



JANDAKOT AIRPORT WILDLIFE FENCING AND UNDERPASS STRATEGY

CONSERVATION MANAGEMENT PLAN APPENDIX H

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1 Introduction

This Jandakot Airport Wildlife Fencing and Underpass Strategy (FUS) addresses Condition 6 of EPBC 2009/4796 which requires the development of:

- A fauna road crossing strategy to facilitate terrestrial fauna movement; and
- A fencing strategy to facilitate terrestrial fauna movement.

The FUS aims to find a balance between maintaining wildlife corridors and facilitating wildlife movement wherever possible, and the use of fencing and other barriers to prevent wildlife accessing areas where they either face danger or themselves cause a dangerous situation (e.g. roads and aircraft movement areas).

Roads may have a significant impact on wildlife populations due to fragmentation of habitat, isolation of populations and direct mortality caused by vehicles (i.e. road-kill).

It should be noted that the factors such as the planned future development of Precincts 7 and 8 by the City of Canning, ongoing management of Ken Hurst Park by the City of Melville, and potential changes in the proposed East Link Road alignment have impacted the original plans to have a continuous wildlife corridor from areas north of the Airport to Jandakot Regional Park in the South.

2 Species of Significance

Species of significance at Jandakot Airport are discussed in detail within the Jandakot Airport Conservation Management Plan. These species include:

- Carnaby's Black-Cockatoo (*Calyptorhynchus latirostris*)
- Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*)
- Quenda (*Isoodon obesulus fusciventer*)
- Western Brush Wallaby (*Macropus irma*)
- Graceful Sun-Moth (*Synemon gratiosa*)
- South-western Cool Skink (*Acritoscincus trilineatum*)
- The Cricket *Throscodectes xiphos*

Of these species, the movements of quenda and Western Brush Wallabies are most likely to be impacted by the development associated with EPBC 2009/4796 (see Figures 1 and 2). Both species will need to be protected from road mortalities via the use of fauna underpasses and/or fencing.

Quenda are less likely to be isolated by fencing and are more likely to be able to move to and from areas within the Airport and between neighbouring properties, depending on the fencing design and materials utilised.

The movement of Western Brush Wallabies beyond the airport boundary has been restricted for many years due to the existing perimeter security fencing. Ongoing development and fencing within the airport is likely to further restrict the movement of wallabies, and planning should consider the potential to increase opportunities for movement and dispersal between conservation precincts and neighbouring properties (i.e. Ken Hurst Park and Jandakot Regional Park) in instances where it is practicably possible to do so without impacting airport security requirements.

3 Planning

When planning for new roads and transport links at Jandakot Airport, the need for fauna habitat connectivity and fencing will be addressed as a component of the road engineering design process. Each road development will be addressed individually on a case-by-case process and is ultimately approved by the Department of Infrastructure and Transport.

In situations where mitigation measures (e.g. underpasses, fences) are proposed to reduce the impact of transport corridors, the biology and ecology of the target species should be understood to ensure the structures and materials used will be the most effective in preventing such species from entering a road or other corridor.

East Link

An East Link dual carriageway is proposed; however, the final alignment has not been determined. Whilst fauna linkages and fencing will be considered in the design of the final approved alignment, it is anticipated the East Link will be fenced on both sides to prevent fauna access onto the road itself (this minimising the number of fauna road deaths) and to protect the conservation areas from unauthorised access by members of the public.

Ken Hurst Park

Ken Hurst Park borders the north of Jandakot Airport, adjoining Conservation Precincts 1A and 1B. The properties are separated by fire breaks and a service road (Leeming Road). This service road is one option being considered for the alignment of the future East Link Road. Should the East Link Road be developed between the two properties, fencing and underpass requirements will be considered in the design phase. Should the East Link Road alignment not impact the boundary, JAH will liaise with the City of Melville to determine if any additional measures are required to aid wildlife connectivity between the two properties. The current fencing separating the properties, which includes sections of recently upgraded 1.8m chain mesh fencing and older sections of 1.2m stock fence, allows for limited movement of quenda and, to a lesser extent, Western Brush Wallabies. Other factors that need to be taken into account when developing future wildlife corridors include:

- Consistent feral animal management;
- Security of accessible infrastructure; and
- Detrimental public access impacts (e.g. rubbish dumping, vandalism, off-road vehicles).

