

6. FLIGHT PATHS AND AIRCRAFT NOISE IMPACTS

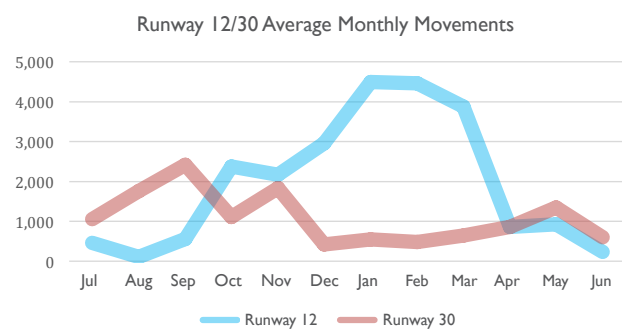
6.1 MOVEMENTS

Less than 15% of all movements are on runway 12/30 due to the weather conditions at Jandakot favouring use of the 06 or 24 directions. Use of the runway 12 and 30 directions is very seasonal. Nearly 95% of all movements in the runway 12 direction occur between October and May due to the south-easterly winds which are experienced mainly in the morning periods between October and December, and early afternoon from January to March. The runway 30 direction is generally used in north-westerly winds experienced prior to and during periods of stormy weather and when frontal systems approach from the west. Currently less than 6% of all movements use the runway 30 direction.

As detailed in section 5.3, the current length of runway 12/30 is not able to easily accommodate some of the larger and/or higher-performing (faster) aircraft types. The extension to runway 12/30 will result in all code 2B aircraft types being able to use this runway in any weather condition.

The change in movements using runway 12/30 once extended has been calculated as an additional 0.7% of overall movements using runway 12, and an additional 0.5% of overall movements using runway 30. Based on current movement levels, this would result in an increase of 1,680 annual movements for runway 12 and 1,200 annual movements for runway 30. The actual impact may be slightly lower as fixed-wing aircraft engaged in emergency response activities, such as the Airtractor bushfire water-bombers and Royal Flying Doctor Service, may continue to request use of the runway that provides the quickest arrival or departure for priority flights, regardless of the runway direction in use.

Due to the seasonal use of runway 12/30, based on the current average monthly runway use data, this would result in an additional 200-300 movements per month (daily average <10 additional movements) between December and March on runway 12, and an additional 100-220 movements per month (daily average <8 additional movements) between August and November on runway 30.



6.2 FLIGHT PATHS

The *Airports Act 1996* requires that an MDP identify the effect of the proposed development on flight paths.

Flights are defined by two types of aircraft operations: instrument flight rule (IFR) or visual flight rule (VFR) procedures. Visual flight rule procedures require the pilot to fly by sight and use visual landmarks to determine the flight path, with information published to advise what altitude the aircraft needs to achieve by the specified landmarks. Instrument flight rule procedures provide instructions for pilots based on information derived from the cockpit equipment, such as making direction changes at specific altitudes.

TABLE 3 – AIRCRAFT MOVEMENTS BY RUNWAY DIRECTION

MOVEMENTS BY RUNWAY DIRECTION								
Annual Movements	Runway 06		Runway 24		Runway 12		Runway 30	
2011/2012	99,712	39.9%	111,455	44.6%	24,850	10.0%	13,655	5.5%
2012/2013	88,355	35.7%	127,363	51.4%	20,325	8.2%	11,605	4.7%
2013/2014	72,784	30.8%	119,072	50.4%	26,588	11.3%	17,588	7.5%
2014/2015	78,561	34.5%	117,453	51.6%	22,109	9.7%	9,402	4.1%
Annual average use	84,853	35.3%	118,836	49.5%	23,468	9.8%	13,062	5.4%
Average with runway 12/30 extension	83,171	34.6%	117,635	49.0%	25,149	10.5%	14,263	5.9%

The rate at which an aircraft can climb is dependent on variables such as wind strength, total payload/weight, and aircraft engine type, so every aircraft will perform differently. The actual flight track flown is also affected by, but not limited to, factors such as the pilot's familiarity with the area, air traffic management requirements, and meteorological conditions. Although the term 'flight path' is commonly used and the tracks are shown as thin straight lines on maps, in reality an aircraft's flight path occupies a three-dimensional region of space or set area and the resulting flight corridor can be a few kilometres wide.

REPORTING WAYPOINTS

Class D Airspace procedures allow aircraft to enter and leave the Jandakot Control Zone from any direction. However, due to the large volume of traffic at Jandakot Airport, Air Traffic Control requires aircraft to track via specific entry and exit waypoints so that aircraft segregation and clearances can be appropriately managed by the Air Traffic Controllers.

The main departure tracks from Jandakot are northwest via the Fremantle golf course, southeast via Armadale and south via Yangebup and Thompson Lakes. The main inbound tracks are via Canning Bridge, Forrestdale Lake and Adventure World. Jandakot Airport has a high volume of aircraft movements and the established flight tracks are designed to achieve efficient traffic segregation. These locations are selected because they are prominent landmarks that assist with visual navigation. As these waypoints are used for coordinating aircraft traffic into and out of the Jandakot Control Zone (3 nautical mile radius of the airport), there is no impact from the proposed runway 12/30 extension.

IMPACT ON VISUAL FLIGHT RULE PROCEDURES

Approximately 95% of aircraft operations at Jandakot Airport are conducted under visual flight rule conditions. When departing, pilots are required to make the first prescribed turn when they reach 500ft. The exact location of an aircraft when it reaches 500ft varies significantly, depending on aircraft performance, payload (operating weight), wind speed and weather conditions, and pilot competence. For arrivals, pilots are required to turn for the base leg (prior to the straight in final approach) when the threshold of the runway they are landing on is at a 45 degree angle behind them. This turning point will also vary between different aircraft and different pilots, depending on aircraft performance, wind conditions and pilot familiarity

in completing the landing check-list. In addition, the mix of aircraft in the circuit can also impact on where aircraft are positioned, as to maintain appropriate sequencing the faster aircraft will need to fly wider circuits than the lower-performance aircraft.

There are no changes to the runway 12 flight paths under visual flight rule conditions as the runway threshold (starting and ending position) has not changed.

The visual flight rule conditions for runway 30 operations are minimally impacted. The extended length of the runway will mean that aircraft are departing runway 30 from a further 518m east of the current threshold, and will thus reach 500ft altitude level much earlier. More aircraft will be conducting the prescribed altitude turn within the airport boundary, and this will result in aircraft being at a higher altitude over the impacted residential areas to the south-west, west and north-west of the airport. For runway 30 arrivals, due to the strong north-westerly winds that exist for runway 30 to be in operation, the majority of aircraft currently conduct a low approach from the edge of the Jandakot Control Zone and the impact of the extended runway 12/30 is expected to result in aircraft being only 50ft-100ft (15m-30m) lower than current operations over Jandakot Regional Park and the residential areas located in between the airport and Nicholson Road.

IMPACT ON INSTRUMENT FLIGHT RULE PROCEDURES

Instrument flight rule procedures are based on the aircraft requiring the full length of the runway, with the departure track starting from the end of the sealed runway and approach tracks ending at the runway threshold.

There is no change to the location of the runway 12 threshold and therefore no change to the runway 12 arrival or departure instrument flight paths.

For runway 30 instrument departures, as the length of the runway has been extended and the take-off run has increased, aircraft will be at a higher altitude sooner and will be making any required direction changes earlier. The majority of these direction changes will now be conducted within the airport boundary, resulting in aircraft being at a higher altitude over the impacted residential areas to the south-west, west and north-west of the airport.

For runway 30 instrument arrivals, the runway threshold will be extended by 518m to the east. This will result in aircraft

being at a lower altitude over Jandakot Regional Park and the residential areas located in between the airport and Nicholson Road. Similar to visual flight rule procedures, the impact of the extended runway 12/30 is expected to result in aircraft altitude being only 50ft-100ft (15m-30m) lower than current operations.

The extension of the runway 12/30 is therefore not expected to result in any noticeable change to the instrument flight altitudes or flight paths.

Prior to the commissioning of the runway extension (see Section 11.3), Airservices Australia will recalibrate the runway 30 instrument approach landing and standard instrument departure procedures via a flight test. This will determine any required procedure changes.

NIGHT OPERATIONS

Jandakot Airport operates 24 hours per day, 7 days per week. During the day aircraft in the Jandakot Control Zone operate up to 1,500ft. However, during night operations the lowest safe altitude around Jandakot Airport for arriving and departing aircraft is above 1,500ft. For night operations pilots are not required to track via the visual flight rule waypoints, and will instead plan to use preferred flight paths that maintain the appropriate terrain clearances. Aircraft operations above 1,500ft require a clearance from Perth Air Traffic Control to climb into and descend from Perth Controlled Airspace, and the runway in use in Perth will therefore determine the track Perth Air Traffic Control approve or assign to aircraft operating into and out of Jandakot. This results in some different flight tracks being used for night operations, as shown in the following illustrated flight path diagrams. Aircraft conducting operations solely within the Jandakot Control Zone (i.e. circuits) will remain under 1,500ft.

ILLUSTRATED FLIGHT PATHS

Figures 10 to 13 display the flight paths for runway 12/30 operations. Because the actual flight tracks flown vary substantially between different aircraft, there is no demonstrable difference between the current operations on runway 12/30 and the future operations once the runway 30 threshold is extended. These flight paths present the main flight corridors expected to be used by the majority of aircraft operations.

6.3 AIRCRAFT NOISE

One of the most obvious impacts of airport operations on the surrounding community is aircraft noise. While the Jandakot Airport site was originally farmland, the close proximity of Jandakot to the Perth CBD and the rapid population growth in Perth has resulted in residential communities becoming established around the airport.

The *Airports Act 1996* requires that an MDP identify the effect of the proposed development on noise exposure levels, and the airport's plans for managing aircraft noise intrusion in areas forecast to be subject to exposure above the significant ANEF levels.

ANEF

The Australian Noise Exposure Forecast (ANEF) is a noise chart used for land use planning purposes in Australia. The ANEF displays the predicted noise exposure levels for aircraft movements 20 years into the future. The ANEF is a scientific measure that takes into account meteorological conditions at the airport, forecast aircraft movement volume and frequency, allocation of these movements to flight paths and distribution over the day and night time periods, and the noise signature (intensity, duration and tonal content) and performance characteristics of the specific aircraft types. An ANEF is required to be updated at least every five years, in conjunction with the Master Plan update, and be endorsed for technical accuracy by Airservices Australia.

The ANEF chart illustrates noise contours plotted at 20, 25, 30, 35 and 40 ANEF units. The contour plot is the calculated total noise energy at that given point on the ground on an annual average day. The higher the ANEF value, the greater the expected exposure to aircraft noise in that area. Properties located within the ANEF 20 contour and above may have zoning and development restrictions placed on the land, noise insulation included as a condition of planning approval, and/or notification of the likely presence of aircraft noise on the land title.

Noise levels over particular periods vary due to prevailing winds, traffic demand and times of operation. Australian Standard 2021-2000 Appendix A states that the actual location of the 20 ANEF contour is difficult to define accurately because of variations in aircraft flight paths, pilot operating techniques and the effect of meteorological and terrain conditions on noise propagation. For that reason, the 20 ANEF contour is shown as a broken line on ANEF plans.

