Alice Springs Airport Wildlife Hazard Management Plan

VERSION 9.0 November 2024

Alice Springs Airport

Biodiversity Australia

Contents

Foreword

Alice Springs Airport Pty Ltd (ASA) is owned and operated by Airport Development Group Pty Ltd (ADG). The Civil Aviation Safety Authority (CASA) and Manual of Standards 109 (MOS139) does not strictly require ASA to operate and maintain a Wildlife Hazard Management Plan (WHMP). However, ASA acknowledge that some of the wildlife hazards present within the operational footprint may pose a risk to the operational aircraft and have therefore voluntarily chosen to develop and implement this WHMP to ensure the safety of carriers and patrons.

Annually, the aerodrome records an average of 18,200 movements, including a diverse range of aircraft type and size from light general aviation aircraft through to narrow body aircraft conducting scheduled domestic services. Most Scheduled Air Transport (RPT) operations are operated by Boeing 737, Embraer E190, Fokker 100 and Brasilia types. The aerodrome is also an important alternate landing location for domestic and international flights, and occasional wide-body aircraft that are stored at a purpose-built storage area. Bureau of Infrastructure and Transport Research Economics (BITRE) identified that 344,191 passengers passed through ASA in 2022, down from over 600,000 passengers pre COVID levels.

Alice Springs Airport Pty Ltd is committed to ensuring the safety of aircraft, aircrew and passengers using the airport; and has a commitment to monitoring and controlling wildlife hazards in order to satisfy its professional obligations under the *Civil Aviation Safety Regulations 1998* (Part 139) and Manual of Standards (MOS) part 139. The WHMP has been written in accordance with ADVISORY CIRCULAR AC 139.C-16v1.0 for the Aerodrome Manual to consist of more than one document and is consistent with the ASA Safety Management System approach.

The management plan is developed and based on knowledge of local wildlife and the hazard that various species pose to aircraft. The procedures related to this WHMP are guidelines designed to allow the ASA Airside Operations team to concentrate their efforts where aircraft are most at risk from wildlife hazards.

Document Control

Revision History

Version	Date	Description of Change	Author	Reviewed	Approved
1.0	23 Feb 2004	FINAL	Michelle Koulakis	Robert Calaby	Robert Calaby
2.0	13 Jul 2006	Annual Review	Working Group	Working Group	Robert Calaby Dan Richards Don McDonald
2.1	19 Feb 2008	Annual Review	Kym Meys	Working Group	Working Group
2.2	30 Mar 2009	Annual Review	Treacy White	Senior Airport Duty Manager	DIA Operations Manager
2.3	15 Sep 2010	Annual Review	Simon Hatfield	Simon Hatfield	ASA Operations Manager
2.4	15 Sep 2011	Annual Review	Simon Hatfield	Simon Hatfield	ASA Operations Manager
2.5	15 Oct 2012	Annual Review	Simon Hatfield	Simon Hatfield	ASA Operations Manager
3.0	15 Oct 2013	Annual Review	Simon Hatfield	Simon Hatfield	ASA Operations Manager
4.0	31 Mar 2014	Annual Review	Working Group	Simon Hatfield	ASA Operations Manager
5.0	30 May 2015	Full Review	ECOZ/NTAPL	Simon Hatfield Kerrie Perkins	ASA Operations Manager
5.1	21st Dec 2018	Draft	Biodiversity Australia [Agatha Dolan]	Biodiversity Australia [Karl Robertson]	
6.0	15th Feb 2019	Complete Review	Biodiversity Australia [Agatha Dolan]	Davy Maddick-Semal and Nick Fewster	
6.1	11th Mar 2020	Annual Review	Working Group	Bradley Benson Nick Fewster	ASA Operations Manager
6.2	20th Aug 2021	Annual Review - Draft	Biodiversity Australia [Agatha Dolan]	Biodiversity Australia [Karl Robertson]	
7.0	24th Jan 2022	Annual review	Biodiversity Australia [Kate Chant]	Bradley Benson Nick Fewster	
7.1	2nd Sept 2023	Complete review - Draft	Biodiversity Australia [Stuart Butler]	Biodiversity Australia [Karl Robertson]	
8.0	13th Sept 2023	Complete review	Biodiversity Australia [Stuart Butler]	Rob Porter Tony Schulz	
9.0	17th November 2024	Annual Review	Biodiversity Australia [Stuart Butler & Ashley McAlpine)]	Tony Schulz	Tony Schulz

Note: Original version compiled using advice from Avisure.