4 Fencing

Fencing is often an effective step that can be taken to protect native vegetation (i.e. habitat) and the wildlife dependent on it. How wildlife of significance will be affected by fencing (positive and negative) must also be considered.

Figure 3 shows the Proposed Fencing Plan. This includes details of existing fence structures, as well as proposed future fences. It is stressed that that proposed fencing detailed in Figure 3 is indicative only, as it is dependent on final alignments and designs of developments such as the East Link Road and the 4th Runway and associated runway extensions.

4.1 Fencing Roads

The direct relationship between roads and a sudden decline of native species has previously been documented for native species elsewhere in Australia (Harris and Bamford 2011). Fencing is often used to guide fauna to the crossing structure, but more importantly to stop fauna crossing the road. Such fencing serves not only to protect the native fauna, but in cases where larger macropod species are present, also prevents vehicle accidents and associated injuries and fatalities to people.

Fencing design and materials is generally dependent on the species present.

If the East Link Road alignment remains the same, the bollard fence along Harvard Road (Figure 3) will be replaced with a chain mesh fauna exclusion fence in conjunction with the East Link Road construction works. If East Link Road alignment is changed to another location, the bollard fence will still be upgraded, with works scheduled to commence within 12 months of the alternative alignment being confirmed.

Once the Harvard Road fencing and the East Link road construction and associated fencing has been completed, the existing fence that separates Precincts 1A and 1B will be removed to facilitate fauna movements between the two areas.

4.2 Fencing for Aircraft Safety Purposes

Fencing will also be utilised to prevent fauna accessing areas where they pose a risk to aircraft safety.

Whilst Western Brush Wallabies are identified as an environmental value to be managed within the Jandakot Airport CMP (which is the case in Conservation Precincts physically isolated by fencing from aircraft movement areas), they are also recognised as posing a high risk to aircraft and personnel in air movement areas (refer also to Overabundant Native Species Section within Appendix F, Feral Animal Management Plan).

Currently Precincts 2, 6, and 6A (Figure 1) as well as Clearing stages 3 and 5 (Figure 2) are located within the airside security area and wallabies within these areas can potentially access aircraft movement areas such as runways and taxiways.

Jandakot Airport controls macropods in air movement areas using methods of exclusion, deterrents and harassment. Exclusion (primarily through fencing or trapping and relocation) is the preferred approach. However, fencing is currently not possible in some areas due to the configuration of air movement areas, so deterrents and harassment is also utilised. In conjunction with the planned clearing for the 4th Runway and runway extension (see Figure 2) in early 2014, JAH will review the fencing requirements in line with this FUS and implement an airside wildlife fencing program.

5 Underpasses

It is generally recognised that where possible, underpasses should be constructed to help facilitate the potential movement of all recognised species in the area rather than being species-specific. To aid in achieving this goal, Harris and Bamford (2011) have recommended the following be incorporated in the structure design. Underpasses should:

- be placed at locations well-used by fauna;
- have vegetation at both ends of the underpass;
- have the sky-line visible from both ends;
- contain cover inside, in the form of logs/branches (otherwise known as furniture);
- be located away from human activity; and
- maximise the 'openness ratio'.

In addition to the construction of underpasses, the management of introduced predators must be considered. Previous studies associated with fauna underpasses at nearby Roe Highway have indicated that feral animals such as foxes readily use underpasses, potentially to the detriment of native fauna (Harris *et al.* 2010). Baiting of remnant vegetation in the vicinity of underpasses may assist in controlling predators, thus reducing the chance of predation.

6 Signage

In areas where significant fauna (i.e. quenda and wallabies) can access road areas and are at risk of being killed, appropriate signage will be erected to warn motorists and mitigate the risks. The need for signage will be determined by the JAH Environment Manager in response to multiple (i.e. two or more) reports of road deaths or near misses in a specific area over a six month period. Reports, which can be raised by JAH staff, tenants or members of the public, are to be recorded in the JAH Safety Management System (SMS) as detailed below in Section 7.