FIGURE 10 - FLIGHT PATHS 12 DAY

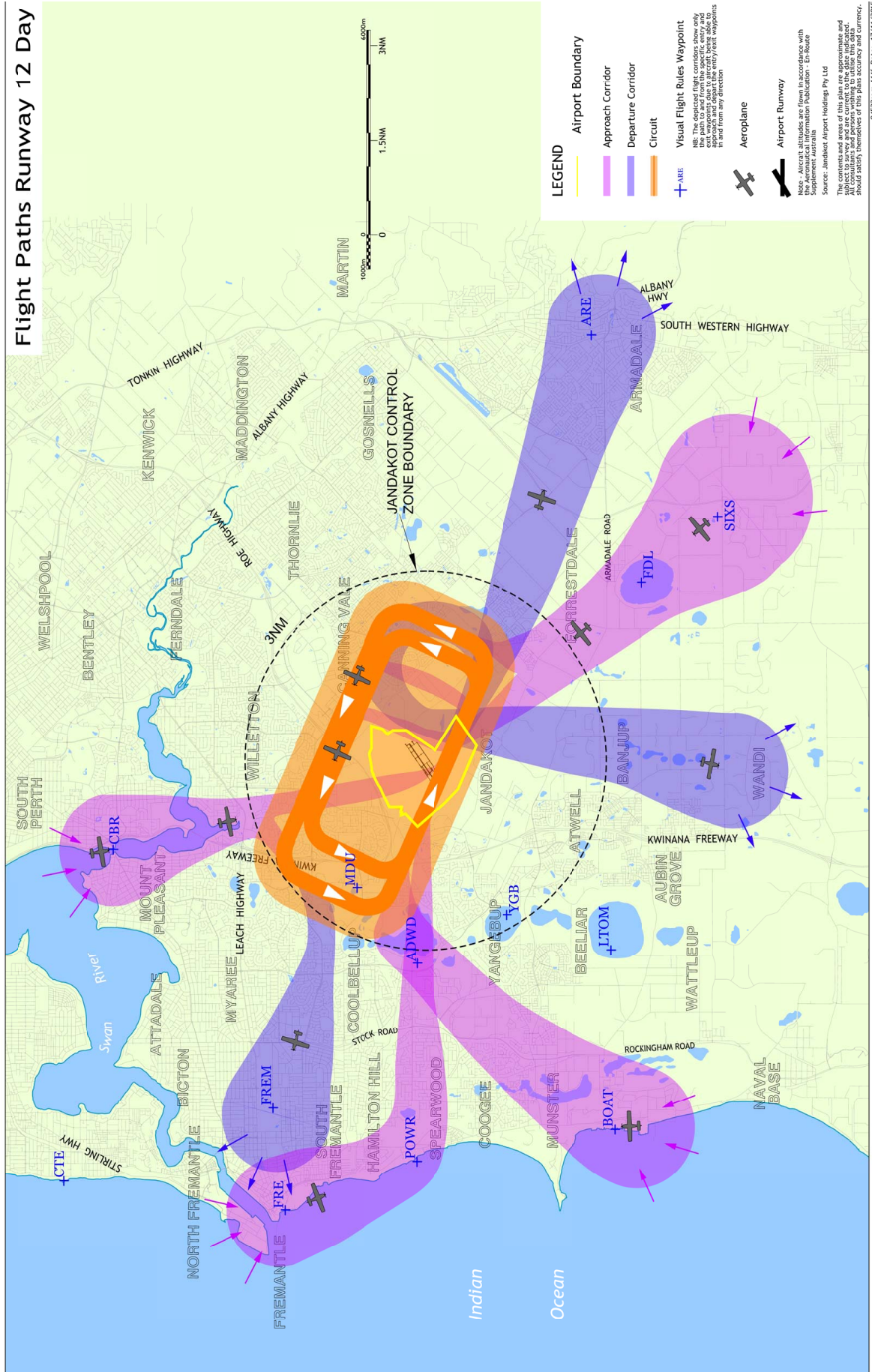


FIGURE 11 - FLIGHT PATHS 30 DAY

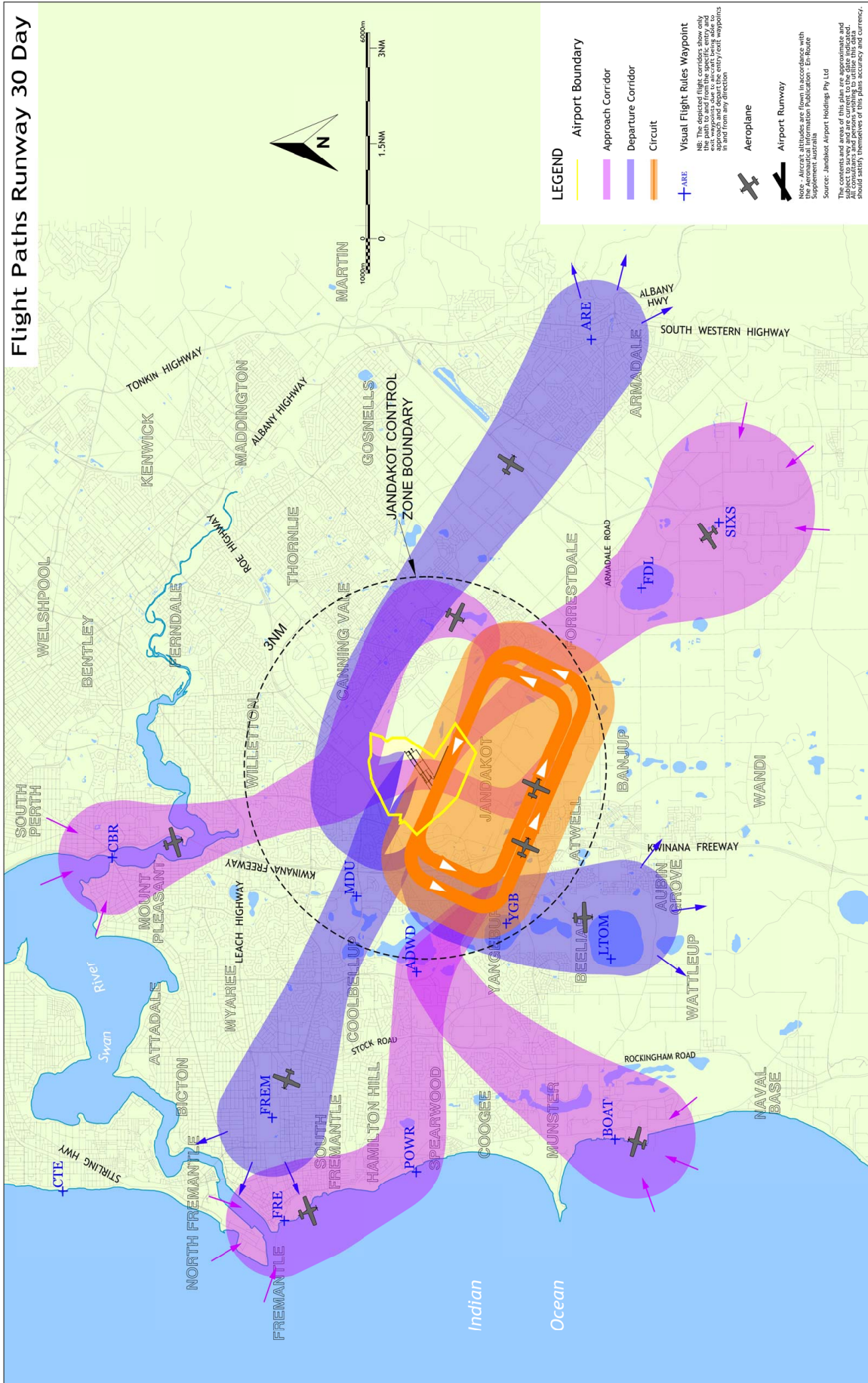


FIGURE 12 - FLIGHT PATHS 12 NIGHT

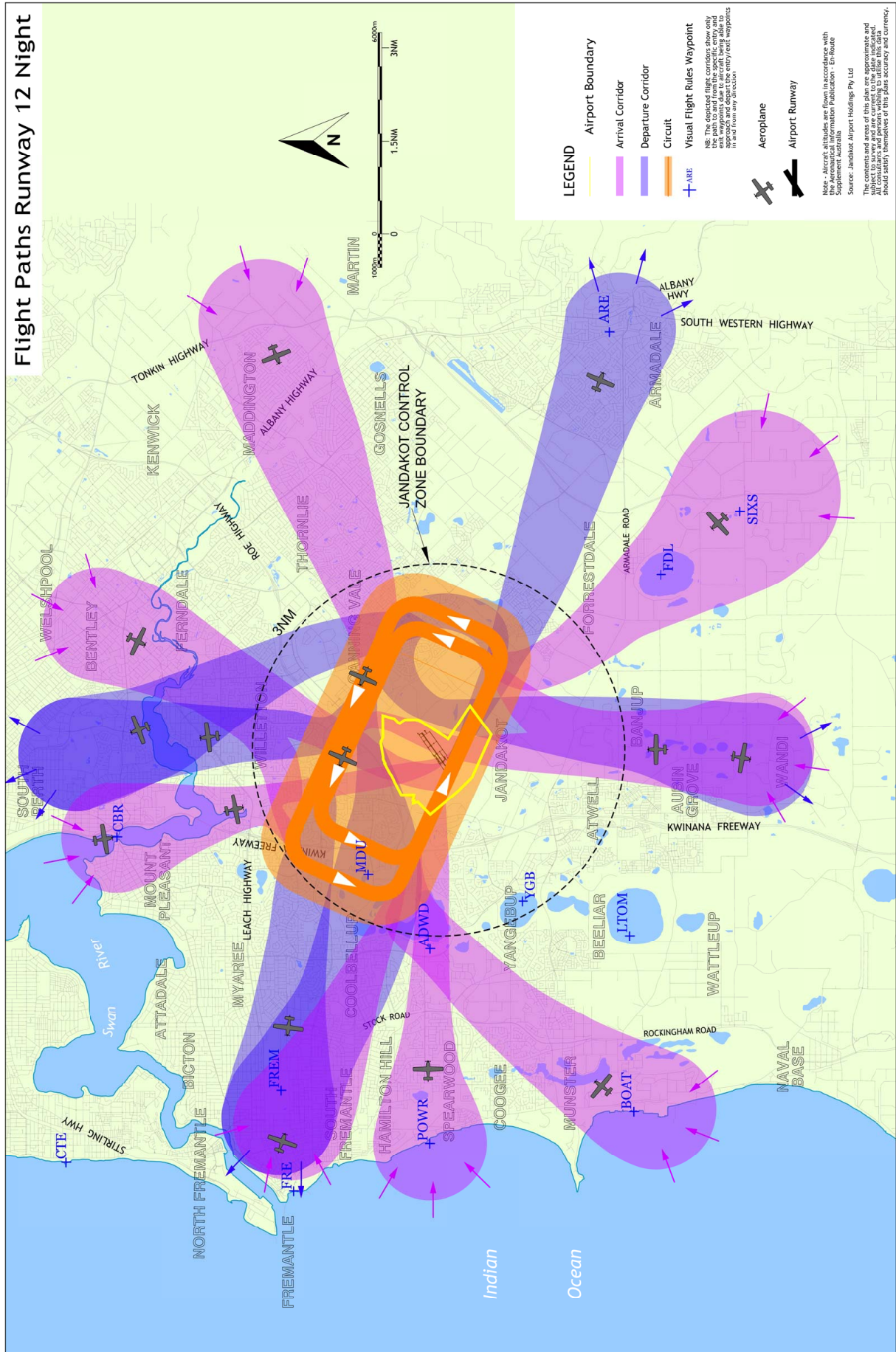
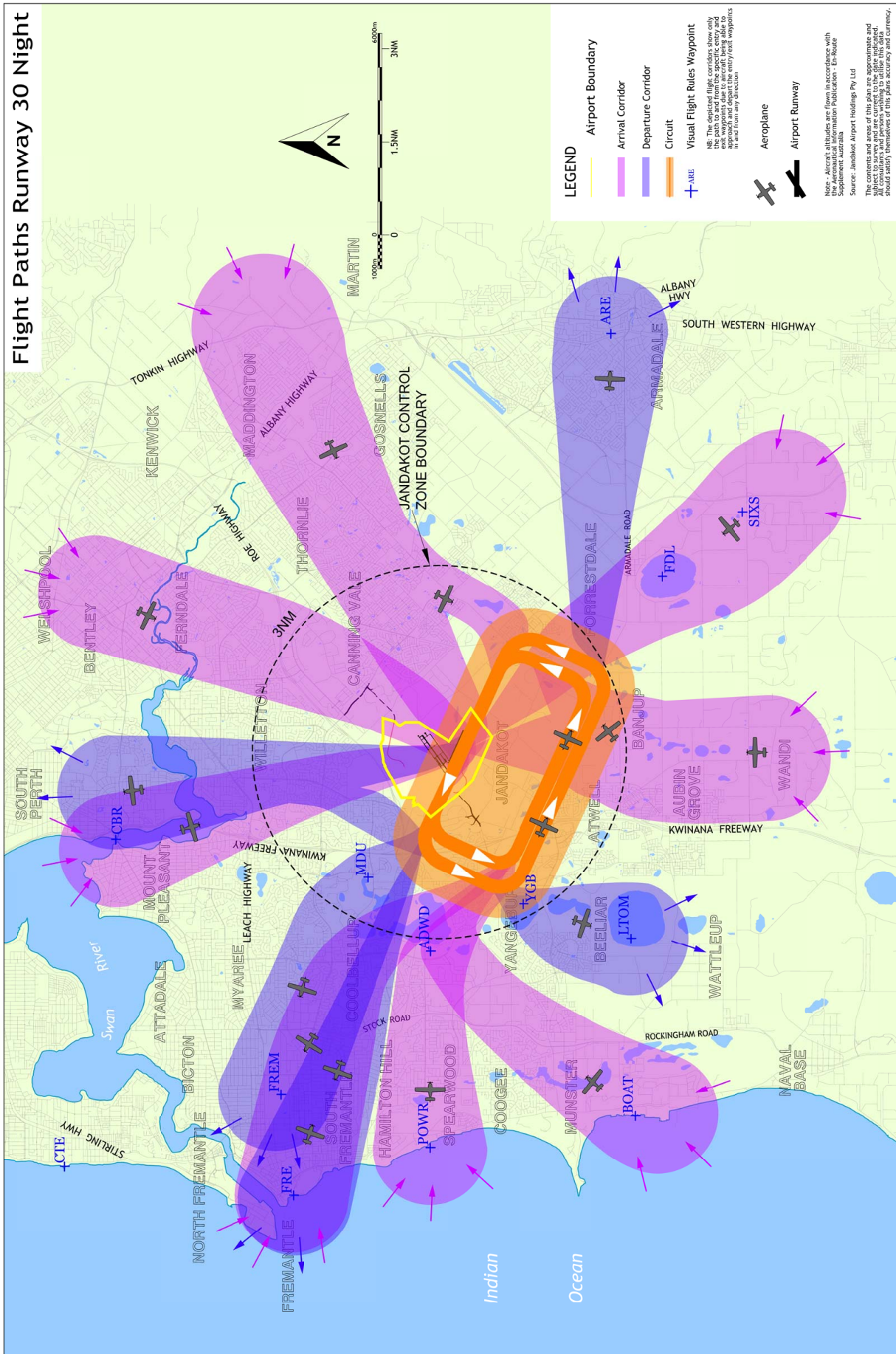


