perth Airport Remnant Vegetation Areas – Assessment of Threatened and Priority Ecological Communities. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA, and
- Focused Vision Consulting (2017) Flora, Vegetation, Fauna and TEC Assessment, Airport West, Site 6. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA.

The catalogue of vegetation surveys undertaken on the estate provides a high level of confidence in the vegetation information and this information has guided Perth Airport's environmental management efforts.

7.5.1.1 Regional Context

The estate is located within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) Region and Swan Coastal Plain 2 Subregion. This subregion is a low lying coastal plain covered with woodlands dominated by Banksia and Tuart on sandy soils, Casuarina obesa on outwash plains and paperbark in swampy areas.

7.5.1.2 Vegetation Complex

Vegetation complexes present within the estate as mapped by Heddle (E. M. Heddle, 1980) include:

- Southern River Complex,
- Bassendean Complex – central and south, and
- Guildford Complex.

The project area lies within the Bassendean Complex – central and south as shown in Figure 27.

A total of four vegetation community types have been mapped within the project area. The vegetation community type which corresponds to the listed BWSCP is coded AfBmHh. Approximately 45 per cent of the project area has been cleared or developed for services and drainage purposes. The remaining vegetation is comprised of vegetation types detailed in Table 14 and shown in Figure 26.

The vegetation within the project footprint was assessed according to the Keighery 1994 vegetation condition rating scale as outlined in Table 15. The condition of the vegetation ranges from 'excellent' to 'completely degraded' as shown in Table 16 and Figure 28.

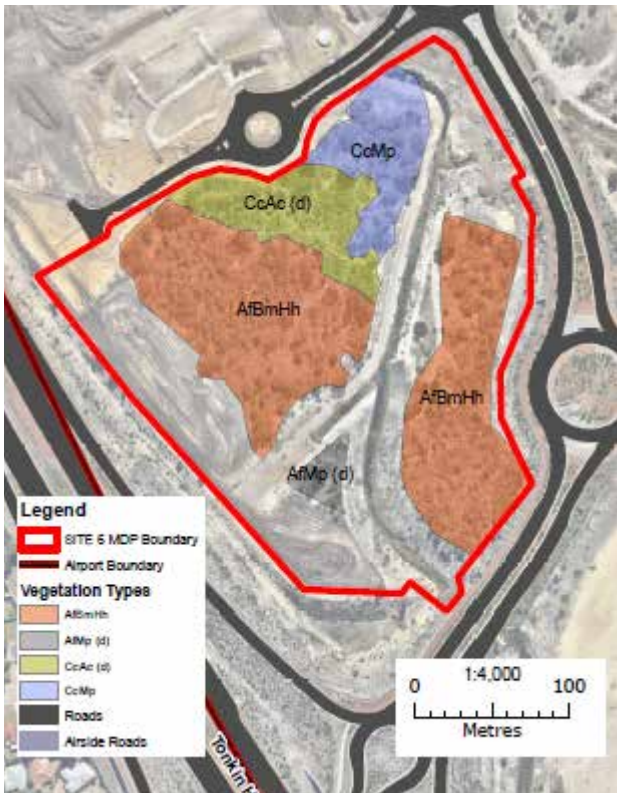

Figure 26 Vegetation Types

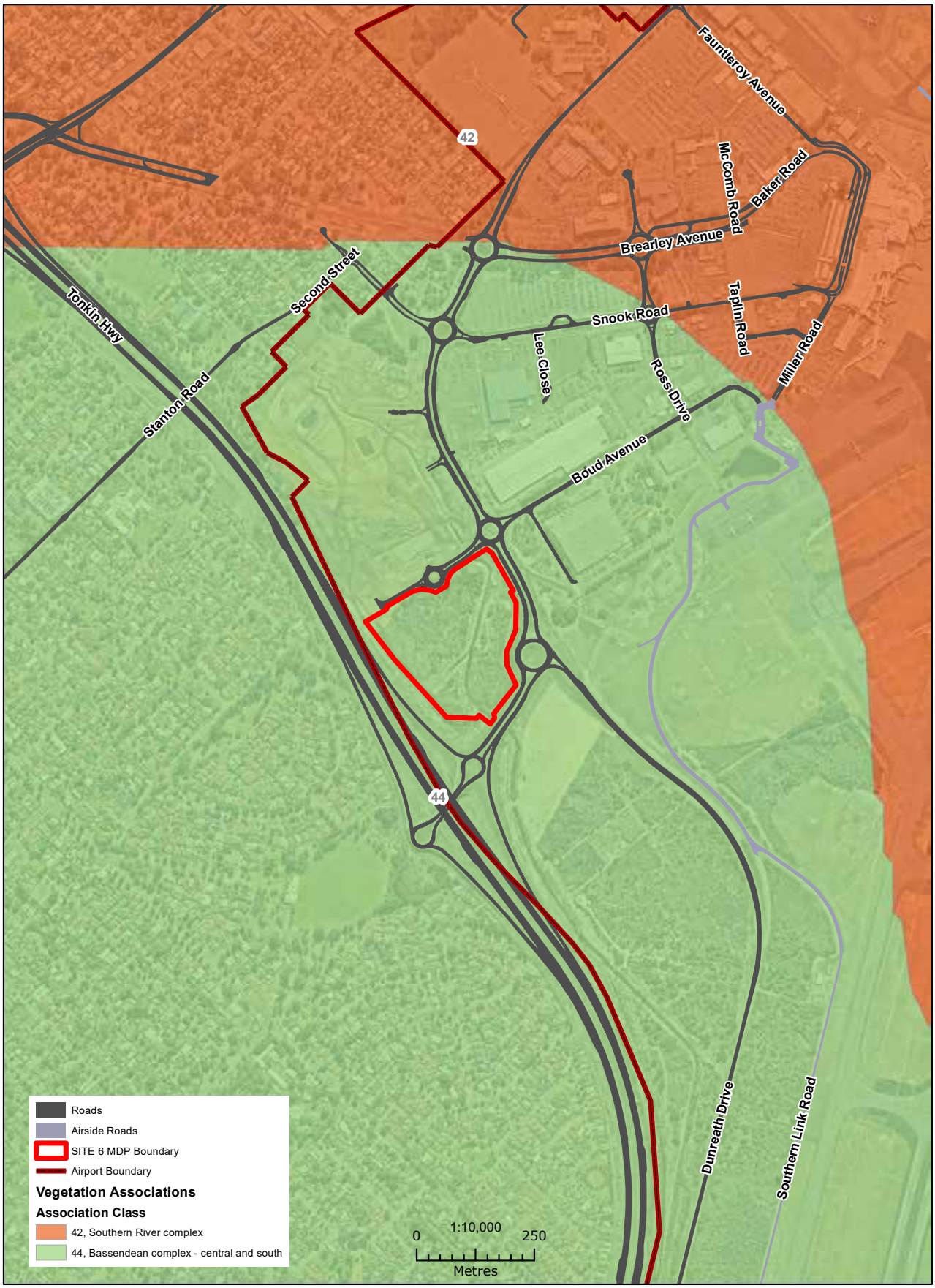

Figure 27 Vegetation Complex

Vegetation Code	Vegetation Type	Project Area Footprint (hectares)
AfBmHh	Allocasuarina and Banksia low woodland - Low woodland A of occasionally dominant Eucalyptus marginata with Allocasuarina fraseriana, Banksia menziesii and Banksia attenuata over low scrub B of Acacia pulchella and Calytrix fraseri over dwarf scrub of Hibbertia hypericoides over Mesomelaena pseudostygia and Alexgeorgea nitens low sedges, in grey sands.	2.49
CcMp	Corymbia calophylla and Melaleuca preissiana low woodland - Low woodland A of Corymbia calophylla over Low woodland B of Melaleuca preissiana over open low scrub B of Xanthorrhoea preissii, over low sedges dominated by Plebocarya ciliata, in pale grey sands.	0.50
CcAc (d)	Degraded Corymbia calophylla and Melaleuca preissiana open low woodland - Degraded Open low woodland A of Low woodland A of Corymbia calophylla over Low scrub A of Adenanthos cygnorum subsp. cygnorum over annual weeds, dominated *Ehrharta calycina, in pale grey sands.	0.58
AfMp (d)	Degraded Allocasuarina and Melaleuca preissiana low woodland - Low woodland A of occasional Corymbia calophylla with Allocasuarina fraseriana and Melaleuca preissiana over low scrub A of Calytrix fraseri and Pericallymma ellipticum in brown loamy sands.	0.10
Total vegetated area to be cleared:		3.67

Table 14 Vegetation Types within the Project Area

Condition Description	Explanation
Pristine	Pristine or nearly so, no obvious signs of disturbance
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are nonaggressive species
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure covers repeated fire, aggressive weeds, dieback, logging and grazing
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure covers frequent fires, aggressive weeds at high density, partial clearing, dieback and grazing
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure includes frequent fires, presence of very aggressive weeds, partial clearing, dieback and grazing
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs

Table 15 Vegetation Condition Rating Scale (Keighery 1994)

Vegetation Condition	Project Area Footprint (hectares)
Excellent	0.62
Good to Very Good	0.30
Good	0.63
Degraded to Good	0.64
Degraded	1.24
Degraded to Completely Degraded	0.22
Completely Degraded	2.01
Cleared	1.43
Total (including vegetated and cleared areas)	7.09