7 Monitoring and Maintenance

Monitoring and maintenance is also an essential part of mitigating the impacts of road-kill as it can provide valuable information on strategies to improve future designs and also ensure structures aren't damaged and are still fulfilling their desired function.

Currently, all airport boundary fences and internal fences bordering air movement areas are inspected daily and if required, repaired immediately to ensure security is maintained.

All sightings and reports of native species associated with air safety management are to be recorded in the JAH SMS. Additionally, significant species (i.e. quenda and wallabies) injured or killed on roads will be reported within the JAH SMS. The JAH Environment Manager is responsible for maintaining a record of all wildlife incidents within the JAH SMS and providing a summary in the JAH Environmental Site Register.

8 Reporting Requirements

Reporting against actions described in this Strategy will be included within the Jandakot Airport Annual Environment Report (AER). In line with the *Airports (Environmental Protection) Regulations 1996*, the AER will be submitted to the Department of Infrastructure and Regional Development by 28th October each year. A copy of the report will be provided to DOE by 28th October each year.

9 Review and Amendment of Fencing and Underpass Strategy

As with the overarching Conservation Management Plan, the FUS is a 'live' document and as such will require regular review and amendment in order to meet practical requirements on site as changing circumstances demand.

Where amendments are unlikely to have a material impact on matters protected under the EPBC Act or the intent of EPBC 2009/4796 conditions of approval, copies of the amended strategy, including appropriate rational and justification for each amendment, will be provided to DOE and DIRD. If DOE deem it necessary, the amended strategy will be elevated for the Minister's approval.

Where amendments to the FUS impact matters protected under the EPBC Act or are deemed not to be in accordance with that approved by the Minister (ref Conditions 6 and 12 of EPBC 2009/4796 approval), the amended Plan will be submitted to DOE for review and approval by the Minister.

The FUS will undergo a comprehensive review every 5 years. This is designed to coincide with the revision of the Jandakot Airport Master Plan and Environment Strategy. The next comprehensive review will be undertaken in 2018 prior to the completion of Master Plan 2019.

However, if new relevant information comes to light before the five-yearly review is undertaken, a review of the FUS will occur before the scheduled action.

10 Summary of Actions

The Table below contains a list of summary actions relating to the Jandakot Airport Wildlife Fencing and Underpass Strategy.

Table 1. Wildlife Fencing and Underpass Strategy Summary of Actions.			
Action		Responsibility	Timing
Planning and Design			
FUS1	Consider and include fencing and underpass requirements to assist fauna movements within planning and design phases of the East Link Road.	JAH MD and JAH EM	Following confirmation of final agreed alignment and prior to construction commencing.
Fencing			
FUS2	Replace fencing along Harvard Road (approx. 300m) to current JAH exclusion/Conservation Precinct specifications.	JAH EM	Dependent on alignment of East Link Rd. If East Link Rd alignment remains the same, will be undertaken in conjunction with the East Link Road construction works. If East Link Rd alignment is changed, will be undertaken within 12 months of the alternative alignment being confirmed.
FUS3	Remove unnecessary fencing between Precincts 1A and 1B to facilitate wildlife movements between the two areas.	JAH EM	Within 12 months of the completion of Eastern Link Road and associated fences and underpasses and Harvard Road fencing.
FUS4	Undertake fencing of Precincts 2 (south) and 6 to current JAH exclusion/Conservation Precinct specifications to exclude macropods from aircraft movement areas	JAH EM	Following the completion of Stage 3 (4 th Runway) and Stage 5 (Runway extensions) clearing.
Underpasses			
FUS5	Include fox baiting in vicinity of fauna underpasses that link Jandakot Airport to neighbouring property in JAH 1080 baiting program.	JAH EM	Within 6 months of completion of underpasses.
FUS6	Implement fox baiting in vicinity of fauna underpasses that link Jandakot Airport to neighbouring property in accordance with JAH 1080 program.	JAH EM	In accordance with JAH 1080 program.
FUS7	Investigate fauna connectivity options between Precinct 2	JAH EM	Within 12 month of the completion of

Table 1. Wildlife Fencing and Underpass Strategy Summary of Actions.