FIGURE 13 - FLIGHT PATHS 30 NIGHT



An Ultimate Capacity ANEF was prepared for Master Plan 2014 to represent an average day when the airport reaches its maximum aircraft operating capacity and is based on the ultimate design of the airfield as presented in Master Plan 2014. The impact of the changed runway 30 threshold was taken into account in the preparation of the Ultimate Capacity ANEF, shown in Figure 14.

EXPOSURE ABOVE SIGNIFICANT ANEF LEVELS

There are no residential houses located within the Ultimate Capacity ANEF 30 Contour. The two small areas where the Ultimate Capacity ANEF 30 Contour extends beyond the airport boundary are to the southwest and the east and relate to the runway 06L/24R and 06R/24L operations. These areas are appropriately zoned under the respective local government town planning schemes and the Metropolitan Region Scheme to preclude the future development of residential houses.

NOISE ABOVE CONTOURS

The Noise Above metric is a frequency based measure of aircraft noise to present the projected number of aircraft noise events on an average day that are above a specific noise level, shown as a N70, N65 or N60 Contour chart.

The N70 Contours display the calculated average daily aircraft noise events above 70 decibels (dbA). A 70 decibel outside noise corresponds to a 60 decibel noise event indoors, which is the noise level specified in Australian Standard AS2021 as the indoor design sound level for normal domestic areas in dwellings that may interfere with activities such as normal conversation and watching television.

The N60 Contours display the calculated average daily aircraft noise events above 60 decibels. A 60 decibel outside noise corresponds to a 50 decibel noise event indoors, which is specified in Australian Standard AS2021 as the sleep disturbance level.

The N60, N65 and N70 contours charts shown in Figures 15, 16 and 17 have been calculated using the ANEF ultimate capacity data, which is when Jandakot Airport will be operating at the maximum number of aircraft movements and the airfield has been fully developed as shown in Master Plan 2014. Contours are shown in intervals from 10 average daily events up through to 700+ average daily events.

It is important to note that the Noise Above charts show the average daily noise events, calculated by dividing the total annual events by 365. For comparison purposes, N60 contours have also been prepared for a Busy Day. The N60 Busy Day diagram, included as Figure 18, depicts the projected amount of noise events for a day where the airport will be operating at its peak daily movement level (i.e. extremely favourable weather conditions for flying training).

These contour calculations have taken into account the airfield development at its ultimate development, including the runway 12/30 extension.

6.4 AIRCRAFT NOISE MANAGEMENT

Aircraft noise management is the responsibility of the entire aviation industry. The range of organisations and agencies involved are detailed in Master Plan 2014 and on the Jandakot Airport website (Aircraft Noise webpage).

FLY NEIGHBOURLY

Fly Neighbourly is a voluntary code of conduct for pilots that was introduced at Jandakot Airport in January 2000. While it is impossible to stop aircraft noise emanating from an airport, Fly Neighbourly recognises that there are opportunities to reduce the effect of aircraft noise on surrounding communities.

Pilots are expected to undertake operations in a manner which is considerate of local residents. However, safety is the primary concern of air navigation and operations, and implementation of the Fly Neighbourly principles is therefore subject to safety and operational considerations as air traffic procedures and instructions must be complied with at all times.

Fly Neighbourly requires pilots to use sufficient runway length and best rates of climb to maximise height over populated areas. High performance and twin-engine aircraft are to conduct full length take-offs where possible. The extended length of runway 12/30 will permit aircraft departing runway 30 to commence take-off a further 518m east of the current threshold and thus achieve higher clearances over residential areas to the west, south-west and north-west of the airport.

Detailed information about Fly Neighbourly is available on the Jandakot Airport website.