Distribution List

The WHMP is distributed electronically to staff and airlines and published on the Alice Springs Airport Website, SharePoint and AVCRM. Individuals and organisations requiring a copy can contact ASA.

Authority

This Wildlife Hazard Management Plan (WHMP) has been written in accordance with Part 3, Section 11 of the ASA Aerodrome Manual and is consistent with the ASA Safety Management System approach. The plan provides particulars of the procedures to deal with danger to aircraft operations caused by the presence of wildlife (birds or animals) on or near the aerodrome. An objective when producing this plan has been to ensure that the documented procedures are an accurate reflection of both current and best practices.

The management plan also meets the requirements of Appendix 1 to CASR 1998 subparagraph 139.095(a)(ii) and the Manual of Standards Part 139 Chapter 17 as well as ADVISORY CIRCULAR AC 139.C-16v1.0.

This WHMP was developed and with input and revision from the Airport-appointed Biologist (Biodiversity Australia) and Alice Springs Airport personnel.

This system has been approved and authorised by the ADG Executive General Manager - Operations and ASA Airport Manager for Airport Development Group Pty Ltd.

Rob Porter
Executive General Manager - Operations
Airport Development Group

Tony Schulz
Airport Manager
Alice Springs Airport

Note: Original signatures held in Master Copy

Acronyms

AEO	Airport Environment Officer
ADG	Airport Development Group Pty Ltd
ALC	Airport Leasing Company
ARO	Airport Reporting Officer
ASA	Alice Springs Airport
ASSM	Aerodrome Safety and Standards Manager
ATC	Air Traffic Control
ATIS	Automated Terminal Information Service
ATSB	Australian Transport Safety Bureau
BITRE	Bureau of Infrastructure and Transport Research Economics
CASR	Civil Aviation Safety Regulations
CASA	Civil Aviation Safety Authority
CEMP	Construction Environment Management Plan
DIA	Darwin International Airport
DME	Distance Measuring Equipment
EMS	Environment Management System
EM	Environment Manager
ERSA	En-Route Supplement Australia
GA	General Aviation
ICAO	International Civil Aviation Organisation
ILS	Instrument Landing System
MAGS	Movement Area Guidance Signs
MOS	Manual of Standards Part 139
NASF	National Airport Safeguarding Framework
NT	Northern Territory
NOTAM	Notice to Airmen
PRO	Standard Operating Procedure
RPT	Scheduled Air Transport
RWY	Runway
SSIR	Significant Strike Investigation & Reporting
SMS	Safety Management System
TWY	Taxiway
VOR	Very High Frequency Omnidirectional Radio
WHMP	Wildlife Hazard Management Plan
WHMWG	Wildlife Hazard Management Working Group