Action		Responsibility	Timing
	(south) and neighbouring Jandakot Regional Park.		Precincts 6 and 2 (South) fencing from aircraft movement areas.
Signage			
FUS8	Install wildlife warning signs in areas where significant fauna (i.e. quenda and wallabies) can access road areas and are at risk of being killed.	JAH EM	In response to 2 or more reports in the SMS of road deaths or near misses in a specific area over a 6-month period. Signage to be installed within 2 months of the requirement being identified.
Monitoring and Maintenance			
FUS9	Inspect security fencing daily and repair immediately if necessary.	JAH ASOs	Daily
FUS10	Report in SMS all incidents associated with road deaths of significant fauna species (i.e. quenda and wallabies) and incidents associated with aircraft safety.	JAH Grounds Landside Grounds Staff, JAH ASOs and JAH EM.	Within 48 hours of incident occurring.
Reporting Requirements			
FUS11	Report against actions of the FUS within the Jandakot Airport Annual Environment Report (AER) and provide copies to DIRD and DOE.	JAH EM	28 October Annually.
Review and Amendment of FUS			
FUS12	Update and revise the existing FUS.	JAH EM	2018

11 References

Harris, I. and Bamford, M. (2011). Roads and Wildlife. A Review of Purpose-Built Fauna Underpasses. Report prepared by M.J. and A.R. Bamford Consulting Ecologists for: City of Armadale.

Harris I.M., Mills H.R. and Bencini R. (2010). Multiple individual southern brown bandicoots (*Isodon obesulus fusciventer*) and foxes (*Vulpes vulpes*) use underpasses installed at a new highway in Perth, Western Australia. Wildlife Research. 37, 127-133

12 Glossary.

AER	Annual Environment Report
ASO	Airport Services Officer
ATSB	Air Transport Safety Bureau
CMP	Conservation Management Plan
DEC	Department of Environment and Conservation. On 1 July 2013 the Department of Environment and Conservation separated into two agencies, the Department of Parks and Wildlife (DPAW) and the Department of Environment Regulation (DER).
DEWHA	Department of Environment, Water, Heritage and the Arts (now DOE)
DIRD	Department of Infrastructure and Regional Development (previously DIT)
DIT	Department of Infrastructure and Transport (now DIRD)
DOE	Department of the Environment (previously DEWHA and DSEWPaC)
DPAW	Department of Parks and Wildlife (formerly DEC).
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (Previously DEWHA and now DOE)
EPBC	Environmental Protection and Biodiversity Conservation Act 1999
FUS	Fencing and Underpass Strategy
JAH	Jandakot Airport Holdings
JAH EM	Jandakot Airport Holdings Environment Manager
JAH MD	Jandakot Airport Holdings Managing Director
OM	Operations Manager
SASO	Senior Airport Services Officer
SMS	Safety Management System (An access database used by JAH to record all Incidents).
SOP	Standard Operating Procedure