FIGURE 14 - ULTIMATE CAPACITY AUSTRALIAN NOISE EXPOSURE FORECAST

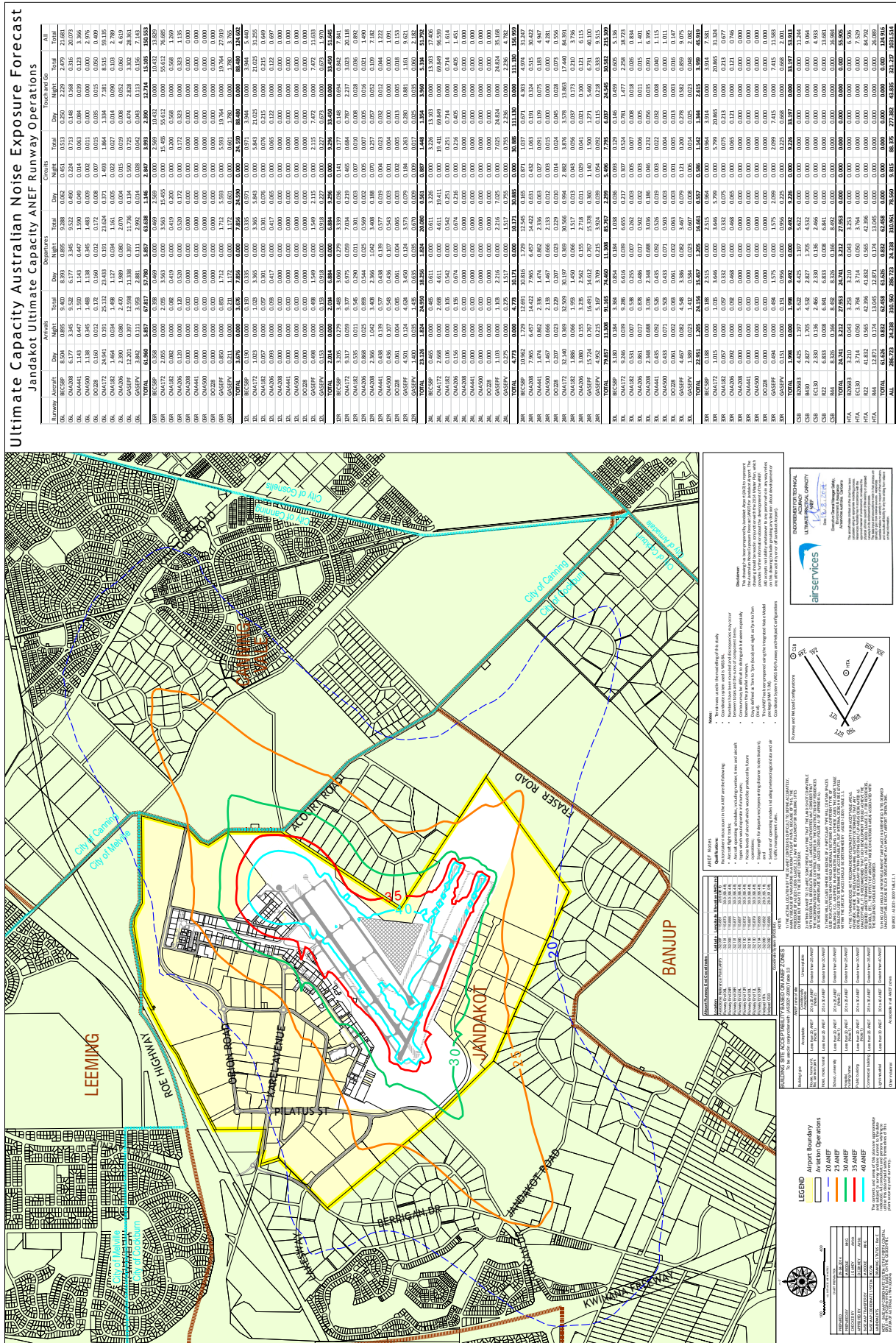


FIGURE 15 – N60

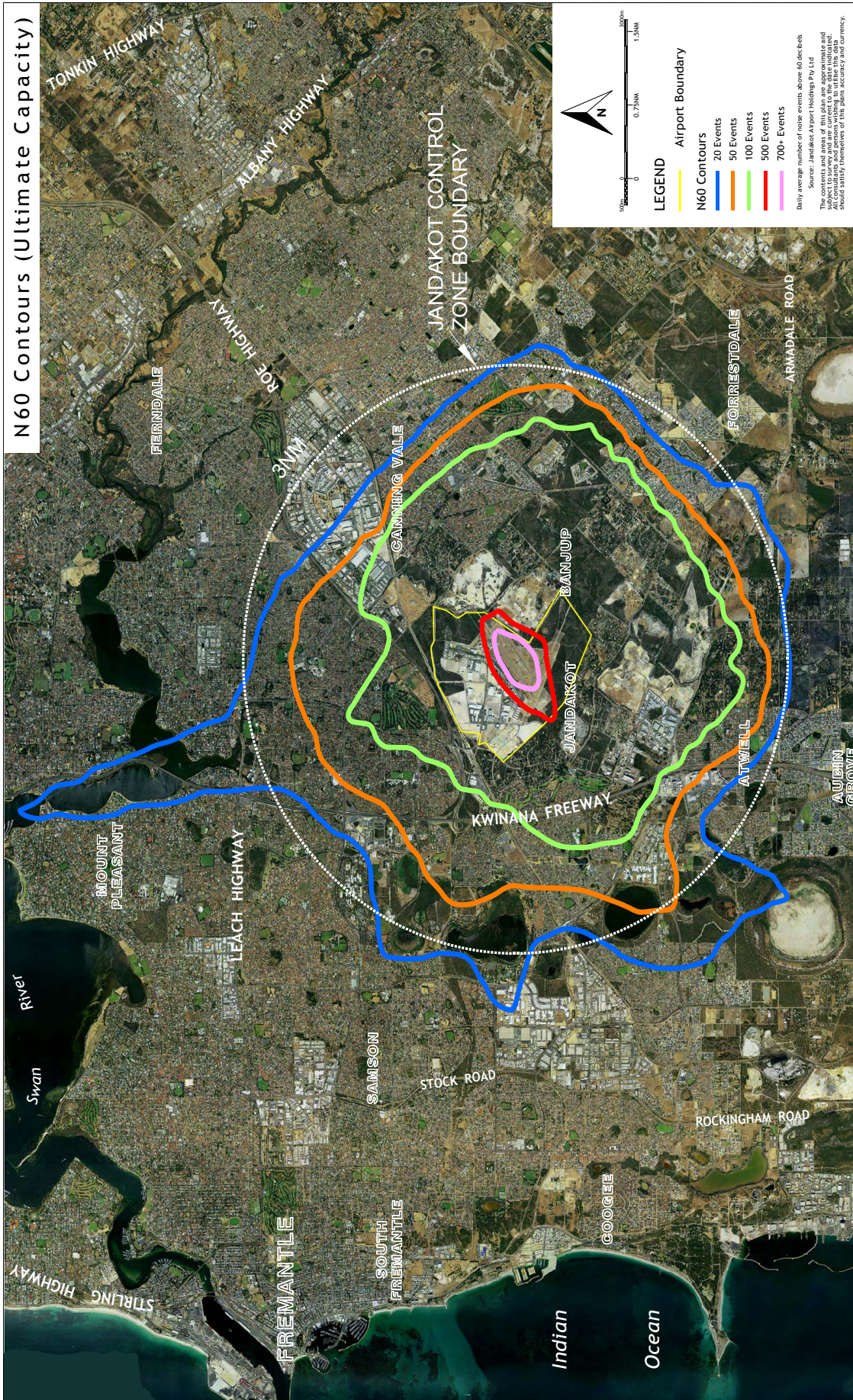


FIGURE 16 – N65

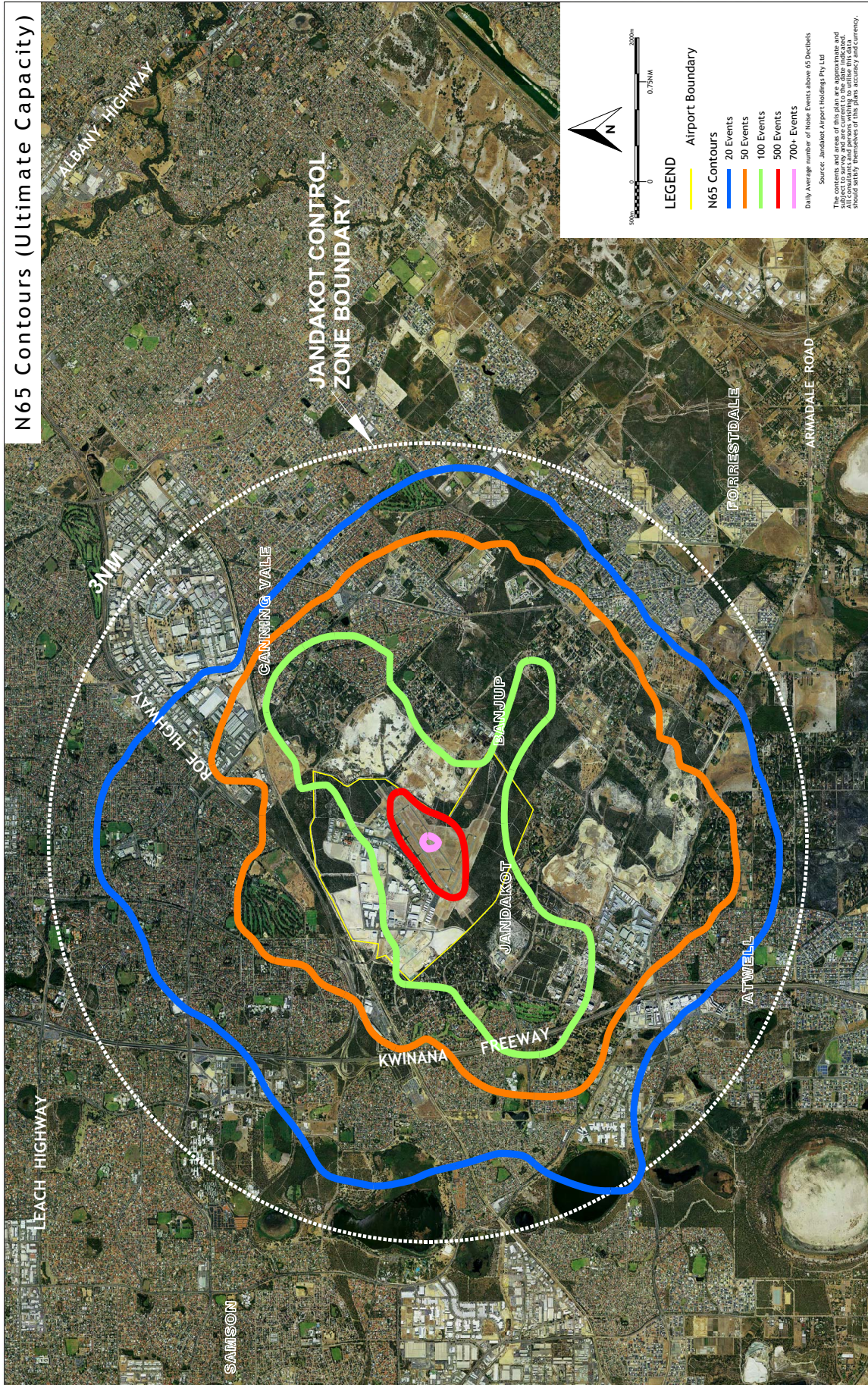


FIGURE 17 – N70

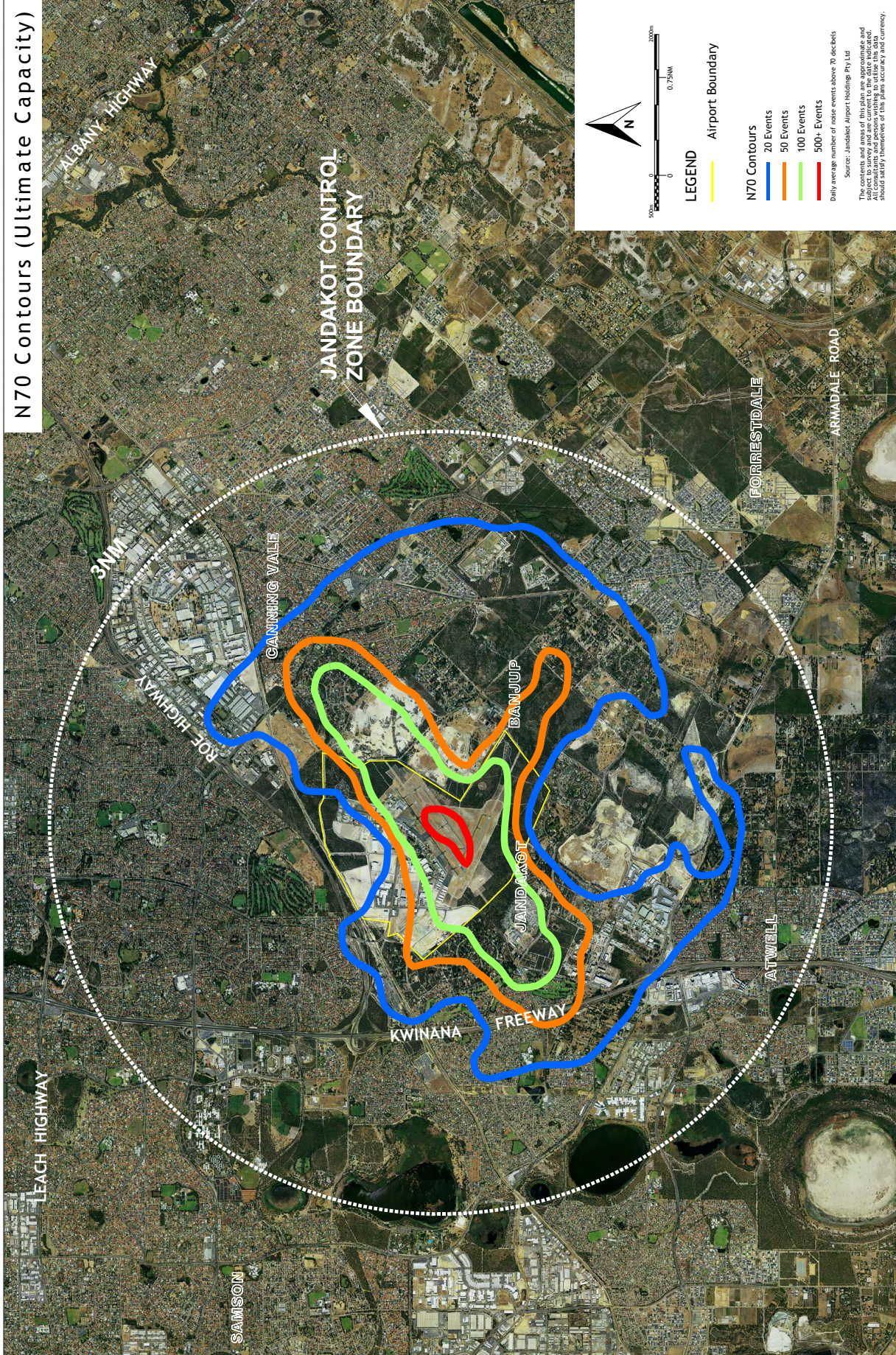
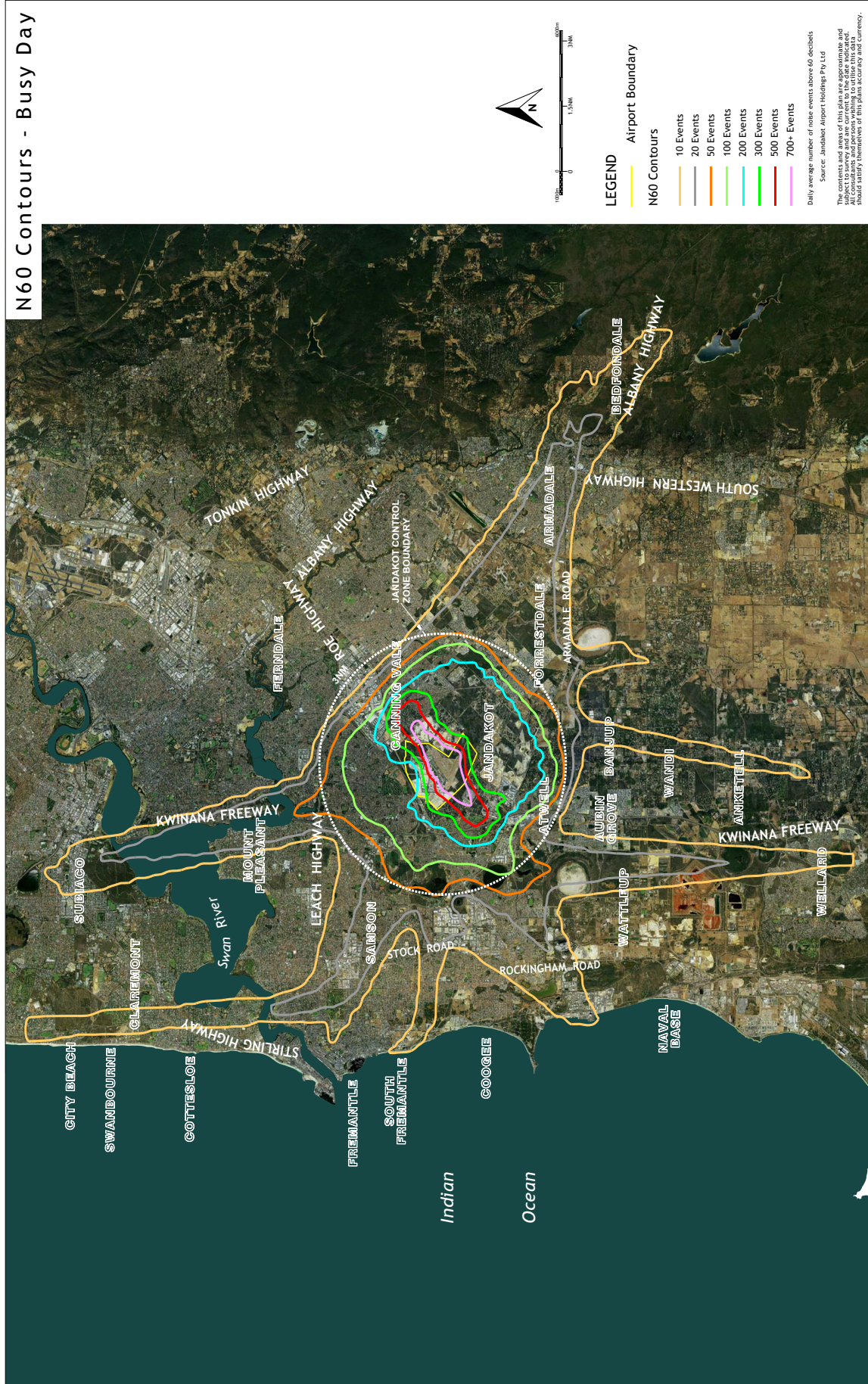


FIGURE 18 – N60 BUSY DAY



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7. AIRSPACE AND AVIATION PROTECTION

7.1 PROTECTION OF AIRSPACE

The Department of Infrastructure and Regional Development protects the airspace around leased Federal airports under the *Airports Act 1996* and the *Airports (Protection of Airspace) Regulations 1996*. Obstructions and obstacles in the vicinity of an airport have the potential to create air safety hazards and to seriously limit the scope of current and future aviation operations into and out of an airport. Whilst the protection of airspace is applied to all stages of flight, it is most critical for arrivals and departures at any airport. During these stages, the aircraft is close to the ground, the pilot's workload is greatest and the aircraft is least manoeuvrable. Since the majority of aircraft accidents occur during these stages, the objective is to provide a safe, predictable environment in which aircraft can land and take-off.