Glossary

Active Management	The use of short-term management techniques such as distress calls, pyrotechnics, trapping and culling to disperse or remove wildlife.
Aerodrome/Airport	A defined area intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft at ASA.
Aircraft	The term aircraft refers to fixed wing and rotary wing powered aircraft and balloons.
Aircraft Operator	A person, organisation or enterprise engaged in, or offering to engage in, an aircraft operation.
Airline Operator	The Operator of a Regular Public Transport air service. Also see Aircraft Operator.
Airside	The movement area of an airport, adjacent to terrain and buildings or portions thereof, where access is controlled.
Airport Operator	The Airport operator is Airport Development Group Pty Ltd.
Air Traffic Control	Air traffic control services provided by RAAF.
Anti-perching devices	Installation of a treatment to discourage and prevent birds from perching on a structure to allow for resting or assessment of the surrounding environment from an elevated position such as a light pole.
Apron	That part of an airport to be used for the purpose of enabling passengers to board or disembark from an aircraft, loading of freight onto, or unloading freight from an aircraft, refueling, parking or carrying out maintenance on aircraft.
Authorised Shooter	A person with a relevant Firearms licence, who is required by, and has authorisation from the Airport Manager Alice Springs to use firearms for the purpose of controlling birds and animals at the Airport.
Consequence	The outcome of an event expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain. There may be a range of possible outcomes associated with an event.
Firearm	A shotgun, rifle or other weapon as defined under State and Commonwealth legislation.
Foraging	When wildlife search for and obtain food.
Habituation	The tendency for wildlife to become accustomed to certain stimulus when repeatedly exposed to it.
Hazard	A source of potential harm or a situation with potential to cause loss.
Incident	An occurrence, other than an emergency/disaster, associated with the operation of the aircraft that affects or could affect the safety of operations.
Inherent Risk	The process of eliminating the likelihood of a risk without reducing the consequence.
Landside	Those parts of an airport not considered Airside; that is normally accessible to the general public.
Manoeuvring Area	Those parts of an airport used for the take-off, landing and taxiing of aircraft, excluding Aprons.

Migration	When wildlife passes periodically from one region to another.
Movement Area	That part of an airport used for the surface movement of aircraft, including manoeuvring areas and aprons.
Nocturnal Species	A species which is most active during the night.
Passive Management	The modification of habitat to render it less attractive to wildlife.
Probability	The likelihood of a specific event or outcome, measured by the ratio of specific events or outcomes to the total number of possible events or outcomes.
Pyrotechnic Rounds	A non-lethal projectile intended to present a very marked visual and aural stimulus to which most species of wildlife will respond. It is specifically designed for the purpose of scaring, rather than killing wildlife.
Residual Risk Assessment	The process of estimating the likelihood and consequences of a risk after controls have been put in place.
Risk	The chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and probability.
Risk Control	Methods employed to reduce a risk rating (and thereafter the likelihood and/ or consequence of the risk occurring).
Risk Rating	The rating given to a risk that has been assessed using the risk matrix. This rating is used to determine prioritisation and controls.
Risk Treatment	The process of selection and implementation of measures to modify risk.
Roosting	When birds repeatedly return to a particular place in numbers to loaf or spend the night.
Runway	A defined rectangular area on an aerodrome, prepared for the take-off and landing of aircraft.
Runway Strip	A defined area including the runway and stopway (if provided) intended to reduce the risk of damage to aircraft running off the runway; and to protect aircraft flying over it during take-off or landing operations.

Taxiway	A defined path on an aerodrome established for the taxying of aircraft and intended to provide a link between one part of the aerodrome and another including: Aircraft taxi lane. A portion of an apron designated as a taxiway and intended to provide access to aircraft stands only.
AVCRM	Sequential recording system required by CASA under the MOS to recorded daily events, including significant events and actions on the airfield entered by ARO on a daily basis.
Transit	When birds fly from one place to another.
Undershoot	The area within the take-off and approach splays preceding the runway threshold.
Wildlife	Wildlife refers to animals that may pose hazards to aircraft when struck. This includes birds, bats and terrestrial mammals such as rabbits, cats, foxes, dogs etc.
Wildlife Count	Schedule Counts conducted by airport staff or consultants.
Wildlife Strike	The collision of an aircraft with wildlife. A "**Confirmed wildlife strike**" is deemed to have occurred whenever: ▪ When physical evidence of a wildlife strike is found on the runway or runway strip used by the aircraft involved (unless another reason for the death of the wildlife can be found); ▪ When physical evidence of the strike is found on the aircraft involved following an inspection; and ▪ In any other instance where it can be reasonably proved from evidence that wildlife was struck as a direct result of a moving aircraft. For example, when aircrew report they definitely saw, heard or smelt a wildlife strike. on the ground report seeing an aircraft strike one or more birds or animals, or A "**suspected wildlife strike**" An event where a wildlife strike has been suspected by aircrew or ground personnel but upon inspection: ▪ no carcass from the wildlife is found; and ▪ there is no physical evidence on the aircraft of the strike having occurred. A "**Wildlife Incident**" An event where it is likely that a strike could have resulted from a wildlife hazard. A near miss event involving both wildlife and aircraft should be considered a form of wildlife incident. An **"on-aerodrome wildlife strike"** is deemed to be any strike that occurs within the boundary fence of the aerodrome; or where this is uncertain, where it occurred below 500 ft on departure and 200 ft on arrival.