Table 16 Vegetation Condition with the Project Area

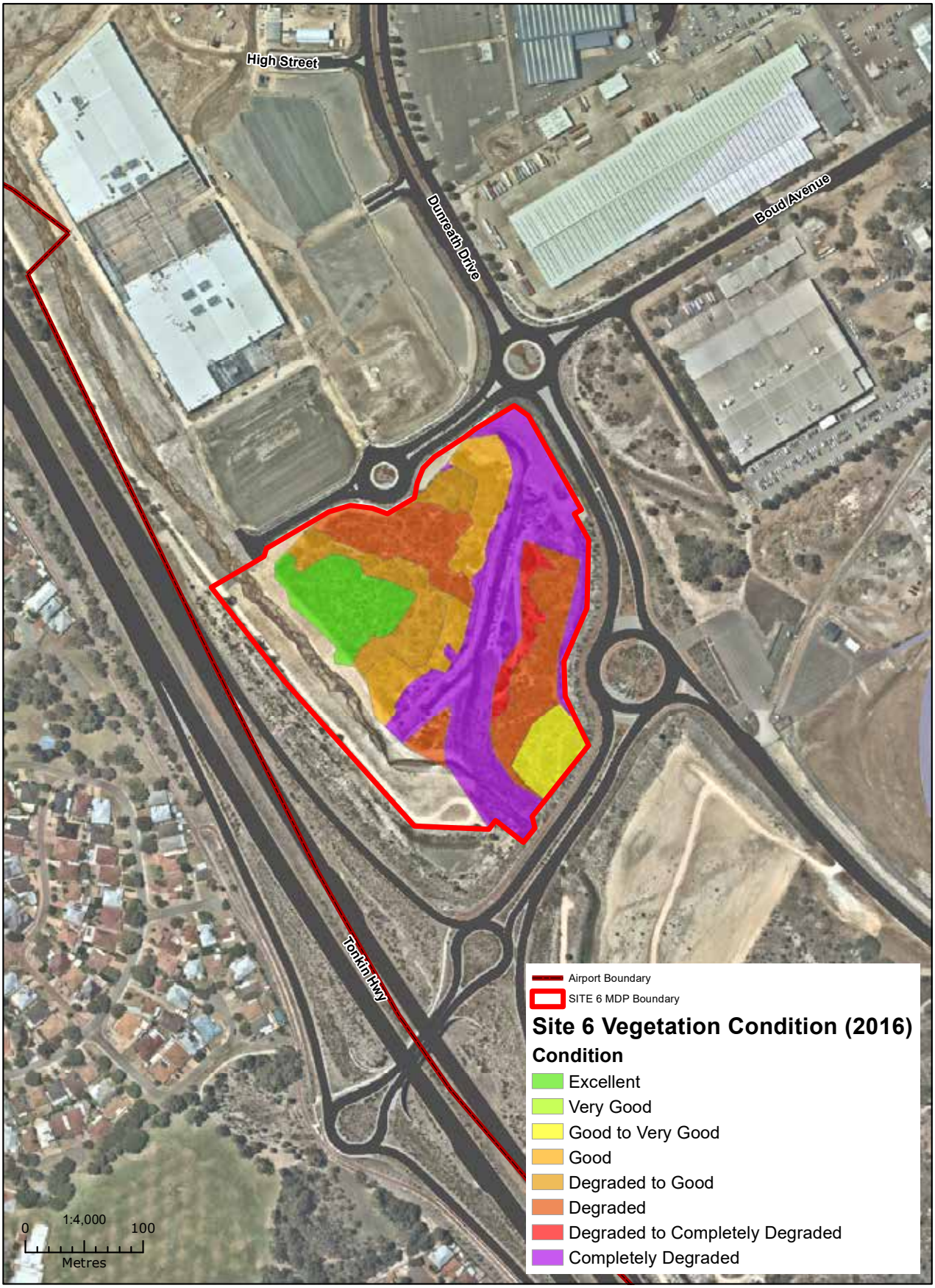

Figure 28 Vegetation Condition

Source: Focused Vision Consulting (2017)

7.5.2 Assessment of significance of impacts

Table 18 presents an assessment of the significance of the impact from the proposed development to the BWSCP ecological community.

Perth Airport will continue to work with DEE and the State Department of Biodiversity, Conservation and Attractions (DBCA) to further quantify and refine strategies to mitigate impacts to the BWSCP, including development of a suitable offset proposal.

7.5.3 EPBC Act Listed Flora Species

A survey undertaken of the estate, by Mattiske in 2008 and Ecologia in 2013, indicated the presence of over 650 vascular plant taxa from 285 plant genera and 91 families. Two flora species known to occur on the estate, *Conospermum undulatum* and *Macarthuria keigheryi*, are listed under the EPBC Act as vulnerable and endangered respectively. No impact on these species will occur as a result of this project.

7.5.4 Threatened Ecological Communities

Threatened Ecological Communities (TEC) listed by the Commonwealth and the State are mapped by the State Government as being present on the estate. Verification studies were conducted in 2014 and 2015 to understand whether this mapping was accurate. Using approved flora and vegetation survey methodologies, Mattiske (2015) concluded that there were no Federal or State listed TECs present within the project area.

Since this survey, the Banksia Woodlands of the Swan Coastal Plain ecological community (BWSCP) was federally listed on 16 September 2016. Following the listing, Perth Airport commissioned Focused Vision Consulting (2017) to undertake a survey to identify the presence and extent of BWSCP within the proposed project area. The approach for the BWSCP TEC assessment included:

- review and verification of areas mapped as Banksia woodland, including boundaries delineated by Mattiske Consulting,
- review and verification of the vegetation condition of areas mapped as Banksia woodland by Mattiske Consulting, and
- assessment of replicate vegetation quadrats (10 metres x 10 metres) within areas of Banksia woodland across the estate.

The areas of Banksia woodlands across the estate included some verifications to boundaries resulting from recent clearing, due to observed vegetation not considered representative of the Mattiske (2015) Banksia vegetation types (types H1 and J1), or due to vegetation condition observed to be poorer quality than as mapped by Mattiske (2015).

The conservation advice for the BWSCP states that a patch should first be identified using the diagnostic features listed in the conservation advice, then the condition thresholds should be applied as the BWSCP is only protected when the patch has a condition rating of good or better. Accordingly, as shown in Figure 29, approximately 2.49 hectares of vegetation which meets the criteria for classification as the BWSCP has been identified to occur within the site boundary. Table 17 summarises the key diagnostic characteristics of the BWSCP within Site 6.

7.5.4 Phytophthora Cinnamomi (Dieback)

Phytophthora dieback disease is caused by the pathogen *Phytophthora cinnamomi* and presents a major threat to biodiversity in south-western Western Australia. Dieback has previously been found to occur on some areas of the estate and is actively treated. No dieback has been confirmed via soil testing within the project area; however, an area of suspected dieback infestation was observed in approximately the centre of the study site, with evidence of this in the form of stressed Jarrah and dead Banksia trees.

The CEMP will include procedures to limit the spread of dieback.

Figure 29 Banksia Woodlands Condition
Source: Focused Vision Consulting (2017)

Key diagnostic characteristics	Information	Key diagnostic questions	Response
Location and physical environments	Bioregion	Is the proposal site within the Swan Coastal Plain IBRA bioregion (including Dandaragan plateau), or adjacent areas within the Jarrah Forest IBRA bioregion?	Yes. Site 6 is located within the IBRA Region and Swan Coastal Plain 2 Subregion. See Section 7.5.1.1.
Soils and Landform	Soil type	Is the soil type consistent with where the Banksia Woodlands TEC may occur?	Yes. The site consists of mostly Bassendean Sands with some Pinjarra Soils in the southern portion. See Section 7.3.1.
	Location in the landscape, topography	Is the topography/physical environment consistent with where the Banksia Woodlands TEC may occur?	Yes. Ground conditions within the project area are generally flat, with minimal observed undulation, and sandy top soils.
Structure	Tree composition, understory composition, diversity, species	Is the structure consistent with the characteristics set out in the conservation advice?	Yes. All vegetation types in the area are Low woodlands over scrub. See Table 11.
Composition	Dominant tree species, emergent tree layer, understory	Is the composition consistent with the characteristics set out in the conservation advice?	Yes. See description of vegetation composition for vegetation type AfBmHh in Table 11.
Patch Condition	Condition thresholds	What is the patch condition using the condition categories outlined in the conservation advice.	There are two patches in Site 6. The western patch average condition is Very Good, with the maximum condition being Excellent. The eastern patch average condition is Good with the maximum condition being Very Good.
Patch Size	Patch size in hectares	Is the patch size large enough to meet criteria in the conservation advice.	The western patch is 1.41 hectares, which meets the criteria of a minimum of one hectares for its average of Very Good condition. The western patch comprises 0.62 hectares Excellent, 0.27 hectares Good and 0.51 hectares Degraded to Good areas. The eastern patch is 1.08 hectares which does not meet the criteria of two hectares for its average condition of Good but does meet the criteria of one hectare for its maximum condition of Very Good. The eastern patch comprises 0.30 hectares Good to Very Good, 0.56 hectares Degraded and 0.22 hectares Degraded to Completely Degraded areas.
	Surrounding buffer	What is the size and vegetation type in the surrounding buffer and what is the connectivity to the surrounding vegetation?	The two patches are contained within an area of 3.67 hectares of vegetation ranging from very good to completely degraded. A drainage channel runs through the two patches, which are also connected to other vegetation types as shown in Figure 32 and described in Table 11.
Location and physical environments	Regional distribution and quality	Quantity/quality of vegetation community in, and in the region around, the site of the proposed action.	Most of the area surrounding Site 6 is developed or under development as shown in Figure 3. The site is bound by roads, the DFO site and Living Stream project.
Other condition considerations	Presence/absence and spread of Phytophthora cinnamomic (dieback)	If present, how much dieback exists and is the proposed action likely to spread dieback further or increase its impact? If not present, can its introduction be avoided?	While no dieback has been confirmed in the area, an area of suspected dieback infestation was observed in approximately the centre of the study site, with evidence of this in the form of stressed Jarrah and dead Banksia trees. Given the area will be cleared, a Dieback Management Plan will need to form part of the Construction Environmental Management Plan.