International and national standards have been adopted that define two sets of invisible surfaces to delineate the various airspace obstacle protection areas: the Obstacle Limitation Surfaces (airspace designed to provide protection for visual flying operations, where the pilot is flying by sight), and Procedures for Air Navigation Services - Aircraft Operations surfaces (airspace designed to protect aircraft operating in instrument flying conditions whereby the pilot is relying entirely on the information derived from cockpit navigation instruments). Prescribed airspace is the airspace above any part of either of these surfaces.

JAH, as the aerodrome operator, is required to establish the Obstacle Limitation Surfaces in accordance with Manual of Standards Part 139. As an Obstacle Limitation Surface is prepared for each Master Plan, the airspace requirements for the lengthening of runway 12/30 has been protected since 2009. Figure 19 depicts the Obstacle Limitation Surfaces for the ultimate development of the Jandakot Airport.

The Procedures for Air Navigation Services - Aircraft Operations surfaces (PANS-OPS) are established by instrument procedure designers approved by the Civil Aviation Safety Authority under the *Civil Aviation Safety Regulations Part 173*. The reviews of the PANS-OPS undertaken for Master Plan 2009 and current Master Plan 2014 included the extension of runway 12/30 to the proposed length of 1,508m and have therefore protected the airspace required for this runway extension. Figure 20 depicts the lowest PANS-OPS surfaces for the ultimate

development of the Jandakot Airport and is provided as a guide only to obstacle management within the vicinity of the airport.

CONTROLLED ACTIVITIES

Any activities that could result in an intrusion of prescribed airspace are referred to as 'controlled activities' that can only be carried out with approval. Controlled activities include:

- permanent structures, such as buildings;
- temporary structures, such as cranes; and
- any activities causing intrusions into the protected airspace through glare from artificial light or reflected sunlight, air turbulence from stacks or vents, smoke, dust, steam or other gasses or particulate matter.

Under the *Airports (Protection of Airspace) Regulations 1996*, details of proposed controlled activities must be provided to JAH as the airport-operator company. JAH will complete an initial assessment to determine whether the activity will cause an intrusion into the prescribed airspace for Jandakot Airport and the extent of any intrusion. If there is an intrusion, JAH is required to seek further assessment from Airservices and the Civil Aviation Safety Authority. These comments will then be provided to the Department of Infrastructure and Regional Development to approve/ refuse the controlled activity. Controlled activities that are less than 3 months duration may be approved by JAH following assessment by Airservices and the Civil Aviation Safety Authority.

All cranes and construction equipment used for the extension of runway 12/30 and the taxiway system will be subject to the controlled activity assessment prescribed under the *Airports (Protection of Airspace) Regulations 1996*.

7.2 EXTERNAL LIGHTING RESTRICTIONS

The Civil Aviation Safety Authority has the authority, under the *Civil Aviation Regulations 1988*, to control ground lights where they have the potential to cause confusion or distraction (from glare) to pilots in the air. The Civil Aviation Safety Authority has established guidelines, through the Manual of Standards Part 139, on the location and permitted intensities of ground lights within a 6km radius of airports.

FIGURE 20 - PANS-OPS



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Temporary lighting used during construction night works will comply with CASA guidelines to ensure that it does not shine above horizontal or have the potential to cause glare or distraction to pilots.

The clearing and construction works required for the extension of runway 12/30 and building of associated taxiways will be formally assessed by Airservices Australia, but these are not expected to result in an activity or structure that would impact the Non-Directional Beacon or microwave link.

7.3 WINDSHEAR AND TURBULENCE

The location of a significant obstacle, such as a building, in the path of a cross-wind to an operational runway can pose a safety risk to aircraft operations by creating windshear and turbulence. The National Airports Safeguarding Framework 'Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports' notes that windshear poses the greatest risk on approach, landing and take-off when the aircraft's speed is low and pilot's ability to respond is limited.

There is no construction activity associated with the extension of runway 12/30 and development of associated taxiways that will cause wind shear. There are no existing buildings in the vicinity of the runway extension. JAH will apply the Guideline B criteria to assess whether a proposed development of buildings or structures in the vicinity of the extended runway 12/30 has the potential to create windshear and affect aircraft movements.

7.4 COMMUNICATION, NAVIGATION AND SURVEILLANCE INFRASTRUCTURE

Airservices Australia provides and maintains a Non-Directional Beacon at Jandakot Airport to facilitate location navigation for aircraft arrivals and departures. In addition, a microwave communication link exists between the Jandakot and Perth Air Traffic Control towers. These navigation and communication links rely on the transmission of radio waves that must be protected from structures or obstacles that could cause signal refraction or interference.

The NASF Principles state that Guidelines for the Protection of Communication, Navigation and Surveillance Infrastructure will be considered at a later stage. While these additional guidelines have not yet been released for public comment, consideration is made to protecting this critical infrastructure. Information about relevant developments is provided to Airservices to allow an assessment to be made to ensure that the performance of current and future navigation and communication aids is maintained.

8. ENVIRONMENTAL ASSESSMENT

8.1 LAND USE PLANNING AND CONSERVATION

In accordance with the requirements of the *Airports Act 1996*, Master Plan 2014 identifies areas of high natural conservation values on the Jandakot Airport estate as Conservation Precincts 1A, 1B, 2A and 2B. These Conservation Precincts were initially identified due to their high natural conservation values in Master Plan 2009 and Environment Strategy 2009 following site specific survey work, consultation and liaison with various community groups and Government and indigenous agencies, and consideration of the various State and Commonwealth policies and recommendations.

EPBC 2009/4796

Following approval of Master Plan 2009, *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral 2009/4796 (Jandakot Airport Expansion, Commercial Development and Clearance of Native Vegetation, WA) was approved with conditions by the then Minister for Environment, Water, Heritage and Arts in March 2010. This approval, allowing for clearing of 167 ha of native vegetation and subsequent development within Precincts 1B, 3, 4 and 5, remains applicable and consistent with Master Plan 2014 and the proposed airfield development detailed within this preliminary draft MDP. All native vegetation clearing required for the proposed extension of runway 12/30 and the taxiway system has been approved under EPBC 2009/4796.

The extension of runway 12/30 and the taxiway system will occur within the Aviation Operations Precinct (Precinct 3), outside of the Conservation Precinct boundaries. The use of this land for aviation purposes was initially embodied within the Master Plan 2005 Land Use Plan. Subsequently this land use has continued in Master Plan 2009 and more recently in approved Master Plan 2014.

The proposed runway 12/30 extension and associated taxiways comprise areas already cleared and 41 hectares of native vegetation identified as Stage 3 clearing in the Offset Plan approved by the Minister for the Environment as a condition of the EPBC 2009/4796 approval, shown in Figure 21.

All EPBC 2009/4796 conditions of approval relating to this MDP will be met by JAH by ensuring:

- Vegetation clearing occurs within approved areas and total vegetation clearing under EPBC 2009/4796 does not exceed 167 ha;
- Approved management plans and strategies required by various conditions of approval are implemented;
- Annual compliance reporting is undertaken.

8.2 ENVIRONMENTAL ASSESSMENT AND MANAGEMENT

The following environmental management approach will be adopted as part of the development of this project:

- Identify potential environmental impacts (construction and operational);
- Design alternate work practices or control measures to eliminate or mitigate impacts; and
- Develop a strategy for monitoring and reporting of commitments to ensure compliance.

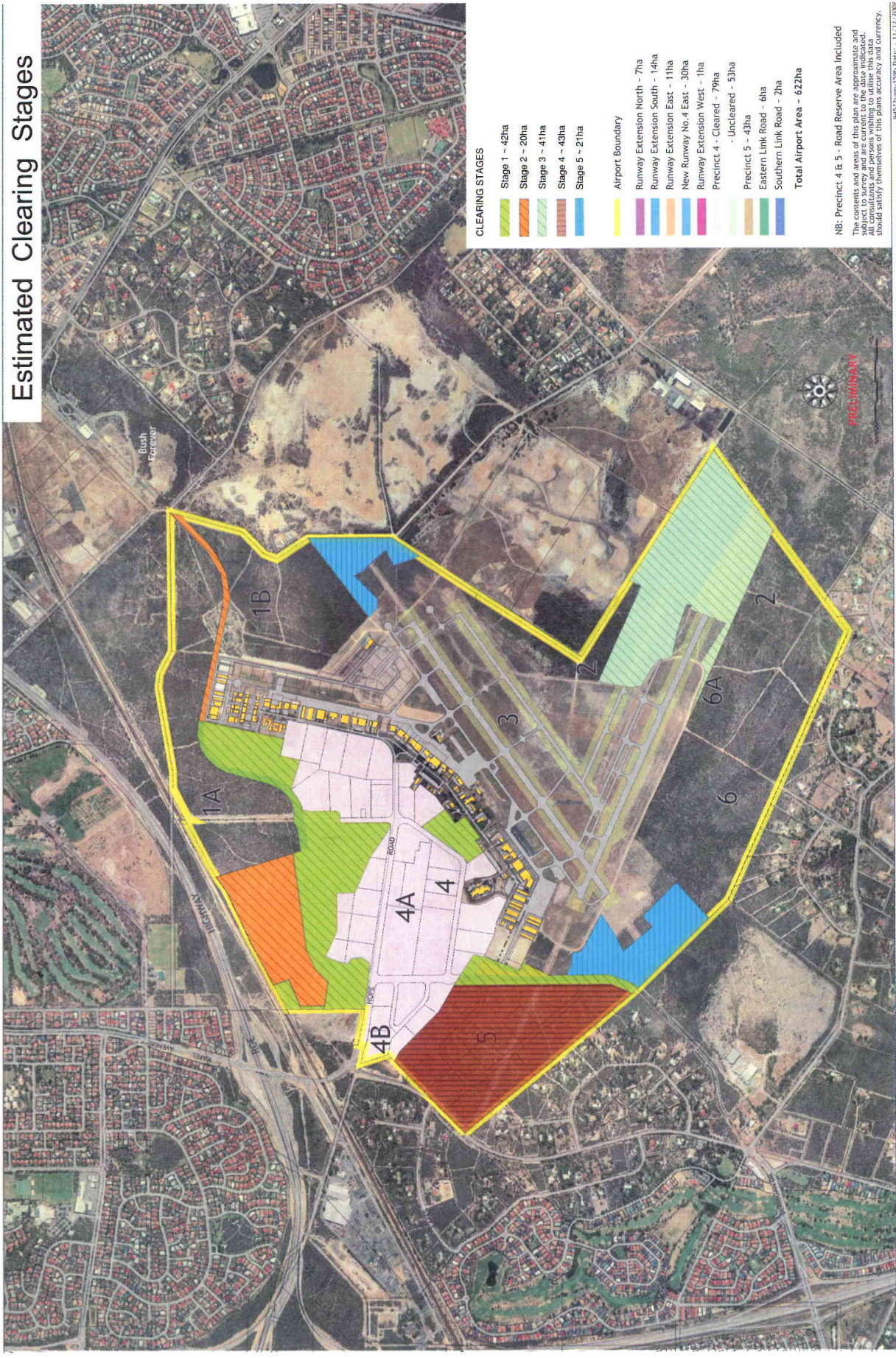
While the major potential environmental impacts and means for dealing with these impacts are identified in this document, details of proposed management actions are provided in the Jandakot Airport Construction Environmental Management Plan.

EXISTING ENVIRONMENTAL MANAGEMENT SYSTEM SUMMARY

This MDP adheres to the JAH Environment Policy, which forms the basis of the JAH Environmental Management System. The policy recognises JAH's responsibility to maintain and protect the quality of the environment in and around its operations. In achieving this, JAH commits to establishing and maintaining a system that strives to:

- Develop and manage Jandakot Airport in an environmentally sound manner;
- Comply with environmental legislation and regulations;
- Work with relevant authorities and the community to identify specific objectives and targets to minimise adverse environmental impacts;

FIGURE 21 - CLEARING STAGES (JANDAKOT AIRPORT OFFSET PLAN)



- Pursue opportunities to promote efficient use of resources and increase recycling;
- Continually measure, monitor, report and improve upon the environmental performance defined by our objectives and targets; and
- Promote the JAH commitment to the environment, employees, tenants, customers and neighbours.
- Ground Water Management Plan;
- Jandakot Airport Offset Plan; and
- Construction Environment Management Plan for clearing and civil works associated with EPBC 2009/4796 and EPBC 2013/7032.