A **“bird strike in the vicinity of an aerodrome**” is deemed to have occurred whenever a bird strike occurs outside the area defined as “on aerodrome” but within an area of 13 kilometres radius from the aerodrome reference point (ARP) or up to 1,000 feet above the elevation of the aerodrome.

A “**wildlife strike remote from the aerodrome**” is deemed to have occurred whenever a bird strike occurs more than 13 kilometres from an aerodrome or more than 1,000 feet above the elevation of the aerodrome.

A “**significant wildlife strike**” may be deemed to have occurred when:

- There is damage evident on the aircraft due to a strike
- There is an effect on flight,
- More than one bird is involved, or
- At the discretion of the Operations Manager.

Wildlife Survey — Refers to structured surveys conducted by external consultants to assess wildlife populations.

1 Introduction

1.1 Background

Biodiversity Australia Pty Ltd (Bio Aus) was commissioned by Airport Development Group to conduct a Wildlife Hazard Management Plan (WHMP) review for Alice Springs Airport (ASA) located in the Northern Territory (NT). The intent of this plan is to provide a framework that allows ASA to minimise the associated hazard presented by Wildlife at ASA.

In accordance with these requirements, ASA has developed standard operating procedures that provide additional detail for the day-to-day management of wildlife hazards (Appendix 1). These procedures may be reviewed and amended independently of this plan.

1.2 Purpose

The purpose of this WHMP is to define the hazard that wildlife pose to air traffic at ASA and to set objectives, performance indicators and procedures in place for the systematic management of the associated risk. This WHMP aims to support the requirements of Appendix 1 to *Civil Aviation Safety Regulations* (CASR) *1998,* Part 139, subparagraph 139.095(a)(ii) in relation to the inclusion of procedures for bird and animal hazard management in the Aerodrome Manual. It also aims to support the requirements of the Manual of Standards (MOS) Part 139, Chapter 17, Sections 17.03 and 17.04 (made under the CASR) in relation to the preparation of a WHMP. This WHMP has been designed to be incorporated as part of the ASA Safety Management System.

1.3 Policy

Alice Springs Airport is committed to ensuring the safety of aircraft using ASA. While the safety of aircraft at ASA is paramount, it is not possible to prevent all wildlife strikes from occurring. As such, this WHMP aims to reduce the frequency and severity of strikes by focusing management efforts on species and habitats that constitute significant hazards to aircraft operating at ASA.

1.4 Goals and Objectives

The goal of this WHMP is to minimise risk to passengers and flight crews by reducing hazards to aircraft and airport operations caused by wildlife activity on and in the locality of the airport.

The specific objectives of this WHMP are to:

- Define management guidelines for extreme and high-hazard species and the habitats that support them both on and off the airport.
- Ensure compliance with all relevant airport operational and environmental legislation and regulations. These include:
    - International Civil Aviation Organization (ICAO) Annex 14 – Chapter 9,
    - ICAO Airport Services Manual – Part 3,
    - Civil Aviation Safety Authority (CASA) – Manual of Standards – Part 139,
    - ADVISORY CIRCULAR AC 139.C-16v1.0
    - *Civil Aviation Safety Regulations 1998,*
    - *Transport Safety Investigation Act 2003,*

- *Territory Parks and Wildlife Conservation Act 1976* and *Territory Parks and Wildlife Conservation Regulations 2001, and*
- *Environment Protection and Biodiversity Conservation Act 1999.*

- Ensure that adequate systems are in place to define roles, responsibilities, and procedures for managing wildlife risks at ASA.
- Define the methods by which wildlife hazards are managed at ASA.
- Define performance goals and targets for management of wildlife issues and outline how these will be assessed and reviewed.