Key diagnostic characteristics	Information	Key diagnostic questions	Response
Other condition considerations cont.	Presence/absence weeds	Does the patch contain weeds? Which species are present, in what densities, and how can they be managed?	Twelve of the recorded flora species at the site were weeds, all of which are classified as Environmental Weeds and with the Western Australian Organisms List status of 'Introduced – Permitted'. None were Weeds of National Significance or Declared Pest plants by the State Department of Agriculture and Food. See Section 7.5.5 for a list of weeds recorded.
	Any other notable disturbance to the site where relevant (i.e. fragmentation, introduction of edge effects, fire regimes, bare patches, erosion, feral animals)	What disturbance is present which may degrade the quality of the community? For any/each form of disturbance, what is the degree of the disturbance? Is there evidence of recruitment of key native plant species following disturbance?	The area surrounding the site is either developed (roads) or under development (DFO and Living Stream projects). Within the site, there are highly disturbed areas comprising the drainage and bare patches infested with weeds.
	Patch isolation	Is the patch connected to other areas of Banksia Woodland or is it isolated? What are the characteristics of those connected areas?	The site contains two isolated patches.
	Presence of other biodiversity values	Does the site (or surrounds) contain other biodiversity values such as those discussed in the conservation advice.	The site contains habitat for Black Cockatoos as discussed in Section 7.6.2 and shown in Figure 34. The site contains two patches of BWSCP, connected to other vegetation as shown in Figure 32. This vegetation ranges in condition from Completely Degraded to Good as shown in Figure 33.
Sub-community and vegetation unit	Broad scale structural unit (Beard vegetation associations)	Provide the closest corresponding Beard vegetation association(s).	The site sits within the Bassendean – 1001 vegetation association.
	Broad scale structural unit (Vegetation complexes)	Provide the closest corresponding Vegetation Complex(s).	The site sits within the Bassendean complex – central and south vegetation association. See Figure 31.
	Floristic community types	Provide the closest resemblance of floristic community type(s) with reference to those discussed in Appendix C2 of the BWSCP Conservation Advice.	Results of the survey undertaken to verify the presence of BWSCP on the estate identified both patches as presenting the closest resemblance to FCT 23a. However, this preliminary outcome will be confirmed and verified through another survey to be conducted prior to clearing.
	Western Australian ecological community listing	Is this ecological community listed in WA?	No, this FCT is not listed in WA.
Surveying	Timing of the surveying	Ideally surveys should be undertaken in spring with two sampling periods to capture early and late flowering species. When was sampling undertaken at the proposed site? If vegetation community has not been identified, is there any specific reason?	One spring survey was conducted in October 2016. It was not possible to conduct two spring surveys in 2016 given the timing of the listing in September 2016, however, this was accepted by the DoIRDaC as adequate at the time. Perth Airport commissioned another survey with two sampling rounds in 2017 to confirm and verify the findings of the preliminary survey. While the results of the 2017 surveys have not been finalised, data is consistent with previous surveys.

Table 17 Key diagnostic characteristics and other information of the Banksia Woodlands TEC

Significant Impact Criteria	Description of proposed action in relation to significant impact criteria	Likelihood (known, likely, possible, unlikely)
Reduce the extent of an ecological community	A total of 2.49 hectares of Banksia Woodland TEC of varying quality will be removed as part of the project	Known
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	The whole of the site will be cleared including Banksia Woodland TEC and other vegetation. The site is fragmented from other vegetated areas and is under increased pressure from edge effects resulting from surrounding developments	Known
Adversely affect habitat critical to the survival of an ecological community	The two patches of Banksia Woodland TEC to be cleared represent a very small fraction of the remaining TEC and their removal is unlikely to be critical to the survival of the TEC as a whole	Unlikely
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	The area will be cleared and vegetation and topsoil will be removed, with appropriate fill being imported to achieve the necessary clearances to the 1 in 100 year flood levels. To accommodate this development, the surface water entering the site from the south will change from being an open drain to being piped and connected to the living stream project to the northwest of the site	Known
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	All species will be removed. A total of 2.49 hectares of Banksia Woodland TEC of varying quality will be removed as part of the project	Known
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: –– assisting invasive species, that are harmful to the listed ecological community, to become established, or –– causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community	The two patches of Banksia Woodland TEC will be removed as part of the project	Known
Interfere with the recovery of an ecological community	Removal of the Banksia Woodland will not assist in the recovery of the TEC	Known

Table 18 Assessment of Significance of Impacts

7.5.5 Weeds

No species listed as Weeds of National Significance (WONS) have been identified on the site, however, the following weeds were recorded:

- *Hypochaeris glabra,*
- *Sonchus oleraceus,*
- *Ursinia anthemoides,*
- *Wahlenbergia capensis,*
- *Euphorbia terracina,*
- *Gladiolus caryophyllaceus,*
- *Disa bracteate,*
- *Oxalis pes-caprae,*
- *Briza maxima,*
- *Briza minor,*
- *Ehrharta calycina, and*
- *Pentameris airoides.*

The presence of weeds was a contributing factor to the condition ratings given to vegetation within the site.

7.5.6 Mitigation and Management

No significant impacts to Commonwealth protected flora are expected as a result of the proposed project. However, there will be removal of approximately 3.67 hectares of vegetation, including approximately 2.49 hectares of BWSCP ecological community required to prepare the site for development.

The residual impacts of this proposal will be offset following principles as identified in the Commonwealth Environment Offset Policy. Perth Airport will work with DEE and DBCA to implement a suitable offset approach.

Perth Airport operates a policy where species that can be readily translocated are moved prior to clearing. If any *Xanthorrhoea preissii* (Grass tree) and *Macrozamia sp* (Cycads). are present in the project area, efforts to remove and translocate them to another part of the estate will be made where practicable.

Hygiene management measures to minimise the spread of Phytophthora dieback disease and weeds will be detailed in the CEMP.

7.6 Fauna

7.6.1 Existing Environment

Numerous vertebrate and invertebrate fauna surveys have been undertaken on the estate over the past 20 years, with the most recent ones including:

- Bamford Consulting Ecologists (2010). Graceful Sun Moth (Synemon gratiosa) Survey, Unpublished report prepared for Westralia Airports Corporation, Perth, WA,
- Bamford Consulting Ecologists (2012). Perth Airport Black Cockatoo Habitat Survey, Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA,
- Australasian Ecological Services (2012). Graceful Sun Moth Survey, Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA
- Bamford (2013) Perth Airport Black-Cockatoo Habitat Survey. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA,
- Bamford (2014) Fauna Surveys of the Perth Airport Bushland 2008 and 2014. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA, and
- Focused Vision Consulting (2017) Flora, Vegetation, Fauna and TEC Assessment, Airport West, Site 6. Unpublished report prepared for Perth Airport Pty. Ltd, Perth, WA.

The Commonwealth listed species that have been identified as being present on the estate are listed in Table 19.

Listed species that are relevant to the project area are discussed in the following sections.

7.6.2 Black Cockatoos

The estate lies in a region where:

- Carnaby's Black-Cockatoo (Calyptorhynchus latirostris) are common,
- the Forest Red-tailed Black-Cockatoo (Calyptorhynchus banksii naso) often overflies and therefore only occurs rarely, and
- Baudin's Black-Cockatoo (Calyptorhynchus baudinii) occurs probably only as a vagrant.

Carnaby's Black-Cockatoos and Baudin's Black-Cockatoo are classified as 'Endangered' while Forest Red-tailed Black-Cockatoos are listed as 'Vulnerable' under the EPBC Act.

Name	Status	Type of Presence
Calyptorhynchus banksii naso (Forest Red-tailed Black-Cockatoo, Karrak)	Vulnerable	Species or species habitat may occur within area
Calyptorhynchus baudinii (Baudin's Black-Cockatoo, Long-billed Black-Cockatoo)	Endangered	Species or species habitat unlikely to occur within area
Calyptorhynchus latirostris (Carnaby's Black-Cockatoo, Shortbilled Black-Cockatoo)	Endangered	Species or species habitat likely to occur within area
Apus pacificus (Fork-tailed Swift)	Migratory	Species or species habitat may occur within area
Ardea ibis (Cattle Egret)	Migratory	Species or species habitat likely to occur within area

Table 19 EPBC Act listed species previously recorded on the Perth Airport estate

Extensive and regular investigations into Black Cockatoo habitat are conducted on the estate. The quality of potential habitat is classified as low, medium or high, with medium and high value habitat considered during impact assessments.

Medium value Black Cockatoo habitat on the estate is defined as: Contains some Black Cockatoo habitat plants which are clumped together but cover less than half the area.

High value Black Cockatoo habitat on the airport estate is defined as: Contains large numbers of plants (majority of individuals) likely to provide Black Cockatoos with foraging and/ or nesting opportunities, in particular Banksia spp. and Marri.

The high and medium value Black Cockatoo habitat within the project footprint is shown in Figure 30. Approximately 2.88 hectares of potential habitat will be impacted.