JAH's environmental policies and procedures are updated regularly to reflect changes in legislation, development and information. These are specific management instructions or work instructions for particular issues and include:

- Environmental Management Plans - Policy and Guidelines;
- Landscape Design Guidelines;
- Management of Sewage and Greywater Policy;
- Abrasive Blasting, Stripping and Painting Policy;
- Dangerous Goods and Hazardous Materials Policy
- Aircraft and Equipment Washdown Policy; and
- Storage of Empty Drums and Containers Policy.

AIRPORT MANAGEMENT PLANS

A number of environmental issues at the airport are managed through specific management plans, programs and strategies. Many of these plans, such as the Conservation Management Plan, are linked to EPBC approval conditions and are approved by the Environment Minister. Plans include:

- Conservation Management Plan; which includes:
 - Weed Management Plan;
 - Dieback Management Plan;
 - Bushland Rehabilitation and Revegetation Guidelines;
 - Jandakot Rare Orchid Research Program;
 - Feral Animal Management Plan;
 - Bush Fire Management Plan;
 - Wildlife Fencing and Underpass Strategy; and
 - Heritage Management Plan.
- Local Water Management Strategy;
- Water Efficiency Management Plan;

CONSTRUCTION ENVIRONMENTAL MANAGEMENT

The Construction Environmental Management Plan describes the management strategies that are to be applied to minimise any environmental impacts associated with proposed site works.

The works required to extend runway 12/30 and associated taxiways fall within the scope of EPBC 2009/4796. Condition 8 of the approval required a Construction Environmental Management Plan to be developed. This Plan was initially approved by the Minister for Environment on 10 June 2010. Amendments were made to incorporate the requirements of EPBC 2013/7032 into the management plan, as well as address all potential impacts of works associated with this MDP and submitted in March 2015 to the Minister for Environment for approval prior to the commencement of works.

The Department of Infrastructure and Regional Development, via an appointed Airport Building Controller, regulates many aspects of the construction phase through the *Airports (Building Control) Regulations 1996*. The advice of the Department's Airport Environment Officer is taken into account during this process. Conditions, in addition that those issued under EPBC 2009/4796, may be included in the Building Permit issued by the Airport Building Controller.

8.3 MANAGEMENT OF POTENTIAL ENVIRONMENTAL IMPACTS

The potential environmental impacts associated with clearing and construction activities, as well as the various management and mitigation measures, are detailed within the Construction Environmental Management Plan and other related management plans. Key areas are summarised in Sections 8.4 to 8.13.

8.4 NOISE MANAGEMENT

Heavy earthmoving equipment associated with construction activities have the potential to generate noise within the immediate vicinity of the proposed works. Given the distance from rural residential neighbouring properties and the fact that major regional roads bound the airport, noise is not expected to be an issue for any surrounding landowners. However, compliance with the Airports (Environmental Protection) Regulations 1997 and the implementation of the Construction Environment Management Plan will be imposed on contractors through administration of appropriate contract documentation. Mitigation measures will include:

- The majority of construction activities will occur within typical construction working hours (to minimise disruption to aircraft operations some works may be required to occur during night hours);
- Equipment and machinery will be maintained to ensure that noise levels are minimised.

8.5 DUST AND AIR QUALITY

GEOLOGY AND SOILS

The Swan Coastal Plain consists of a series of distinct dune systems aligned approximately north to south and extending from the coast to the Darling Scarp. The Quindalup and Spearwood dune systems lie closest to the coast, with the Bassendean dune system further to the east. Jandakot Airport lies approximately 3 km east of the Spearwood system boundary, within the Bassendean dune system. Bassendean sands are Aeolian, or windborne, soils derived from particles washed up by the ocean and blown by wind to form dunes. These sands are characterised as pale grey, white, medium grained, moderately sorted quartz sand with black heavy minerals scattered throughout (McArthur and Bettenay 1960).

The topography of the airport and surrounding areas is generally flat, with local variations in height of 20m or less. Most of the site has an elevation of 28-30m AHD (Australia Height Datum). High points of 40-45m AHD occur in the south-eastern corner and within Precinct 1A.

DUST AND AIR QUALITY

The two primary causes of potential air quality issues will be emissions from construction machinery and airborne dust

(including wind-blown sand). Airborne dust results from clearing activities, the excavation and stockpiling of soil as well as vehicle movement around the site.

Potential impacts of dust and emissions generated through construction include:

- Reduced visual amenity;
- Decline in vegetation health;
- Risk to human health;
- Nuisance to terrestrial fauna; and
- Risk to aircraft safety.

In order to construct the extension of runway 12/30 and taxiway system, it will be necessary to level the site. A significant amount of sand will need to be removed from the airport to create a level platform for the construction of the works. JAH will work with the Commonwealth Government to agree how the removal of this sand will be managed, noting environmental aspects will be addressed via the Construction Environment Management Plan.

The Construction Environment Management Plan requires JAH to minimise (and where possible prevent) dust and particulate matter impacts beyond the construction site boundary. All reasonable and practicable measures will be implemented during the construction and operation phase. Management measures to be implemented prior to construction and for the duration of operation will be compliant with the *Airports (Environment Protection) Regulations 1997* and, where applicable, consistent with the Western Australian Department of Environment Regulation guideline titled 'A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities'.

Specific actions within the Construction Environment Management Plan to minimise dust impacts include:

- Suppression using non potable water;
- Stabilisation (e.g. soil binders, dust retardants, hydromulch);
- Ensuring soils are covered during transport;
- Use dust barriers to limit transport of dust off work areas;
- Restrict high risk activities in unsuitable wind/weather conditions;

- Restriction of construction traffic to designated areas and tracks; and
- Ensure areas cleared, levelled and ready for lot level construction are stabilised (e.g. seeding with a soil stabilising species, soil binders, dust retardants etc.).

8.6 EROSION AND SEDIMENT CONTROL

Jandakot Airport surface geology consists of highly permeable Bassendean Sand with a low level of erosion or sedimentation risk. The site exhibits low relief topography and no surface water bodies exist on site besides damplands. To date, erosion and sedimentation either during or following clearing activities have not been evident.

The extension of runway 12/30 and the taxiway system has little potential to create erosion and sedimentation during the initial construction phase or the subsequent operational phase. Regardless of risk, management strategies for the control of erosion and sedimentation during the construction stages of the proposed development are in the Construction Environment Management Plan, as required under EPBC 2009/4796 conditions of approval.

Water and sediment control measures will include:

- The use of sediment control fences, catch drains and sand bags where high sedimentation and erosion risks are identified; and
- The consideration of sensitive receptors (e.g. residential neighbours) and prevailing weather conditions when establishing stockpiles.

8.7 ACID SULFATE SOILS

Acid sulfate soil risk maps (Essential Environmental 2015) show the location of the runway 12/30 extension and new taxiways is in an area of moderate to low risk of acid sulfate soils occurring within 3m of the natural soil surface but high to moderate risk of acid sulfate soils beyond 3 m of the natural soil surface (i.e. Class 2). A small area of land in the south of the airport in the vicinity of the Precinct 6 and runway 06L extension area border is categorised as 'high to moderate risk of acid sulfate soils occurring within 3m of the natural soil surface' (i.e. Class 1).

The extension of runway 12/30 and the taxiway system will not require deep excavation and acid sulfate soils are not expected to be encountered. Where acid sulfate soils

are identified, ASS and Dewatering Management Plans will be developed consistent with the requirements within the Construction Environment Management Plan and Jandakot Airport Groundwater Management Plan.

8.8 WATER QUALITY

Water quality management is intrinsically linked to hazardous material and waste management issues. Key activities that have the potential to impact on water quality include:

- Clearing of vegetation;
- Earthworks;
- Storage and handling of chemicals and hydrocarbons; and
- Dewatering.

If not managed correctly, these activities can impact groundwater quality, potentially resulting in contamination.

WETLANDS AND SURFACE WATER

Within Jandakot Airport there are no natural drainage channels or defined areas of surface water:

The two wetlands that occur on the airport are both Resource Enhancement category wetlands (Damplands) as defined by the Geomorphic Wetlands of the Swan Coastal Plain dataset (DEC 2008). These are located in Precincts 1A and 2A of Master Plan 2014, both of which are designated conservation areas.

There are no wetlands in proximity to the extension of runway 12/30 and taxiway system, and these works do not impact on the mapped wetlands.

STORMWATER AND DRAINAGE

Development increases the area of impermeable surfaces such as roads, car parks, runways and apron areas, which concentrate run-off following a very intense rainfall event. A Local Water Management Strategy (Essential Environmental 2015) has been developed to ensure 'best practice' drainage principles are adopted and maintained across the airport.

Drainage swales and basins have been created in strategic areas of the airport to collect run-off from roads and other sealed surfaces. Due to the high permeability of the Bassendean soils, run-off is localised and short term as it generally infiltrates very quickly. Water retention and

ponding within drainage swales and basins is avoided where possible in order to deter water birds that may pose a bird strike risk to aircraft operations.

In general, stormwater throughout the airport is managed via a combination of soakwells, open drains and swales complimented in areas by an underground pipe drainage network. The design of drainage systems aims to maximise local infiltration i.e. recharge to the ground water system.

Manual of Standards Part 139 defines standards for runway longitudinal slopes and provision of effective drainage in the graded runway strips to avoid water ponding. The extension of runway 12/30 and the taxiway system will provide for the same level of slope and drainage as the existing runway and taxiway system.

GROUNDWATER

Jandakot Airport is partially located on the northern margin of the Jandakot Groundwater Mound, with the crest of the mound located just south of the airport (Davidson 1995).

The shallow sand aquifer covers an approximate area of 760 km², from the Swan River in the north to the Serpentine River in the south. The Jandakot Mound has primarily developed because the rate of infiltration exceeds the rate of horizontal groundwater flow through the aquifer. During the summer periods, when there is little or no recharge, the rate of horizontal groundwater flow exceeds vertical infiltrations resulting in a subsidence of the mound as the water table lowers. Throughout most of the airport site, the unsaturated zone consists of fine grey sands; with occasional coarse white and yellow sands in the central and north eastern parts of the site (Sinclair Knight Mertz 1999).

Groundwater levels at Jandakot Airport are generally shallow (22 to 26m AHD) with little variability in the groundwater levels throughout the year. Groundwater levels generally rise between June and September in response to infiltration from rainfall followed by a recession from September to June, with the seasonal difference typically being less than 2m. A review of historical Department of Water data shows that groundwater levels in the Jandakot area have receded over the last 35 to 40 years. This is supported by Department of Water findings of ground water levels across the Perth region as a whole (DoW 2009).

Groundwater flow direction is south-east to north-west, away from the Jandakot Underground Water Pollution Control Area (JDA 2006).

8.8.1 UNDERGROUND WATER POLLUTION CONTROL AREA

The Jandakot Mound is gazetted as both a Public Drinking Water Supply Area and an Underground Water Pollution Control Area (UWPCA). The Department of Water manages Western Australia's water resources including the Jandakot Mound and restricts land uses that may pose a threat to the quantity or quality of water available from the mound for public water supply.

Within the Jandakot UWPCA, a three-level priority system is used. The priority classifications are determined by land tenure, land use and water flow patterns.

Each priority classification is subject to the following management objectives:

- Priority 1 (P1) classification areas are managed to ensure that there is no degradation of the drinking water source by preventing the development of potentially harmful activities in these areas. The guiding principle is risk avoidance. This is the most stringent priority classification for drinking water sources. P1 areas normally encompass land owned or managed by State agencies, but may include private land that is strategically significant to the protection of the drinking water source (e.g. land immediately adjacent to a reservoir).
- Priority 2 (P2) classification areas are managed to ensure that there is no increased risk of water source contamination/pollution. For P2 areas, the guiding principle is risk minimisation. These areas include established low-risk land development (e.g. low intensity rural activity).
- Priority 3 (P3) classification areas are defined to manage the risk of pollution to the water source from catchment activities. Protection of P3 areas is mainly achieved through guided or regulated environmental (risk) management for land use activities. P3 areas are declared over land where water supply sources coexist with other land uses such as residential, commercial and light industrial development.

Portions of the airport land are within the P1 Source Protection Area of the Jandakot UWPCA as shown in Figure 22, including:

- Conservation Precincts 2A, 2B and a portion of 1B;
- Portions of Precinct 4 and 5, which are already under development;

- Precinct 3, including existing infrastructure and portions of the proposed fourth runway and runway extension; and
- Portions of Precincts 6 and 6A.

There are no wellhead protection zones within or near the project area of this MDP; the closest is at the Glen Iris golf course approximately 800m to the west of the airport boundary.