1.5 Legislative Context

There are a number of legislative instruments that define the requirement for implementation of a WHMP at airports (Table 1). Australia has international obligations as a contracting state to the International Civil Aviation Organization (ICAO). The *Civil Aviation Act 1998*, and with it the *Civil Aviation Safety Regulation 1998 (Part 139),* dictate the framework for wildlife hazard management practices in Australia. The Manual of Standards (MOS) Part 139, Chapter 17 dictates the requirements for WHMPs.

Table 1. Australian regulation and legislation relevant to wildlife hazard management at airports.

Instrument	Oversight	Description
Civil Aviation Act 1998	CASA	Establishes CASA functions in relation to civil aviation, with a particular emphasis on safety.
Civil Aviation Safety Regulations 1998	CASA	Details legislation regarding all aspects of civil aviation safety and establishes the regulatory framework. Part 139 (Aerodromes) contains specific requirements for wildlife hazard management.
Manual of Standards (MOS) Part 139 Aerodromes	CASA	Part 139 prescribes the aerodrome requirements. Chapter 17 details the requirements for wildlife hazard management on aerodromes.
Transport Safety Investigation Act 2003	ATSB	Bird strikes are defined as reportable matters, of which written reports must be submitted within 72 hours.
Territory Parks and Wildlife Conservation Act 1976* and *Regulations 2001	Department of Environment, Parks and Water Security	This Act, consisting of 124 sections divided into ten Parts, provides for the establishment of Territory Parks and other parks and reserves and for the study, protection and conservation of wildlife in Northern Territory. The Act includes provisions on changes and revocation of parks, reserves and sanctuaries (sect. 13), the preparation and implementation of plans of management

Instrument	Oversight	Description
		(sects. 18-21), the creation and management of sanctuaries (Part 3A) and on the management of wildlife, flora and fauna.
Environment Protection and Biodiversity Conservation Act 1999	Department of Climate Change, Energy, the Environment and Water	The EBPC Act provides the framework for the protection of Australia's natural environment and its biodiversity and establishes processes that help to protect threatened species and ecological communities and promote their recovery. Within the context of wildlife hazard management on airports, of principle consideration is the effect that management actions such as dispersal and lethal control may have on threatened species.
National Airport Safeguarding Framework-Guideline C	Department of Infrastructure and Regional Development	Aims to develop informed land use planning decisions to safeguard airports and their adjacent communities' wildlife hazards based on the international and regulatory framework.

1.6 Airport Context

Alice Springs Airport is located in the Northern Territory, 14 km south of Alice Springs. The airport is located on Commonwealth property leased to the Airport Development Group Pty Ltd (Figure 1). A general description of the airport is provided in Table 2, below.