As part of the Focused Vision Consulting (2017) survey, all trees within the project area were surveyed for potential as breeding trees. Six mature Eucalypts (four Marri and two Jarrah) with a diameter at breast height (DBH) of 500 millimetres or greater, and therefore classified as Black Cockatoo habitat trees and potential future breeding/nesting trees (based on published criteria (DSEWPaC 2012a) were recorded within the project area. None of the habitat trees recorded were observed to support hollows, including any suitable for Black Cockatoo nesting, despite presenting a DBH of 500 millimetres or greater. Perth Airport does not consider this number to be significant to the species, as there have been no signs of breeding on the estate, and there are no hollows or other aspects required for breeding, apart from thickness of tree.

Perth Airport considers that the impacts from this project will not be significant for Black Cockatoo species in accordance with the EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species (DSEWPaC, 2012).

7.6.3 Rainbow Bee-eater

The Rainbow Bee-eater is found throughout mainland Australia, as well as eastern Indonesia, New Guinea and, rarely on the Solomon Islands. In Australia, their distribution is widespread except for desert areas or overly cool areas such as Tasmania.

In more southern locations such as the south-west of Western Australia, these birds can be found during summer months, but will migrate north to New Guinea or Indonesia as the weather cools down.

The Rainbow Bee-eater has been recorded as a regular visitor to the estate and nests in open fields and distrubed areas. A fauna survey of the project area undertaken in Spring 2016 confirmed that although DBCA database search results include a record for the species nearby and individuals were observed elsewhere on the estate around the time of the field survey, no nests were observed in the study area.

7.6.4 Mitigation and Management

In accordance with Perth Airport policy, prior to clearing vegetation, fauna will be trapped and relocated, either on or off the estate. Species such as the Southern Brown Bandicoots are easily trapped and respond well to translocation.

Perth Airport considers the proposed clearing of approximately 2.88 hectares of potential habitat and six potential breeding trees as not significant to the species due to the availability of similar habitats within a five-kilometre radius of the estate.

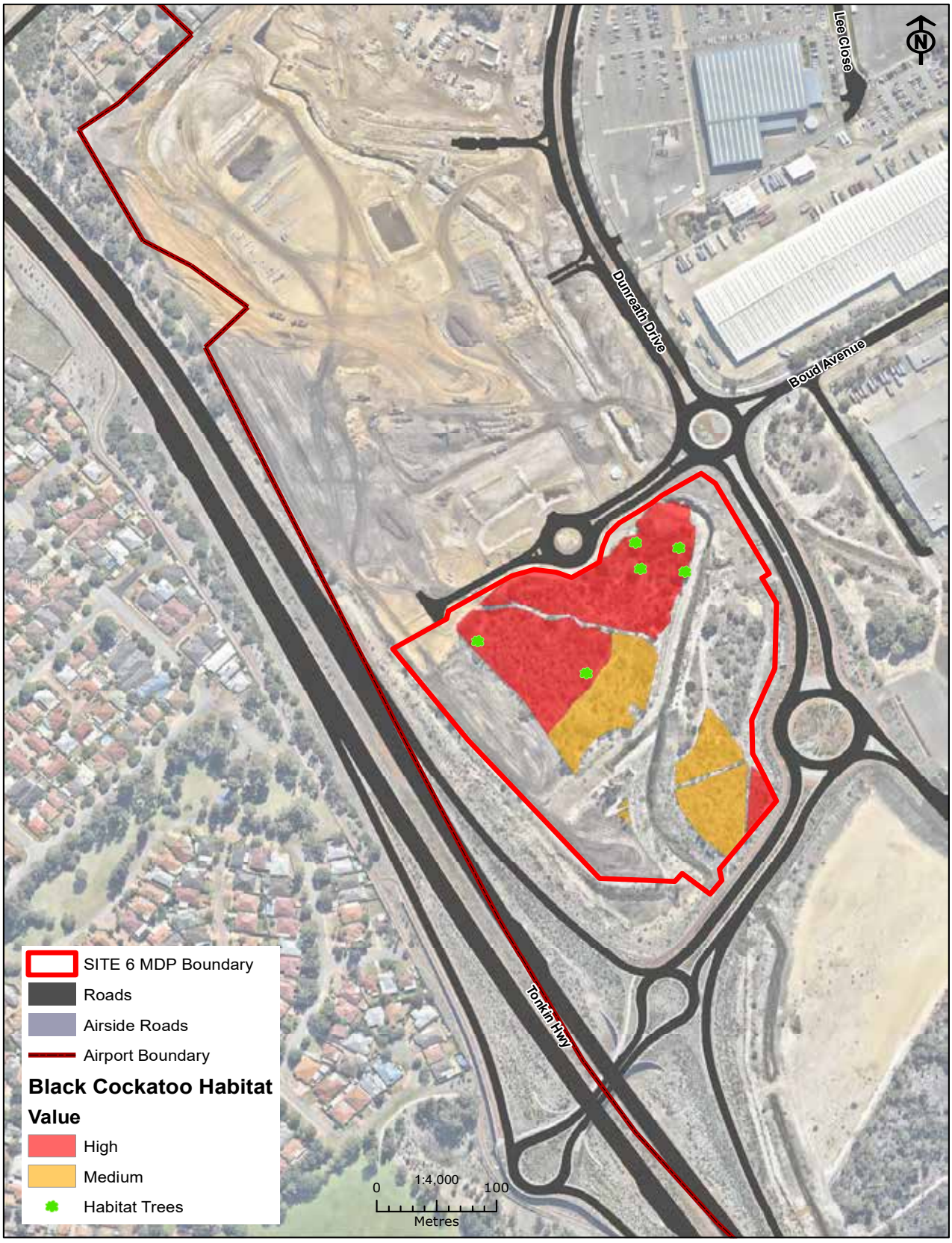

Figure 30 High and Medium Value Black Cockatoo Habitat

Perth Airport requires all projects to undertake environmental management practices that reduce the potential for impact to fauna. These practices include undertaking pre-clearing fauna site assessments and fauna clearances. These requirements will be applied to the project and documented in the CEMP.

7.7 Heritage

7.7.1 Existing Environment

7.7.1.1 European Heritage

A search of the Australian Heritage Database has revealed no built form places of heritage significance exist within or near the project area.

7.7.1.2 Natural Heritage

A search of the Australian Heritage database identified that the following Commonwealth Heritage listed places occur on the estate:

- Forrestfield Bushland, Horrie Miller Drive, Newburn via Perth Airport, and
- Munday Swamp, Kalamunda Road, Perth Airport.

Forrestfield Bushland is located on the south-eastern side of Horrie Miller Drive and the Munday Swamp site is situated in the north-eastern section of the estate, both considerable distances from the project area.

Both sites are classified as 'Indicative places' on the Commonwealth Heritage list, meaning that data in relation to both potential sites has been provided to or obtained by the Heritage Division and has been entered into the database. However, a formal nomination has not been made and the Australian Heritage Council has not received the data for assessment. The data in an indicative place does not necessarily represent the views of the Australian Heritage Council or the Commonwealth Minister of the Environment and Energy.

7.7.1.3 Aboriginal Heritage

Perth Airport recognises the special association that Aboriginal people have with the land. There are several sites located on the estate which are known to have particular importance.

Two Aboriginal sites defined under the State *Aboriginal Heritage Act 1972* (AHA) are present within the project area. These sites are detailed in Table 20. Both these sites are classified as Stored Data, meaning they do not require Section 18 approval under the AHA for works to occur. Perth Airport standard practice includes the use of Aboriginal monitors during earthworks at Stored Data sites where the risk of encountering unknown heritage values is high.

Site ID	Site Name	Status	Site Type
3752	Tea-Tree Fringecamp	Stored Data	Man-made structure (camp)
3801	Belvidere Street A+B	Stored Data	Camp

Table 20 Registered Aboriginal heritage sites within the project area

The management measures for heritage will be outlined in the CEMP for these works.

7.7.2 Mitigation and Management

7.7.2.1 Natural Heritage

Both Indicative Places (Forrestfield Bushland and Munday Swamp) are outside of the project area and the vicinity of the project and will not be impacted, therefore no management measures are required.

7.7.2.2 Aboriginal Heritage

No Section 18 approvals are required for works to be undertaken within the project area. Perth Airport will endeavour to use Aboriginal monitors during disturbance of ground or vegetation to ensure management of any heritage values that may be encountered.

7.8 Other Matters

7.8.1 Contamination

7.8.1.1 Existing Environment

One known contaminated site exists to the south east of the project area. The site is a disused landfill, and investigations were initially undertaken at the site in 1994 and again in September 2016. This site may pose a risk in terms of migration of contamination or disturbance during deep excavation works associated with the project as uncontrolled filling material was encountered to a depth of two metres. The uncontrolled fill profile contained demolition debris, which are commonly associated with asbestos contamination.

Perflourinated chemicals (PFCs), which include perfourooctane sulphonate (PFOS) and perflourooctanoic acid (PFOA) are known to have been previously used within federal airports. Management

of PFC at Perth Airport is guided by the Department of Infrastructure and Regional Development's PFC Management Actions Advice – GEM-002.

A detailed site investigation undertaken indicates that the detected total Polyfluoroalhyl Substances (PFAS) concentration in the analysed soil samples were below the DER (2017) criteria for a commercial/ industrial land use setting. This result does not preclude the construction of the proposed development on Site 6. However, should re-use or stockpile of soil containing PFAS material be required during construction, additional investigations will be undertaken to delineate and segregate the extent of the PFAS impacted soil.