A groundwater pollution risk assessment and management strategy was presented to the Department of Water as part of the Environment Strategy 2009 and Master Plan 2009. The Jandakot Airport Local Water Management Strategy was reviewed and amended in consultation with the Department of Water in 2015 (Essential Environmental 2015). JAH is committed to continuing to work with the State Government to manage the potential environmental impacts within the UWPCA.

The EPBC 2009/4796 and EPBC 2013/7032 conditions of approval for the clearing of vegetation undertaken in accordance with Master Plan 2009 and subsequently Master Plan 2014 (which include the airfield works contained within this MDP) require the preparation and implementation of a Jandakot Airport Groundwater Management Plan. The Groundwater Management Plan was initially approved in August 2011 by the then Minister for the Sustainability, Environment, Water, Populations and Communities as required by EPBC 2009/4796 Condition 7 and has been subsequently implemented. The Groundwater Management Plan has recently been amended to include the requirements of EPBC 2013/7032 Condition 2 and was approved by the Department of the Environment in July 2015. The Construction Environment Management Plan has been developed to be consistent with the approved Groundwater Management Plan.

As part of the Groundwater Management Plan monitoring program, a network of groundwater monitoring bores has been established in key locations around the airport and sampled regularly for potential contaminants and water quality parameters. To date, monitoring of these 'sentinel' bores has not identified any contamination of the groundwater.

8.9 WASTE MANAGEMENT

Unlike building construction works that can potentially generate large volumes of wastes, clearing and civil works associated with the MDP typically generate relatively small volumes of waste materials. These wastes might include construction waste (e.g. packaging, fencing, wiring, conduit etc.), food waste and contaminated or hazardous materials.

Where waste is not dealt with appropriately, it might result in:

- Risk to aircraft safety and loss of amenity from loose, windblown waste;
- Contamination of surface soil or groundwater; and
- Unnecessary placement of inert or recyclable waste to landfill.

JAH recognises that waste management processes need to be implemented to reduce negative impacts. The Construction Environment Management Plan addresses management of waste streams, including:

- All wastes from construction activities will be stored in approved designated areas and disposed appropriately;
- Wastes will be recycled wherever it is practical and possible to do so; and
- All volumes of controlled waste (i.e. tyres, asbestos, oils, batteries and other potentially hazardous wastes) are to be managed in accordance with relevant legislation, in particular *Environmental Protection (Controlled Waste) Regulations 2004*.

8.10 HAZARDOUS MATERIALS

Hazardous materials are considered to be those that have the potential to cause alteration to the environment leading to degradation of environmental value if released. Key activities during construction that involve hazardous materials or dangerous goods include:

- Storage and handling;
- Transportation, including delivery and receipt;
- Operations of plant and equipment; and
- Refuelling and lubrication of plant, vehicles and other equipment.

Impacts from dangerous goods if poorly handled are identified on the Material Safety Data Sheet of each product, and might include:

- Explosion and fire leading environmental harm; and
- Contamination of surface soil and infiltration to groundwater.

In addition to requirements detailed within the Construction Environment Management Plan, JAH has a Dangerous Goods and Hazardous Materials Policy which details the requirements for storage and handling of potentially polluting materials at Jandakot Airport.

The construction activities will likely require only small amounts of hazardous materials to be used on site, and will primarily be restricted to the on-site refuelling of non-mobile plant and equipment. Contractors that use hazardous materials are required to comply with all relevant legislation (e.g. *Dangerous Goods Act 2004*) and develop a spill control plan.

CONTAMINATION

Contamination at the airport is managed under the Commonwealth's *Airport (Environmental Protection) Regulations 1997*. All areas of confirmed or suspected contamination are reported and recorded on the JAH Contaminated Sites Register, which is a component of the Environmental Site Register. Sites are ranked according to the nature of contamination and risks posed. Where investigation identifies sites as requiring remediation or ongoing monitoring, appropriate plans are developed and implemented in line with the *Airports (Environmental Protection) Regulations 1997*, National Environment Protection (Assessment of Site Contamination) Measure 2013 (ASC NEPM) and the Department of Environment Regulation's Contaminated Sites Management Series Guidelines as appropriate.

There are no known contaminated sites within the areas for the extension of runway 12/30 and taxiway system identified within this MDP.

8.11 FLORA AND FAUNA

Management of flora and fauna issues associated with this MDP are intrinsically linked with the Jandakot Airport Conservation Management Plan and the Construction Environment Management Plan developed to meet Condition 6 of EPBC 2009/4796.

The key activities that have the potential to impact flora and fauna are:

- vegetation clearing;
- earthworks and levelling;
- vehicle and machinery activity;
- waste storage;
- human contact; and
- aircraft movements.

Potential impacts to flora and fauna include:

- loss/damage of permanent Conservation Precincts not intended for clearing;
- loss of listed flora and fauna species;
- loss of biodiversity;
- vegetation and habitat fragmentation;
- weed infestations and pathogen infection;
- dust smothering vegetation;
- fire outbreaks;
- increase in abundance or distribution of feral fauna; and
- destruction and reduction of fauna habitats.

FLORA

The vegetation communities of Jandakot Airport are typical of those associated with the Bassendean Vegetation System of the Swan Coastal Plain, which are essentially low woodland dominated by *Banksia attenuata*, *Banksia menziesii*, *Banksia ilicifolia*, *Eucalyptus todtiana* and *Nuytsia floribunda*, with a dense understorey of *sclerophyll* shrubs (Mattiske 2001).

Two endangered flora species protected under the *Environmental Protection and Biodiversity Conservation Act 1999* had previously been identified as occurring within the Airport site. These are:

- Grand Spider Orchid (*Caladenia huegelii*)
- Glossy-leaved Hammer Orchid (*Drakaea elastica*)

Recent orchid surveys of the airport have not located any *Drakaea elastica* orchids at Jandakot Airport (Mattiske 2010). There are no rare or endangered flora species in proximity to the extension of runway 12/30 and taxiway system.

In conjunction with the approval of the Master Plan 2009 and Environment Strategy 2009, the then Commonwealth Minister for Environment, Water, Heritage and the Arts approved the clearing of native vegetation under the EPBC Act: "To construct a fourth runway and associated taxiways, runway extensions, and clear land for the development of aviation and commercial precincts as described in the Jandakot Airport Master Plan 2009, as described in the referral received on 17 March 2009 (EPBC 2009/4796)." In this regard approval has been provided for the vegetation clearing required for the extension of runway 12/30 and taxiway system.

FAUNA

Species of significance that are known to exist, or potentially exist, at the airport have been addressed within the EPBC 2009/4796 approval. This includes Carnaby's cockatoo, the forest red-tailed cockatoo, quenda and the western brush wallaby. Management of these species at the airport is detailed within the Jandakot Airport Conservation Management Plan, which was developed and approved as a condition of EPBC 2009/4796.

Specific management measures to address the impacts of clearing for the runway development on fauna are consistent with the Conservation Management Plan and addressed within the Construction Environment Management Plan.

BIRD AND ANIMAL HAZARD MANAGEMENT

Birds and animals can pose a serious safety risk to aircraft operations. JAH is required to monitor and control the presence of birds and animals on, or in the vicinity, of the airport in accordance with *Civil Aviation Safety Regulations* requirements. JAH has a Wildlife Hazard Management Plan that defines the methods applied to control birds and animal hazards on airport, as well as a Feral Animal Management Plan to address overabundant native species.

The most significant animal hazards at Jandakot Airport are wallabies and kangaroos, and plover, cockatoo and corella bird types. Existence of these wildlife hazards is published in the En-Route Supplement Australia (AIP-ERSA) pilot guide.

Bird and animal hazard assessment forms a part of each daily airport serviceability inspection by the Aerodrome Reporting Officer. Assessments are also made on the basis of pilot and Air Traffic Control reports. A database is maintained to monitor statistics on bird and animal hazards.

Under the *Air Navigation Act 1920*, aircraft bird and animal strikes are classified as an air safety incident and must be reported to the Australian Transport Safety Bureau.

Monitoring of animal and bird hazards is continually carried out to identify habitats and numbers, with seasonal expert advice sought when necessary. When required, Notices to Airmen (NOTAM) will be issued identifying increased bird or animal hazards. Local councils have been made aware of the potential hazard that birds create on or near an airport. If the need arises, approaches are made to local councils to discuss external planning or developments that may increase bird hazard problems (e.g. location of rubbish tips).

Jandakot Airport utilises a number of management methods to control birds and other animals that pose a risk to aircraft safety. These include:

- Exclusion is typically achieved by fencing. Whilst not generally applicable for bird hazards, fencing is an effective means of controlling wallabies and kangaroos. A combination of permanent and temporary exclusion fencing has been erected to prevent macropods accessing aircraft movement areas. The works proposed under this MDP will allow for bushland bordering airside areas to be consolidated and additional permanent wildlife exclusion fencing to be erected.
- Deterrence is often the easiest and most effective way of reducing the incidence and severity of bird and other animal strikes. It generally involves removing or managing features of the airport and its surrounds that are attractive to problem bird species.
- Harassment and dispersal of macropods (wallabies and kangaroos) and birds from runways and airstrips is usually the most immediately effective method. Vehicle harassment and the use of bird-frite are utilised for both bird and macropod management.
- In some situations, lethal management methods may be utilised where there is a significant threat to safety and non-lethal methods do not adequately mitigate the risks. When lethal management methods are necessary, JAH obtains approval from the WA Department of Parks and Wildlife and ensures actions are consistent with other Commonwealth regulatory requirement.

The National Airports Safeguarding Framework 'Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports' acknowledges that new land uses in the vicinity

of an airport can significantly influence the risk of wildlife hazards to aircraft operations. Management of activities that may be wildlife attractant are addressed through Operational Environmental Management Plans that are required to be prepared for all new and existing developments within the airport site. When required, approaches are made to local councils to discuss external planning or developments that may increase bird and animal hazards at the airport, such as the location of rubbish tips.

The extension of runway 12/30 and taxiway system will not cause any activities that will be a wildlife attractant. Construction activities will be managed through a Construction Environmental Management Plan.

8.12 DIEBACK

A triennial dieback (*Phytophthora cinnamomi*) survey, including updated mapping, was undertaken in 2014 that confirmed dieback was absent from all areas associated with the extension of runway 12/30 and taxiway system.

The key activities that have the potential to impact dieback management are:

- Vegetation clearing;
- Earthworks and levelling; and
- Vehicle and machinery activity.

Potential dieback impacts include:

- Introduction of dieback to new sites (either on the airport or off-site);
- Loss/damage/change to vegetation and fauna habitats; and
- Loss of biodiversity.

Areas of dieback are managed (and dieback free areas protected) via the implementation of the Jandakot Airport Dieback Management Plan, which is a component of the Jandakot Airport Conservation Management Plan developed to meet condition 6 of EPBC 2009/4796. In addition, dieback management requirements during clearing and civil works are also detailed within the Construction Environment Management Plan developed to comply with Condition 8 of EPBC 2009/4796 and Condition 3 of EPBC 2013/7032.

8.13 HERITAGE

EUROPEAN HERITAGE

Land acquisition for Jandakot Airport began in 1959. No European heritage sites have been registered within the City of Cockburn Local Government Inventory and Heritage List, the State Heritage Register or the Commonwealth Heritage List. There are also no visible signs of European heritage on site.

INDIGENOUS HERITAGE

Surveys to locate potential sites of indigenous significance were undertaken in 1990 and again in 2008 involving archaeologists and indigenous custodians. The 2008 surveys encompassed all areas of development detailed within Master Plan 2014.

Archival research revealed two sites (artefact scatters) which were believed to be within the airport boundary; Site 4309 Princep Road and Site 3513 Lukin Swamp. The 2008 investigation concluded:

- no new ethnographic or archaeological sites were identified
- Site 3513 Lukin Swamp could not be located within Jandakot Airport and previously identified Site 4309 Princep Road is no longer a site within the meaning of Section 5 of the *Aboriginal Heritage Act 1972*
- a Section 18 application is not required for the Jandakot Airport Master Plan to proceed.

Activities that might impact on cultural heritage within Jandakot Airport include:

- Vegetation clearing
- Construction earthworks, including site levelling and trenching.

Impacts of the above activities might include disturbance, damage or loss of previously unknown items or sites of Aboriginal heritage significance in construction areas.

The potential for ground disturbing activities to encounter previously unknown archaeological deposits (which may contain cultural materials) is noted and addressed within the Jandakot Airport Heritage Management Plan and the Construction Environment Management Plan under which works detailed within this MDP will occur.