1.7 Standard Definitions

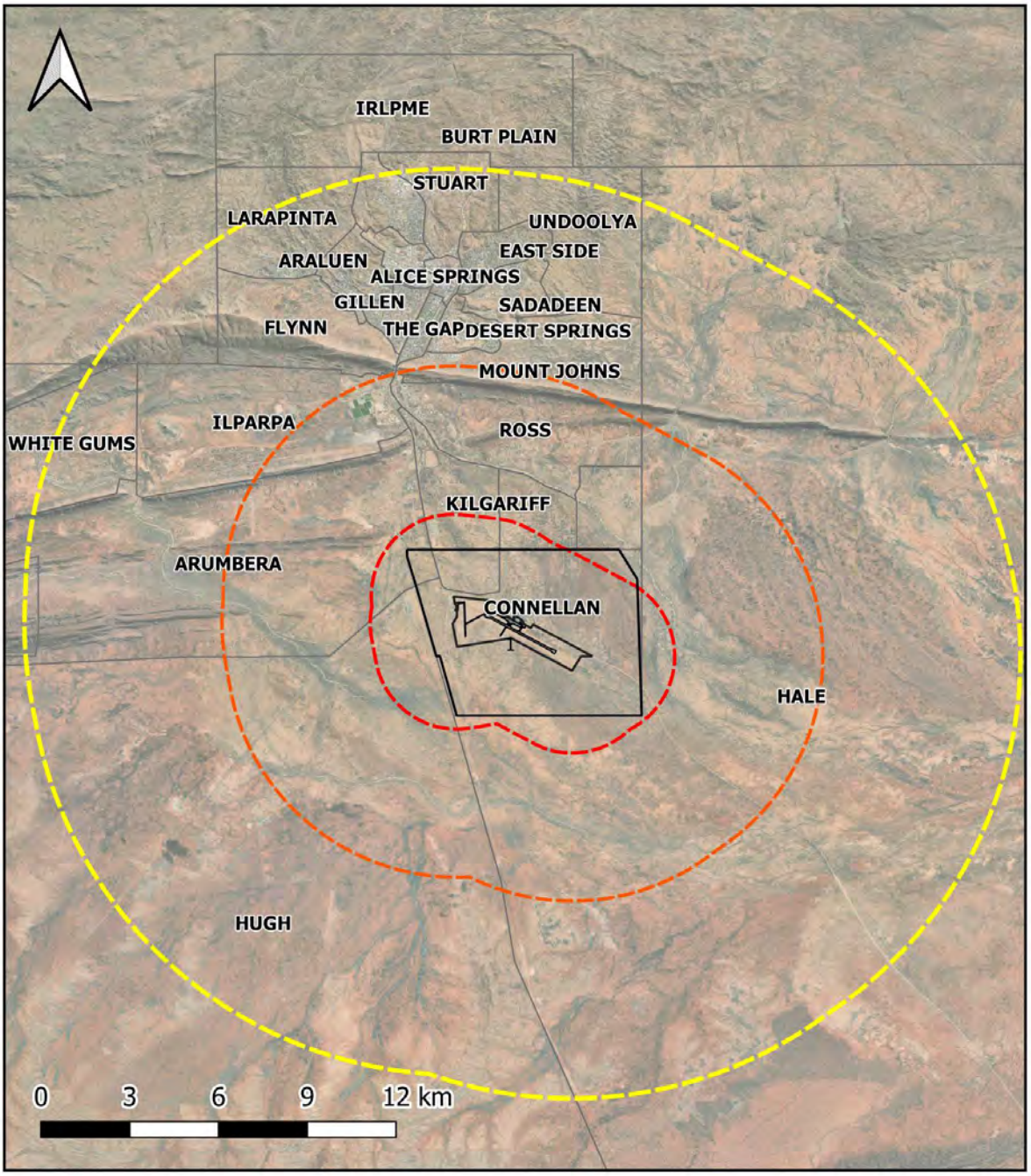
Influences surrounding the airport are assessed within three-, eight- and 13-kilometre radiuses in accordance with the criteria set out in the National Airport Safeguarding Framework (NASF) – Guideline C. For the purposes of this WHMP, these areas will be defined as follows:

- Airport land
- Three km radius – Area A
- Eight km radius – Area B
- 13 km radius – Area C

Table 2. ASA - general information.

Element	Description
Airport Location	Alice Springs Airport is located approximately 14km southeast of Alice Springs, Northern Territory. Alice Springs Airport is bounded by: ▪ The Arid Research Institute and rural residential properties to the north ▪ The Todd River to the northeast ▪ Amoonguna settlement east of the Todd River ▪ Northern Territory government land that includes the Stuart Highway, Finke Desert Racetrack, the old Ghan Railway, a drag strip and the Roe Creek Bore field to the west.
Surrounding Land use (s)	Land uses surrounding ASA are predominantly open residential and commercial use, consisting of various farms, and nature centres and reserves.
Geography	Alice Springs Airport occupies an area of approximately 3550 hectares, comprising Acacia shrubland, open woodland and grasslands. Aviation related use is centred on the property and covers approximately 560 hectares, bounded by a secure perimeter fence. The landside areas are largely undeveloped. There are no permanent naturally occurring waterways within ASA land; however, ephemeral waterbodies, including Todd River and Roe Creek, are located nearby.
Elevation	545 meters above sea level
Airport Ownership	ASA is owned by the Airport Development Group Pty Ltd, which through its subsidiaries acquired the lease for ASA in June 1998, as well as those for Darwin International Airport (DIA) and Tennant Creek Airport (TCA). The lease is for a period of fifty years with the option to renew for a further forty-nine years.
Traffic Profile	There were 18,260 aircraft movements in 2021 and 18,200 in 2022.
Runways	The Airport has two runways – the main runway (12/30) is 2438 m x 45 m and the secondary runway (17/35) is 1133 m x 18 m. Both are sealed.