Spoil is expected to be generated because of site preparation works. The excavated spoil may be stockpiled or reused within the estate and a Stockpile Management Plan and Construction Traffic Management Plan to facilitate the movement of the spoil will be developed prior to commencement of works. Where fill is required to be brought onto the estate as part of site preparation works, testing will be undertaken to ensure that the fill meets regulatory limits for PFAS and weed and hygiene management strategies outlined in the CEMP.

7.8.1.2 Mitigation and Management

Prior to any excavation or dewatering activities on an area which has been identified as contaminated, a thorough contaminated sites investigation will be commissioned in accordance with relevant government agency guidelines. Any subsequent excavation and/or dewatering activities to be undertaken on the site will be subject to appropriate management measures contained within a Contamination Management Plan.

Car parking for the proposed development is planned to be located on the south east portion of the project area, where the uncontrolled fill has been identified. Therefore, there is unlikely to be a need for excavation which would expose the uncontrolled fill. It is possible that a layer of fill will be placed over the impacted area instead. However, should there be excavation activities which have the potential to disturb the uncontrolled fill profile, further investigations will be undertaken to delineate and characterise the uncontrolled fill prior to construction.

The operation of a fuel station may result in soil and groundwater contamination, however, as stated in Section 2.3.2, the construction and operation of the fuel station will be undertaken in accordance with the NSW Environment Protection Authority's *Standards and Best Practice Guidelines for Vapour Recovery at Petrol Service Stations and Underground Petroleum Storage Systems: Best practice guide for environmental incident prevention and management documents.*

There will be ongoing monitoring in accordance with the NSW guidelines to ensure that any leaks from underground storage tanks or contamination of soil, surface water and groundwater are detected as early as practicable for mitigation and management.

The provision of tyre sales and fitting services may generate wastes which have the potential to be classed as controlled wastes and will need to be disposed at an appropriately licensed landfill. Therefore, waste management and groundwater monitoring and management measures will be outlined in the Operational Environmental Management Plan (OEMP), if required.

7.8.2 Air Quality

Construction activities for the project have the potential to impact upon air quality through dust generation and emissions. The CEMP will outline methods to manage dust generation and emissions during construction.

7.8.3 Noise

Construction of the project has the potential to affect the amenity of airport employees and surrounding residents.

The noise and vibration impacts associated with construction will be temporary and intermittent in nature. Construction noise will comply with the Airport (Environment Protection) Regulations 1997 to minimise the impact to the amenity of the community. Management of potential noise impacts will be outlined in the CEMP.

Construction activities will comply with Perth Airport's noise monitoring and complaints procedures.

7.8.4 Waste

All wastes from construction activities will be disposed of in approved regional landfills. Contractors will not be permitted to dump wastes within property controlled by Perth Airport. Operational wastes generated from the proposed development will be managed to ensure compliance with the AEPR. Waste management will be part of the CEMP and OEMP developed for the project.

7.9 Monitoring Program

It is Perth Airport's responsibility to include a monitoring component as part of the environmental management plan, in line with the general guidance set out in the AEPRs. Perth Airport will also develop a monitoring program to ensure that the project is compliant with relevant environmental standards and procedures, as well as the project specific CEMP.

This monitoring will be sufficient to allow for an assessment of the potential environmental impacts of the project and implementation of additional management where required.

7.10 Reporting

Activities, including monitoring, complaints and changes to environmental conditions will be reported via the Perth Airport Annual Environment Report, or through other established reporting procedures between Perth Airport and the Airport Environment Officer (AEO) as required.

7.10.1 Incident Reporting

Environmental incidents include events that directly or indirectly cause environmental impacts or harm, as well as events involving non-compliance with project procedures and near-miss events which may or may not have resulted in an environmental impact.

The CEMP will use the current Perth Airport incident reporting procedure and system, and ensure that the AEO is made aware of incidents in a timely manner.

7.11 Risk Management

A project specific construction environmental risk assessment is required and will be developed by the contractor to identify environmental risks applicable to the project. It will be approved by Perth Airport prior to project mobilisation and will inform the development of the CEMP.

7.12 Conclusion

The proposed project site is approximately 7.09 hectares in the west of the estate.

An environmental and heritage impact assessment has been undertaken considering the following environmental and heritage values:

- climate conditions,
- geology and soil conditions (including Acid Sulfate Soils),
- hydrology (including groundwater, surface water and dewatering),
- contamination,
- vegetation and flora (including TECs and listed species),
- fauna (including Black Cockatoo), and
- natural and Aboriginal heritage.

Environmental impacts resulting from the proposed project comprise the clearing of 2.88 hectares of Black Cockatoo habitat, as well as clearing of six potential breeding trees (absence of hollows, no evidence of nesting, potential based on tree thickness only). Perth Airport considers this impact not significant to the species.

The project will also impact on approximately 3.67 hectares of vegetation, of which approximately 2.49 hectares is the EPBC Act listed BWSCP ecological community. Perth Airport will develop an Offset proposal to mitigate against the loss of the BWSCP in consultation with DEE and DBCA. The offset proposal will be submitted for DEE approval.

A CEMP will be implemented to mitigate and manage any potential environmental and heritage impacts. An OEMP which details the ongoing management and monitoring requirements associated with the operation of the service station and other retail activities will be developed and implemented when the project reaches operation.

8. Relationship to Aviation Activity

A review of the impacts into aviation activity associated with the construction and operation of the development has been completed. The key areas identified are:

- aircraft noise exposure levels,
- effect on flight paths,
- airspace requirements,
- lighting in the vicinity of the aerodrome,
- windshear,
- aviation tower line of sight,
- protection of communication, navigational and surveillance infrastructure,
- bird and animal hazard management,
- public safety zones, and
- local security risk.

These considerations are guided by, but not limited to, the National Airports Safeguarding Framework (NASF) guidelines. Perth Airport continues to consider the NASF guidelines in its ongoing planning and development. How the NASF guidelines have been considered for this development are outlined in Table 21.

Also addressed is the effect the development will have on flight paths, air traffic control tower line of sight and public safety zones (PSZ) at runway ends which is expected to eventually have its own NASF guideline.

NASF Guideline	MDP Section
Guideline A: Measures for Managing the Impacts of Aircraft Noise	8.1 Aircraft Noise Exposure Levels
Guideline B: Managing the Risk of Building Generated Windshear and Turbulence	8.2 Windshear and turbulence
Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports	8.3 Bird and Animal Hazard Management
Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation	Not addressed in this MDP. No windfarms are planned as part of this project.
Guideline E: Managing the Risk of Distraction to Pilots from Lighting in the Vicinity of Airports	8.4 Lighting in the Vicinity of the Aerodrome
Guideline F: Managing the Risk of Intrusions into Protected Airspace of Airports	8.6 Airspace Requirements
Guideline G: Protecting Aviation Facilities – Communications, Navigation and Surveillance (CNS)	8.7 Protection of Communication, Navigational Surveillance

Table 21 Consideration of NASF Guidelines

8.1 Aircraft Noise Exposure Levels

The Airports Act requires that a MDP identifies whether the proposed development will affect noise exposure levels and the airport's plan for managing aircraft noise within the area. The proposed development will have no impact on the aircraft noise exposure levels that exist.

Australian Standard 2021:2015 Acoustics - Aircraft Noise Intrusion - Building Siting and Construction (AS2021:2015) provides guidelines for:

- determining the acceptability of aircraft noise intrusion in buildings within Australian Noise Exposure Forecast (ANEF) contours of a given aerodrome (see Table 22),
- the level of noise reduction measures to be taken, and
- the types of attenuation measures that should be put in place based on the classification of the building.

As shown in Figure 31, much of the development site is within the 20 ANEF contour, but outside the 25 ANEF contour. When determining aircraft noise attenuation requirements, given the nature of its use and operation the building is classified as a commercial building. Therefore, no special measures are required beyond the requirements of the Building Code Australia.