8.14 MONITORING AND REPORTING

Environmental monitoring and reporting requirements are identified within the Construction Environmental Management Plan. In addition, JAH meets weekly with the Department of Infrastructure and Regional Development's Airport Environment Officer to discuss the environmental management of developments and existing operations. These meetings also address incidents and complaints and the corrective actions undertaken in response. JAH summarises progress towards achieving the objectives as detailed within the Airport Environment Strategy within annual environment reports to the Department of Infrastructure and Regional Development.

8.15 ENFORCEMENT

The commitments made as part of this MDP and the works and operation of the extension of runway 12/30 and taxiway system are enforceable under the relevant legislation including:

- *Airports Act 1996*;
- Airports (Environment Protection) Regulations 1997; and
- *Environmental Protection and Biodiversity Conservation Act 1999*.

In addition, Department of Infrastructure and Regional Development's Airport Environment Officer, who is independent to JAH, is employed to monitor, report and take preventative action against any environmental impacts or pollutants.

8.16 CONCLUSION

An environmental review of the extension of runway 12/30 and taxiway system has been undertaken and JAH concludes that with the proposed environmental controls in place, there will be no significant environmental impacts. Additionally, there will be no detrimental impacts on any Conservation Precincts designated under Master Plan 2014.

9. ACCESS AND TRAFFIC

9.1 TRAFFIC ASSESSMENT

The *Airports Act 1996* requires that an MDP identify the effect of the proposed development on traffic flows at the airport and surrounding the airport.

Access to Jandakot Airport is provided from Berrigan Drive (from the south) and Karel Avenue (from the north). Berrigan Drive is two-lanes undivided from Karel Avenue to Jandakot Road and then two-lanes divided west of Jandakot Road. Karel Avenue is currently a two-lane divided road from Roe Highway to Berrigan Drive, and then four-lane carriageway with bicycle lanes in both directions within the airport boundary. Spartan Street provides a left-in and left-out connection to Berrigan Drive. The road hierarchy is shown in Figure 23.

There are no permanent vehicle traffic impacts as a consequence of the proposed airfield works as the development does not include the construction of roads or create a demand for additional traffic on the current road infrastructure.

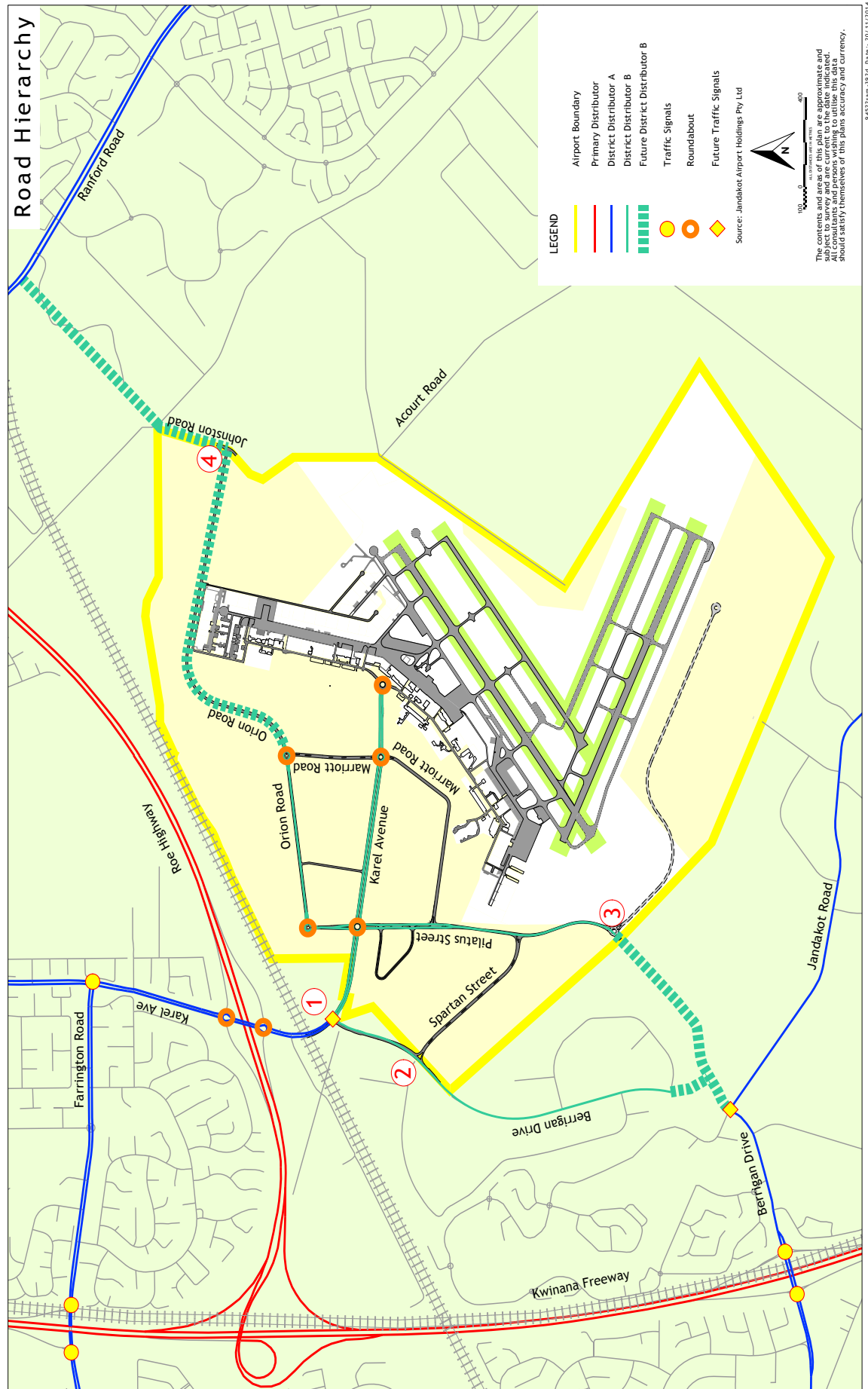
The extension of runway 12/30 and associated taxiways will generate minimal traffic for the duration of the works. Where necessary, the construction traffic will have specific access routes to minimise conflict with other road users and to ensure aircraft operations are not impacted.

As shown in the Road Hierarchy plan from Master Plan 2014 (Figure 23 below), an internal road is proposed to be constructed within the airport boundary to provide access to Precincts 6 and 6A. Construction of this internal road will take place prior to the runway 12/30 extension and taxiway works and will provide access for the construction traffic.

Truck movements during the clearing stage will entail eight movements per day over four weeks. The earthworks involve the removal of approximately 1,500,000m³ of sand. Based on an average of 23m³ of sand per truck load over 280 working days per year, this will require 90 truckloads (180 vehicle movements) per day for two years. The trucks removing sand from the airport site are expected to use Berrigan Drive. As Berrigan Drive is currently carrying 14,500 vehicles per day, the earthworks will increase traffic on this road by 1.2% for the duration of the works. The construction phase is expected to contribute an additional 10 truck movements per day.

Designated areas will be assigned for construction vehicles and construction worker private vehicle parking for the period of works.

FIGURE 23 - ROAD HIERARCHY PLAN



10. CONSULTATION

10.1 STAKEHOLDER CONSULTATION

JAH recognises that the successful development of Jandakot Airport depends on ongoing and productive interaction with the wide range of stakeholders who are impacted by, and who impact, the development and operation of the airport.

This ongoing consultation includes JAH participation in the following forums:

- Jandakot Airport Community Aviation Consultation Group (quarterly);
- Perth Airports Municipalities Group (quarterly);
- Jandakot Regional Park Community Advisory Committee (quarterly); and
- Jandakot Airport Chief Flying Instructor and Chief Pilot meeting (quarterly).

All of the Jandakot Airport master plans have involved consultation with a wide range of stakeholders, including State and Local Government, airport tenants, aircraft operators, and community groups.

In developing an MDP, airports are required to undertake further consultation. The development of this preliminary draft MDP has involved further consultation with:

- Department of Infrastructure and Regional Development (Commonwealth)
- Department of the Environment (Commonwealth)
- Airservices Australia – Jandakot Air Traffic Control
- Civil Aviation Safety Authority
- Local flying schools and aircraft operators
- City of Cockburn (Local)

The Jandakot Airport Community Aviation Consultation Group, which comprises representatives from Federal, State and Local Governments, Airservices Australia, aircraft operators, and local community groups, has been kept informed about the program and contents of this preliminary draft MDP.

Stakeholder workshops have been held with aviation operators to review the proposed airfield layout and operations.

10.2 FORMAL PUBLIC COMMENT PERIOD

In accordance with Section 92(2A)(a) of the Act, this preliminary draft MDP will be made available for public comment for a period of 60 business days. The public comment period commences on Monday 21 December 2015 and concludes on Thursday 24 March 2016.

Electronic copies of the preliminary draft MDP are available for download, free of charge, from the Jandakot Airport website. Printed copies are available for viewing and purchase at the Jandakot Airport Management Centre.

Prior to the public comment period, Sections 92(1A) and 92(1) of the Act require JAH to advise the following organisations of the intention to give the Minister a draft MDP:

- 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.

Under the Act, any comments received during the public comment period must be considered by JAH. Following the public comment period, JAH will review and assess all comments, and if appropriate, changes made to the draft MDP.

10.3 SUBMISSION OF DRAFT MDP TO THE MINISTER

After public comments have been received and considered, the preliminary draft MDP will be prepared as a draft MDP which will then be submitted to the Commonwealth Minister for Infrastructure and Regional Development for consideration.

Section 92(2) of the Act requires the submission of the draft MDP to the Minister to be accompanied by the following material:

- copies of any comments received during the public comment period; and
- a written certificate signed on behalf of the airport:

- listing the names of the people or organisations that provided written comments to the preliminary draft MDP;
- a summary of the comments received; and
- evidence that JAH has given due regard to those comments.

10.4 PUBLICATION OF THE FINAL MDP

In accordance with the Act, JAH will undertake the following notifications upon approval of this MDP:

- publish newspaper notices advising that the MDP has been approved;
- make copies of the approved MDP available for inspection in person at the Jandakot Airport Management Centre; and
- make a copy of the approved MDP available on the Jandakot Airport website.

11. IMPLEMENTATION

11.1 IMPLEMENTATION

The construction of the runway 12/30 extension and associated taxiways is expected to take approximately three years to implement following approval of this MDP. These activities can be summarised as 3 months for clearing, 24 months for earthworks, and 6 months for construction works. Commissioning of the extended runway is expected to take 3 months.

The stages required for these works comprise:

1. Detailed design documentation for the runway extension and new taxiways.
2. Clearing as per EPBC 2009/4796 approval.
3. Tender of construction works.
4. Appointment of contractors.
5. Issue Method of Works Plan.
6. Commence construction.
7. Commissioning of runway 12/30 extension.

11.2 FURTHER APPROVALS

BUILDING PERMIT

A Building Permit for the construction of the runway 12/30 extension and associated taxiways must be obtained from the Airport Building Controller (ABC) under the provisions of the *Airports (Building Control) Regulations 1996*. The ABC is also advised by the Airport Environmental Officer (AEO). Both the ABC and AEO are independent of Jandakot Airport and are respectively contracted to, and employed by, the Department of Infrastructure and Regional Development.

CONTROLLED ACTIVITY

All cranes and construction equipment used during the clearing of the site and the subsequent construction of the runway 12/30 extension and associated taxiways are subject to the controlled activity assessment prescribed under the *Airports (Protection of Airspace) Regulations 1996*. Details of restrictions, such as equipment operating heights and airfield security and access, will be detailed during the

tender process so that these constraints can be taken into consideration prior to engagement and commencement of works.

11.3 COMMISSIONING

Prior to opening the runway 12/30 extension for use by aircraft, Airservices Australia will conduct a recalibration of instrument approach and landing (IAL) and standard instrument departure (SID) procedures via flight tests.

The Civil Aviation Safety Authority requires that runway extensions undergo commissioning prior to opening the facilities for aircraft operations. Commissioning will be conducted for the runway 12/30 extension to check:

- the aerodrome lighting systems through ground and flight checks;
- runway surface quality for skid resistance and water runoff;
- airfield signage; and
- runway and taxiway markings.

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APPENDIX A – REFERENCES

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APPENDIX B – CONSULTANCIES

The following consultancies were used for the specialist input required for the preparation of this preliminary draft MDP.

Aeronautical	Airbiz
	Aviation & Airspace Design Solutions
	Aerodrome Management Services
	Aerodrome Compliance & Civil
Economic	MacroPlan Dimasi
Environmental	ENV Australia and 360 Environmental
Survey and Graphic Figures	McMullen Nolan Group
Town Planning	TPG Town Planning, Urban Design and Heritage

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