FIGURE 1 MASTER PLAN 2009

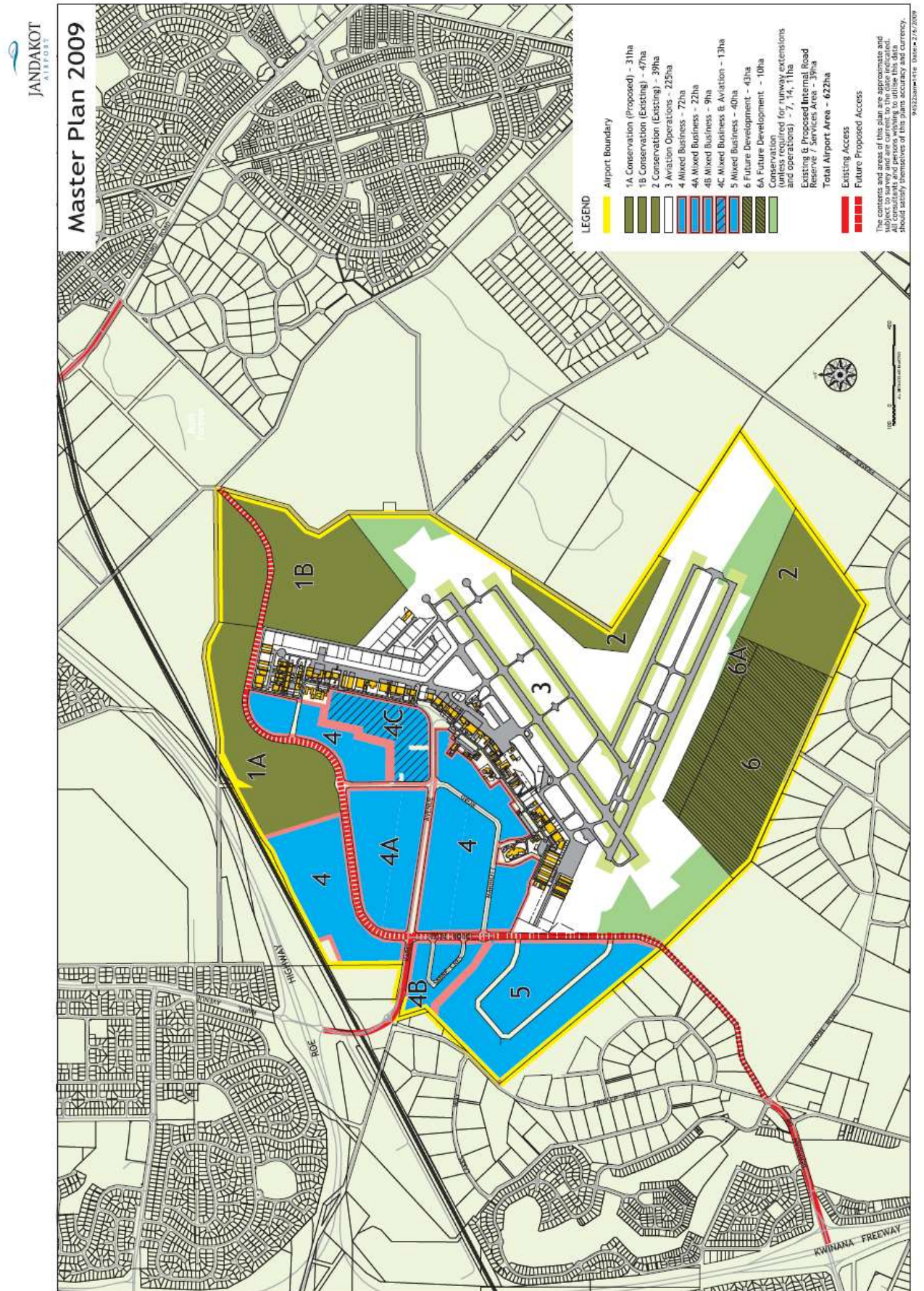


FIGURE 2. ESTIMATED CLEARING STAGES

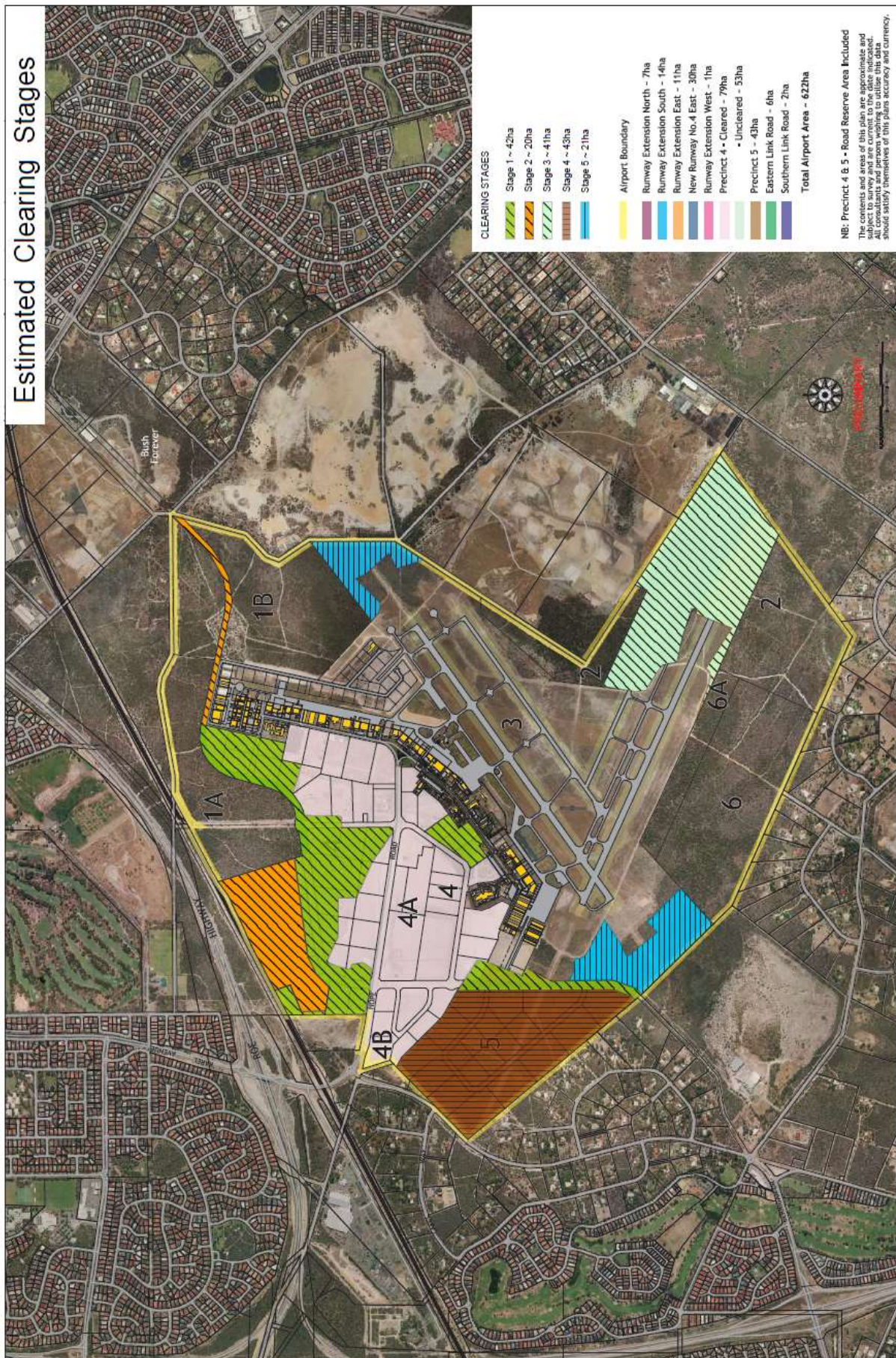


Figure 3

LEGEND

- Airport Boundary
- 1A Conservation (Proposed) - 31ha
- 1B Conservation (Existing) - 47ha
- 2 Conservation (Existing) - 39ha
- 3 Aviation Operations - 22ha
- 4 Mixed Business - 72ha
- 4A Mixed Business - 22ha
- 4B Mixed Business - 9ha
- 4C Mixed Business & Aviation - 13ha
- 5 Mixed Business - 40ha
- 6 Future Development - 43ha
- 6A Future Development - 10ha
- 6B Future Development (unless required for runway extensions and operations) - 7, 14, 11ha
- Existing & Proposed Internal Road Reserve / Services Area - 39ha
- Total Airport Area - 622ha
- Existing Access
- Future Proposed Access

Existing stock fence to be replaced (dependent of final alignment of East Link Rd)

Existing 1.8M Chain Mesh security fence.

Existing fence to be removed to facilitate fauna movement between 1A and 1B.

Existing Precinct 1B Security Fence

Existing Outside Perimeter Security Fence

Harvard Rd bollard fence to be replaced with chain mesh following confirmation of East Link Rd alignment

Proposed future Precinct 2/6/6A fence to exclude wildlife from air movement areas.

Proposed future City of Canning Sporting Complex

Residential

Jandakot Regional Park

Ken Hurst Park

KNIMAKA FREEWAY

KNIMAKA RD

1A

1B

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3

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4A

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