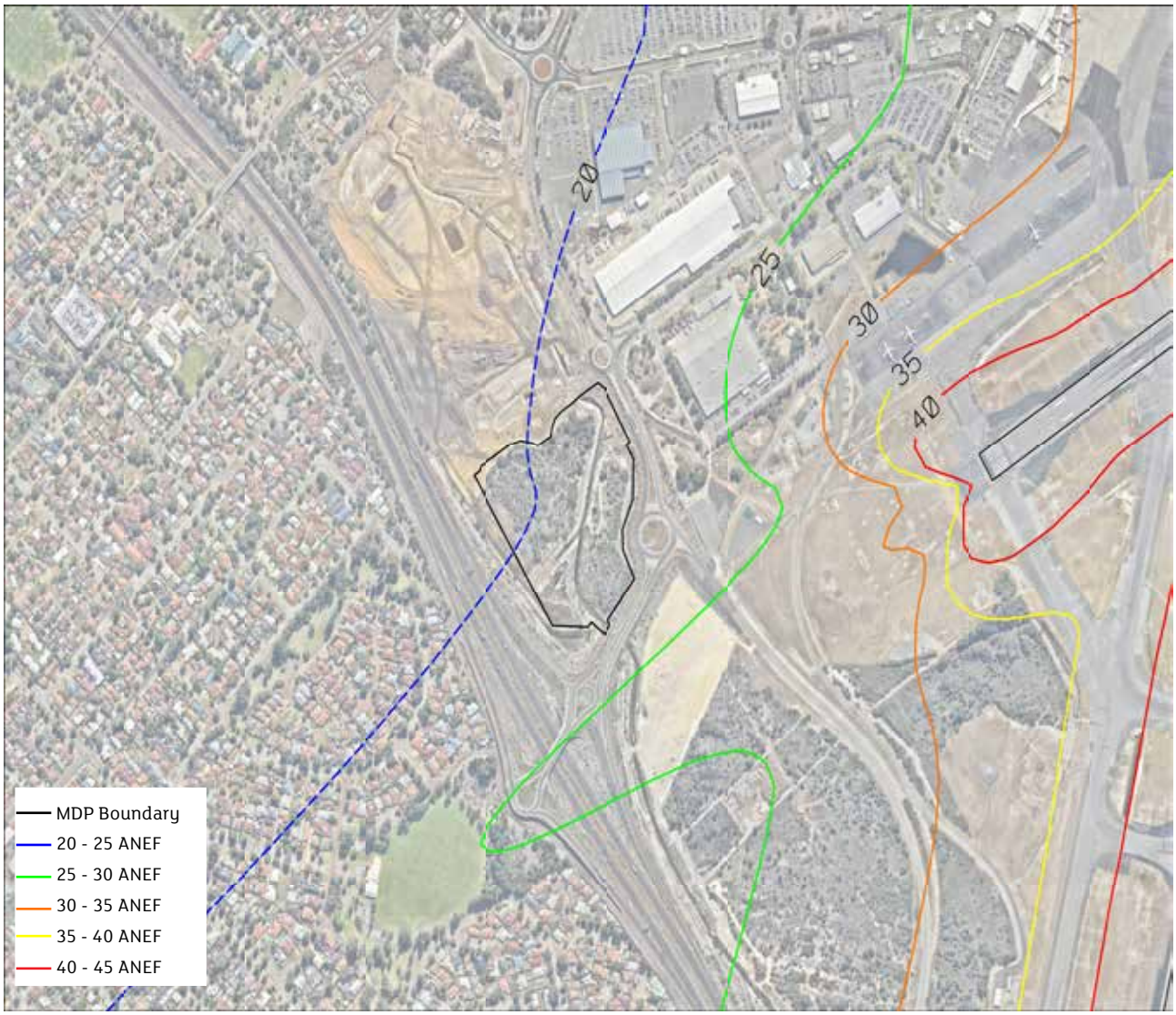

Figure 31 Perth Airport ANEF Contours

Building Type	Forecast Noise Exposure Level (ANEF)		
	Acceptable	Conditionally Acceptable	Unacceptable
House, home, unit, flat, caravan park	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Hospital, nursing homes	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF	20 to 25 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 30 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

Table 22 Building site acceptability table based on ANEF zones

8.2 Windshear and Turbulence

The proposed development is located within the risk envelope for potential building induced windshear as specified in the National Airports Safeguarding Framework (NASF) – Guideline B, as shown in Figure 32. Guideline B states that buildings that are more than 35 times their height from the relevant runway centreline (1:35 rule) will not pose a risk and do not require aerodynamic modelling. Preliminary assessment indicates that the building could only reach a height of approximately five metres above ground level before violating the 1:35 rule for aircraft arriving on Runway 06. As the proposed building will likely exceed this height, an assessment of the potential windshear effects has been conducted by a specialist in the analysis of wind effects and loading.

The result of this analysis showed that a structure up to 11 metres above ground level (as high as permitted without infringing the Obstacle Limitation Surface) would only have a minor impact on wind shear and turbulence conditions on the approach to Runway 06. This is because, depending on the wind direction, there will be no impact or any impact will be mitigated by existing rules regarding the selection of runway directions.

As shown in Figure 33, the prevailing winds at Perth Airport are from the east and south-west quadrants, with winds from the north-west being rare.

Winds from the east quadrant would not be generating disturbance from any structure on the site to approaching aircraft, as the development would be downstream of the extended runway centreline for aircraft approaching from the west.

Aircraft are designed to take-off and land into the wind, that is, with a headwind. This is the safest and most efficient way for an aircraft to operate. Winds from the west and south-west would result in a tail-wind for approaches to Runway 06 and therefore aircraft would be expected to be landing on Runway 24 instead.

For winds from the north-east, the extended runway centreline would be downwind of the proposed main building, however, the impact of the building would only affect the conditions over approximately 750 metres away from the runway threshold. At this distance, the glideslope of landing aircraft would be significantly above the area impacted by windshear and turbulence generated by the structure.

Winds from the north-west are rare at the airport. As a wind from the north-west would have a large crosswind component for Runway 06, it is most likely that the main Runway 03 would be selected on the rare occasions when a strong wind is blowing from this direction.

Perth Airport has undertaken a further detailed assessment, including physical experiments in a wind tunnel. The assessment was focussed on those wind directions for which the development is most likely to pose a windshear or turbulence risk. These directions were chosen for their potential impact regardless of how frequently they are observed throughout the year.

The detailed assessment found that the proposed development meets the NASF (2012) requirements at all times for wind shear during Perth Airport standard operational procedures. The upcoming revision of this guideline is expected to include updated windshear and turbulence criteria based on the latest and best practice research. For all of the wind directions modelled, the wind speed required to exceed these new criteria is well above the operational wind speed for operations on Runway 06.

The results of both assessments will be provided to the Civil Aviation Safety Authority (CASA).

8.3 Bird and Animal Hazard Management

Perth Airport is required to monitor and control the presence of birds on, or in the vicinity of the airport in accordance with CASA requirements. Perth Airport maintains a vigilant Bird Hazard Management System to remove and reduce potential high risk bird species. The development of Site 6 will be subject to the Bird Hazard Management system. The landscaping for this development will have regard for aviation safety and not introduce any bird attracting plant species. The design of the roof of the building, waste management on the site and lighting will also be considered in the planning and operation of the site.

Figure 32 Windshear and mechanical turbulence

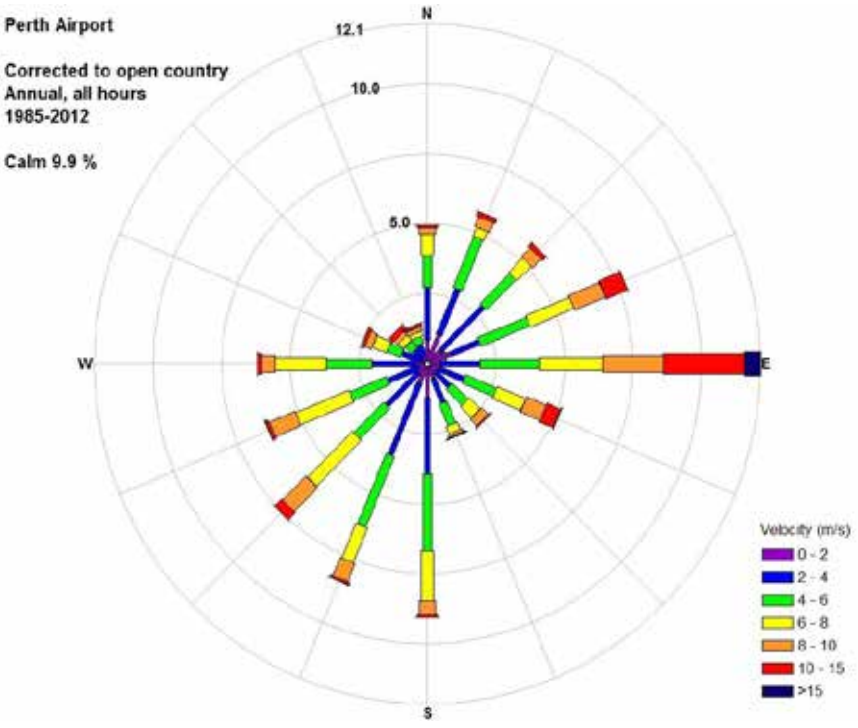

Figure 33 Wind Rose for Perth Airport

8.4 Lighting in the Vicinity of the Aerodrome

The proposed development is located within Lighting Control Zone A, Zone B and Zone C as specified in CASA Manual of Standards (MOS) Part 139 and illustrated in Figure 34. The maximum intensity of external light sources on the site, measured at three degrees above the horizontal, will be limited to:

- Zone A – 0 candela,
- Zone B – 50 candela
- Zone C – 150 candela.

Any lighting will comply with the various lighting control zones as specified in CASA Manual of Standards Part 139.

The building is expected to be constructed from steel frames, Colorbond cladding and tilt-up panels. As such, it is not expected for there to be any risk of pilot distraction from reflective glare from these building materials.

At this stage, solar panels are not planned to be installed at the site. Any future plans for solar panels will be carefully assessed in consultation with CASA, if required.

8.5 Effect of Flight Paths

The Airports Act requires a MDP to outline if a development could affect flight paths at the airport. Given the nature of the development is commercial, the proposed development will not affect any flight paths.

8.6 Airspace Requirements

Protection of airspace required for Perth Airport's current and future needs is essential to provide a safe, predictable environment for the arrivals and departures of aircraft using Perth Airport in all weather conditions.

The Airports (Protection of Airspace) Regulations 1996 prescribe airspace around the airports for protection from activities that could pose a hazard to air navigation.

Prescribed Airspace comprises the airspace above the lower of two sets of defined invisible surfaces above the ground known as the Obstacle Limitation Surfaces (OLS) and Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) surfaces.

Figure 34 Lighting control zones

The proximity of Site 6 to the Runway 06/24 threshold means that the airspace in this area is complex, with no single OLS or PAN-SOPS surface covering the whole site.