Element	Description
Navigational Aids	Airservices maintains the following NAVAIDs at ASA: • DME • VOR • NDB • ILS (Glidepath and Localiser).
Communications	Airspace up to 8,500 FT AMSL is controlled by Airservices ATC, manned 2230 to 0830 UTC (0800 to 1800 local). Common Terminal Advisory Frequency (CTAF) outside tower hours.
Climate	Climatic conditions are characterised by highly variable, low average annual rainfall, high average evaporation rates and a wide annual temperature range.



This mapping is to be considered indicative only and all derivations (e.g. vegetation communities) are at best approximations and subject to errors including individual interpretation and reliance on information provided to Bio Aus where were not independently verified. All information is intended to be indicative only and no reliance for extrapolation, mapping, etc. should be placed upon this map without independent validation of the information by the user. Bio Aus takes no responsibility for any subsequent error losses etc. that may arise from use of this data without independent verification.

Biodiversity Australia

Project Manager: AW

Drawn By: AD

Date: 31-08-2021

CRS: EPSG: 4326 - WGS 84

Legend

- Alice Springs Airport
- Cadastral boundaries

NASF Assessment Radii

- Area A - 3km
- Area B - 8km
- Area C - 13km

Figure Name: Site Context

Site: Alice Springs Airport

Client: Northern Territory Airports Pty Ltd

Scale: 1:130000

Job Number: AV3450

Revision: 2

Figure 1. Alice Springs Airport – site context.

2 Structure

2.1 Stakeholders

This section details the roles and responsibilities of the persons responsible for managing wildlife hazards at ASA.

The ASA Airport Manager is responsible for the overall coordination, supervision and management of the WHMP. This includes allocating resources, designating responsibility, coordinating training and reviewing performance of the Plan's implementation.

The ASA Airport Manager is responsible for implementing this WHMP and the associated procedures. This includes obtaining permits, providing training, monitoring bird numbers, collating strike data, auditing conformance to the WHMP and drafting reports for review by senior management. The Wildlife Hazard Management Working Group (WHMWG) comprises relevant ASA staff and external representatives as depicted in Figure 2; and assesses trends in wildlife activity on a regular basis. Organisational processes and other strategies supporting the implementation of the WHMP are depicted in Figure 3.

Further details regarding roles and responsibilities are included in Attachment 5.

Figure 2. Agencies and personnel involved in the operation of the WHMP.