As shown in Figure 35 the lowest level of the OLS over the site is 28 metres above Australian Height Datum (AHD) located to the south-east. To the north-west, the height of the OLS gradually increases to 61 metres AHD. As the site is located under critical OLS surfaces such as the approach and transitional, detailed design of the development will be carried out in close consultation with Perth Airport to ensure that the OLS is not infringed.

The lowest level of the PANS-OPS is at approximately 35.4 metres AHD over the site. The PANS-OPS is at a higher level than the OLS at all locations over the site. As the development will be designed to avoid infringing the OLS, neither the building nor the construction process will impact the PANS-OPS.

The proposed development will not interfere with current or future aeronautical activities. All structures will be managed and assessed in accordance with the Airports (Protection of Airspace) Regulations 1996 and Civil Aviation Regulations 1998, Regulation 94, which includes the requirements for any controlled activities that infringe upon prescribed airspace to be referred to Airservices and CASA.

While there may be some minor variation in the final finished floor levels for the development following the detailed design of functional drainage requirements and site works, these will not impact the OLS or PAN-OPS surfaces.

Figure 35 Obstacle Limitation Surface (OLS)

8.6.1 Cranes during construction

During the construction of the proposed development, plant or cranes may need to be operated. The construction phases will therefore require the assessment of plant or crane operation to ensure they do not impact the prescribed airspace.

Any activity that may constitute a 'Controlled Activity' will be referred to Airservices for assessment in accordance with Perth Airport's established airspace protection processes and the Airports (Protection of Airspace) Regulations 1996.

The proposed development will follow the 'Process Application' under the Airports (Protection of Airspace Regulations) 1996 Guidelines for Operations of Federal Airports as published by the then Department of Infrastructure and Regional Development.

8.7 Protection of Communication, Navigational and Surveillance Equipment

There are several radio navigation aids and communication installations that provide guidance to aircraft and which are operated by Airservices, including Distance Measuring Equipment (DME), VHF omnidirectional range radio (VOR), Non-Directional Beacon (NDB) and Instrument Landing Systems (ILS) (glide path and localiser). These systems rely on the transmission of radio waves that must be protected from any structure or obstacles that could cause signal refraction or interference.

The known navigational aid clearances were taken into consideration as part of the assessment in this MDP. Perth Airport will continue to engage with Airservices during the detail design phase of this development to ensure there is no negative impact on the navigational equipment used.

8.8 Public Safety Zones

Safety areas, located off the ends of the runways (on and off airport), have been used overseas for several years to minimise the risk of damage by an aircraft during landing or take-off. Currently, no legislation or guidelines exist at Commonwealth or State (WA) level governing permissible land use with respect to aircraft crash risk. However, Perth Airport does consider issues related to crash risk during the approval process on any development.

Perth Airport has used the UK approach to Public Safety Zones (PSZ), as referenced in the draft National Airports Safeguarding Framework (NASF) guideline, to assist with assessing appropriate developments. While there are other approaches to developing PSZs, including guidelines from the United States Federal Aviation Administration and the Queensland State Government's State Planning Policy, the UK model, was considered the most appropriate in the Perth Airport context and this development. This is because the UK approach allows for risk contours to be developed from the movement data that is specific to Perth Airport and, within this context, these contours are the most conservative choice.

Under the UK methodology, the PSZ is generally broken into two areas representing the following probabilities of being killed or injured per year from an aircraft accident: 1-in-10,000 and 1-in-100,000. The UK considers the maximum tolerable level of individual third-party risk of being killed as a result of an aircraft accident as 1-in-10,000 per year. Any occupied residential properties or commercial and industrial properties occupied as normal all-day workplaces, within the 1-in-10,000 are recommended to be emptied.

In the remaining PSZ area between the 1-in-10,000 and 1-in-100,000 individual risk contours, developments which involve a low density of people living, working or congregating is considered acceptable. For example, this may include car parking, open storage or certain types of warehouse development. Perth Airport has developed PSZ contours that reflect the ultimate development and demand of the airport at 475,000 movements per year of which the 1-in-10,000 and 1-in-100,000 zones are shown in Figure 36.

The proposed development is not located within either of the risk contours associated with the ends of any current or future runways at Perth Airport.

8.9 Aviation Tower Line of Sight

A review of the Air Traffic Control (ATC) Tower height in relation to the development has been undertaken. There is no impact to the line of sight from the ATC Tower to the aircraft movement areas.

8.10 Conclusion

The assessment into the impact on aviation activities concluded that there were no risks that could not be adequately mitigated, or were so high as to prevent the construction of the proposed development on the proposed site.

The proposed development will not have any negative impacts on the aviation activities of Perth Airport.

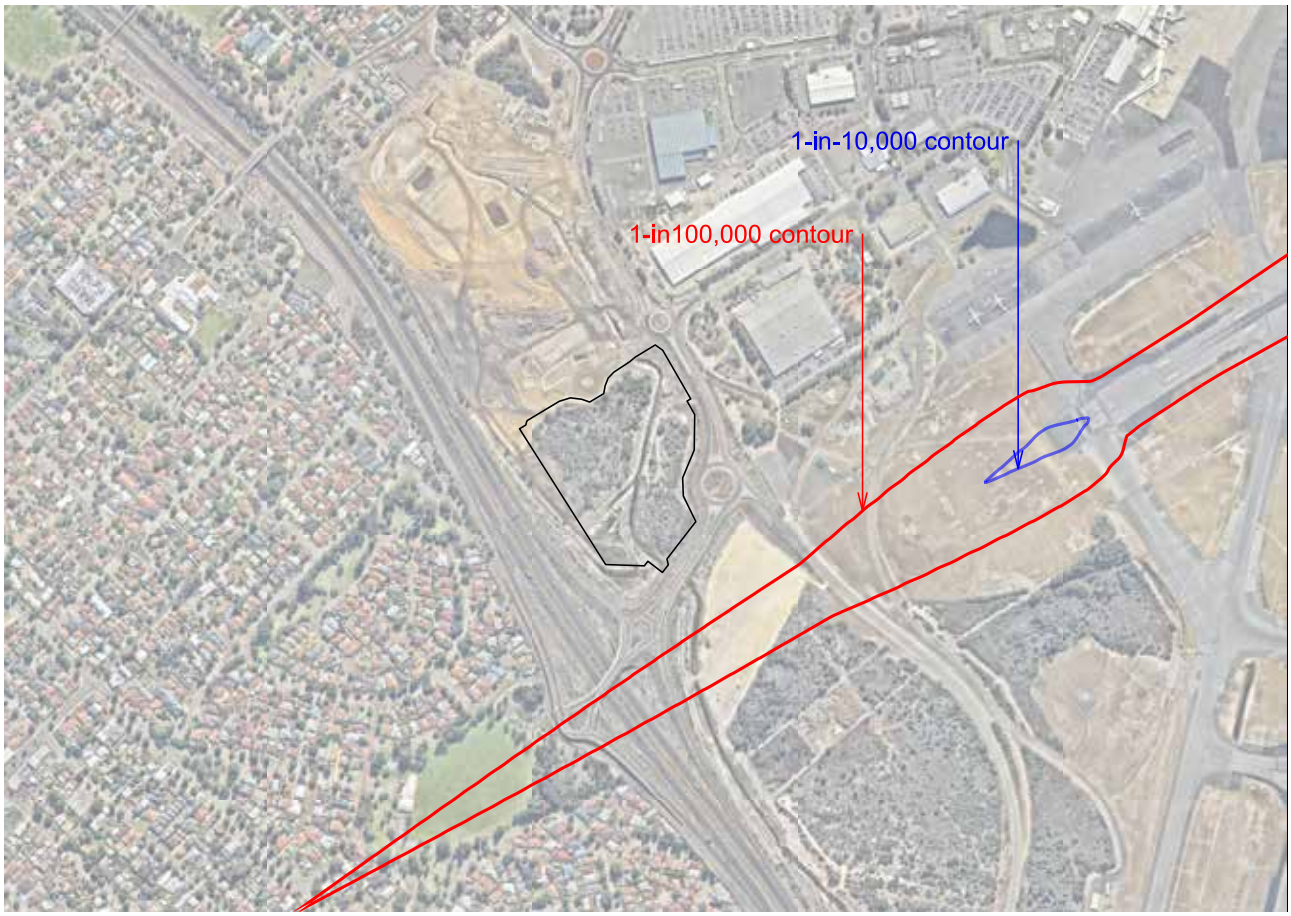

Figure 36 Public Safety Zone Risk contours

9. Consultation

Perth Airport is committed to effective consultation with all stakeholders. Prior to the preparation of this MDP, Perth Airport provided high level information about the proposed development to Airservices, State agencies and adjoining local governments including the City of Belmont, with respect to land use and integration with future plans in the adjacent DA6 area.

In accordance with the Airports Act, the Preliminary Draft MDP was publicly advertised for a period of 60 business days. Comments received during the public comment period were used to develop the Draft MDP prior to submission to the Minister for Infrastructure and Transport for approval.

The following stakeholders were consulted during the public advertising period:

- Civil Aviation Safety Authority (CASA),
- Airservices Australia,
- WA Department of Planning, Lands and Heritage,
- WA Department of Transport,
- Main Roads WA,
- WA Department of Water and Environmental Regulation,
- WA Department of Biodiversity, Conservation and Attractions,
- City of Swan,
- City of Belmont,
- City of Kalamunda,
- Qantas Group,
- Perth Airports Municipalities Group (PAMG) Inc.,
- Perth Airport Planning Coordination Forum (PCF), and
- the community, via advertisement in the West Australian newspaper, Perth Airport website and the Perth Airport Community Forum (PACF).

Perth Airport will continue to engage with relevant stakeholders and the community as widely as possible to ensure that comments on the proposed development are captured for consideration as much as practicable.

9.1 Perth Airport consent and Airport Building Control approval

Following approval of the MDP, in accordance with Division 5 of the Airports Act, Perth Airport will seek approval from the Commonwealth Airport Building Controller (ABC) for the proposed activity via a permit application. The activity is to be consistent with the approved MDP.

The construction contractor, engaged by Perth Airport or a future tenant, must lodge design documentation for building activity to Perth Airport and the ABC following the process indicated in Figure 37.

9.2 Part 13 permit under the EPBC Act

A Part 13 permit issued under Section 201 of the EPBC Act will be required to allow clearing of Banksia Woodlands of the Swan Coastal Plain ecological community (BWSCP). Perth Airport will obtain the Part 13 approval from the Department of the Environment and Energy to enable clearing activities to occur.

Airport Land Approval Process

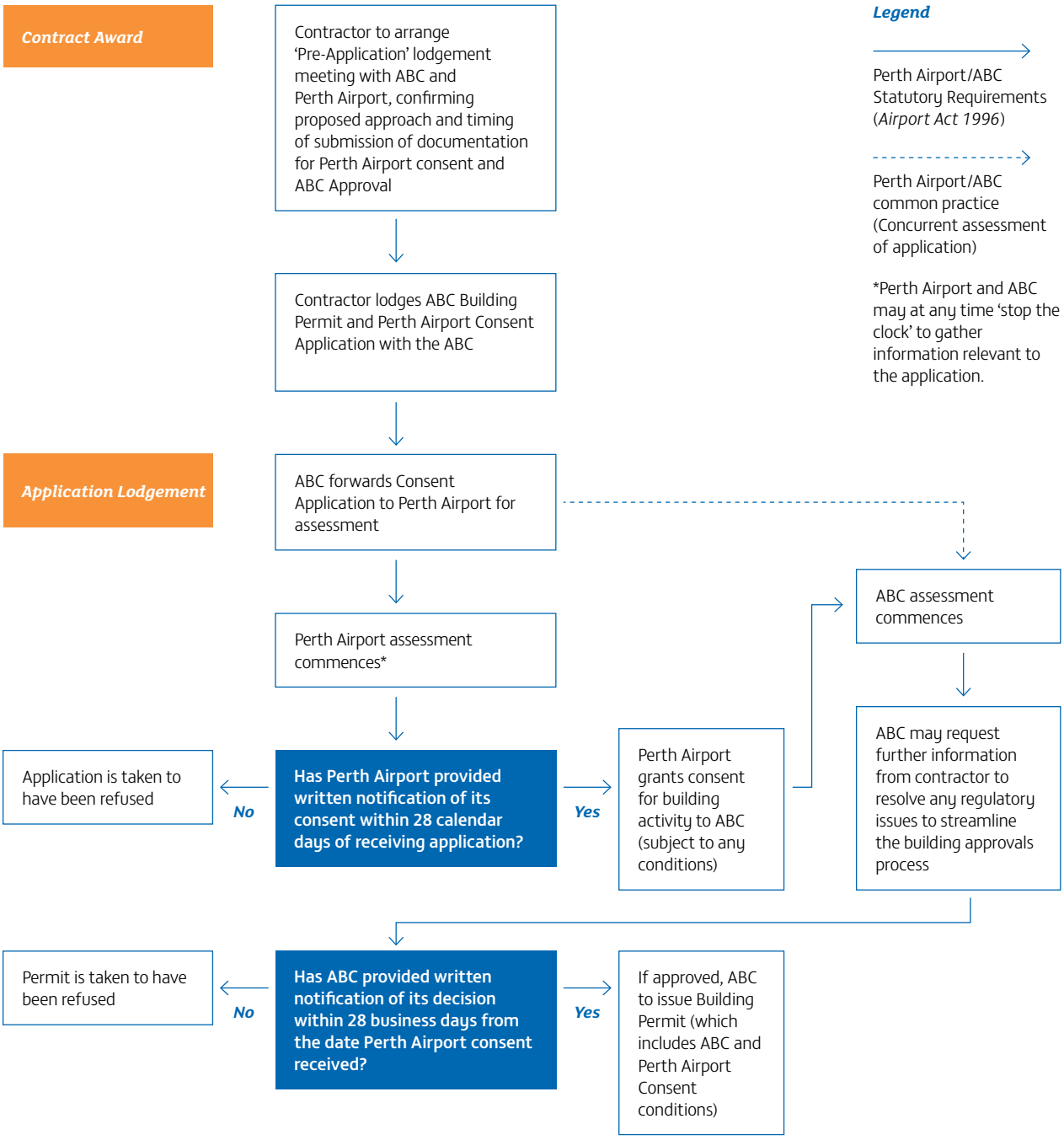

Figure 37 Perth Airport Consent and ABC Approvals Process

10. Conclusion

The proposed Site 6 large format retail outlet development includes the construction of a building which will incorporate specialty services such as tyre sales and fitting, optometrist, hearing centre, liquor sales, cafe, fuel station and associated infrastructure, at-grade car parking and access arrangements to service the development. The development meets with the intent of the approved Perth Airport Master Plan 2014, as it brings into productive use land that is not required for long-term aviation services, to support economic development and employment creation in Western Australia.

The proposed project site is approximately 7.09 hectares in the west of the estate. Environmental impacts resulting from the proposed project comprise the clearing of 2.88 hectares of Black Cockatoo habitat, as well as clearing of six potential breeding trees (absence of hollows, no evidence of nesting, potential based on tree thickness only). Perth Airport considers this impact not significant to the species.

The project will also impact on approximately 3.67 hectares of vegetation, of which at least 2.49 hectares is the EPBC Act listed BWSCP ecological community. Perth Airport will develop an offset proposal to mitigate against the loss of the BWSCP in consultation with DEE and DBCA. The offset proposal will be submitted for DEE approval prior to the commencement of works.

There are no Aboriginal heritage sites which would be impacted from the proposed development.

A CEMP will be implemented to mitigate and manage any potential environmental and heritage impacts. An OEMP which details the ongoing management and monitoring requirements associated with the operation of the service station and other retail activities will be developed and implemented when the project reaches operation.

Perth Airport will engage with relevant stakeholders and the community as widely as possible to ensure that comments on the proposed development are captured for consideration as much as practicable.

The proposed development will not have any negative impacts on the aviation activities of Perth Airport as there were no risks that could not be adequately mitigated, or were so high as to prevent the construction of the proposed development.

The proposed development will be a positive contribution to the Airport West Precinct, and will integrate and complement the land uses in the remainder of the Airport West Precinct, as well as the existing and planned future developments in the nearby DA6 area, within the City of Belmont.

This MDP has been prepared to meet the requirements as prescribed in the Airports Act. Perth Airport submits that, through this MDP, it has fulfilled its statutory obligations.

Appendix A – Consistency with the Airports Act 1996

	Section
(1) A major development plan, or a draft of such a plan, must set out: (a) the airport-lessee company's objectives for the development; and	Section 2
(b) the airport-lessee company's assessment of the extent to which the future needs of civil aviation users of the airport, and other users of the airport, will be met by the development; and	Section 2
(c) a detailed outline of the development; and	Section 2
(ca) whether or not the development is consistent with the airport lease for the airport; and	Section 3
(d) if a final master plan for the airport is in force—whether or not the development is consistent with the final master plan; and	Section 3
(e) if the development could affect noise exposure levels at the airport—the effect that the development would be likely to have on those levels; and	Section 8
(ea) if the development could affect flight paths at the airport—the effect that the development would be likely to have on those flight paths; and	Section 8
(f) the airport-lessee company's plans, developed following consultations with the airlines that use the airport, local government bodies in the vicinity of the airport and—if the airport is a joint user airport—the Department of Defence, for managing aircraft noise intrusion in areas forecast to be subject to exposure above the significant ANEF levels; and	Section 8
(g) an outline of the approvals that the airport-lessee company, or any other person, has sought, is seeking or proposes to seek under Division 5 or Part 12 in respect of elements of the development; and	Section 9
(ga) the likely effect of the proposed development that are set out in the major development plan, or the draft of the major development plan, on traffic flows at the airport and surrounding the airport; and	Section 6
(ii) Employment levels at the airport; and	Section 5
(iii)The local and regional economy and community, including an analysis of how the proposed developments fit within the local planning scheme for commercial and retail development in the adjacent area; and	Section 4
(h) the airport-lessee company's assessment of the environmental impacts that might reasonably be expected to be associated with the development; and	Section 7
(j) the airport-lessee company's plans for dealing with the environmental impacts mentioned in paragraph (h) (including plans for ameliorating or preventing environmental impacts); and	Section 7
(k) if the plan relates to a sensitive development – the exceptional circumstances that the airport-lessee company claims will justify the development of the sensitive development at the airport; and	N/A
(4) In specifying a particular objective or proposal covered by paragraph (1)(a) or (c), a major development plan, or a draft of such a plan, must address (a) the extent (if any) of consistency with planning schemes in force under a law of the State or Territory in which the airport is located; and if the major development plan is not consistent with those planning schemes – the justification for the inconsistencies.	Section 3
(6) In developing plans referred to in paragraph (l)(f), an airport-lessee company must have regard to Australian Standard AS2021—1994 ('Acoustics—Aircraft noise intrusion—Building siting and construction') as in force or existing at that time.	Section 8

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