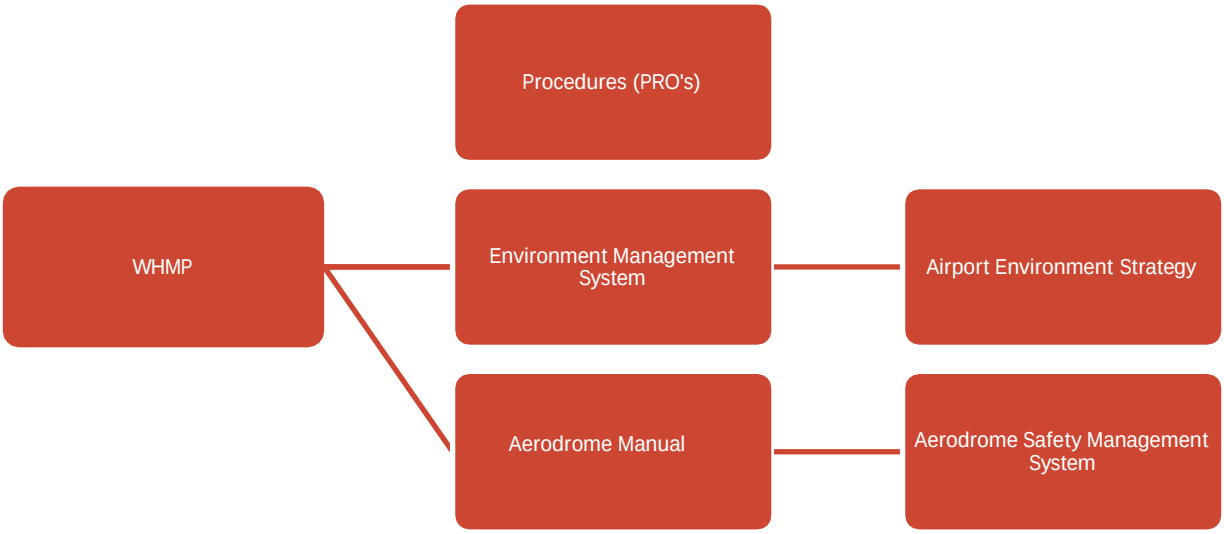


Figure 3. Documents and organizational structure supporting the implementation of the WHMP.

2.2 Review Process

Alice Springs Airport has mandated an annual review of its operations. The recommended process for the review of ASA's WHMP is included in Table 3. The review involves key personnel, including executive management, and is supported, where necessary, by a suitably qualified person. The annual update of the WHMP will:

- be based on performance indicators and audit findings (Table 4);
- ensure compliance with all current legislation;
- update the assessment of risk using updated strike and monitoring data and observations;
- ensure all procedures, roles, responsibilities and associations are current and relevant; and
- ensure all management actions undertaken by ASA are appropriate and listed in the WHMP.

2.2.1 Internal Audit

An audit of the WHMP and associated procedures is conducted by the ASA Airport Manager on a yearly basis. The CASR Section 139.075 and MOS Part 139 Chapter 17, Part 17.04 both require the WHMP to be reviewed at least annually. The aim of the audit is to ensure that the processes and procedures in the WHMP are both relevant and being implemented (Table 4).

The recommendations and any findings from the audit are provided to the WHMWG which is responsible for ensuring that recommendations and findings from the audit are actioned.

2.2.2 External Audit

External audits are conducted by Airline and Aircraft Operators periodically or on an as needed basis. Recommendations are reviewed by the WHMWG. Airport operators are encouraged to carry out their own internal audits on ASA based upon their own internal company policies and requirements. External reviews are undertaken by a suitably qualified person on a biennial basis.

Table 3. Recommended WHMP review process.

Review Trigger	Frequency	Details
Initial WHMP Preparation	Required for all certified aerodromes	Must be prepared by a suitably qualified person (e.g., ornithologist or biologist) as per MOS 139 Section Chapter 17 (Part 17.04, subpart 1).
Internal Review	Annually	To be undertaken by the Airport Manager and Environment Manager once every 12 months as part of the annual technical inspection in accordance with MOS 139 Chapter 17 (Part 17.04, subpart 4). The review will be supported, where necessary, by a suitable qualified and experienced consultant. Internal review includes analysis of previous years' data and wildlife strike trends and presented to the board members, stakeholder meetings and WHM Reports.
Annual Audit	Annually	To be undertaken by a suitably qualified person annually. The audit will include an update of the wildlife risk assessment, updated species risk assessment, species action management plans, figures & tables, review of legislative compliance, and updates to roles & procedures.
Circumstantial	When an aircraft experiences substantial damage or ingestion due to a species not included in the current plan When an aircraft strikes a species currently identified in the WHMP as a result of insufficient procedures.	A review of the wildlife hazard management plan and/or relevant procedures should be undertaken if any of the aforementioned events occur as a result of improper wildlife management strategies as per MOS 139 Chapter 17 (Part 17.04, subpart 4).
Major Review	Every three years	A complete rewrite and re-issue of the WHMP will occur every three years to ensure current wildlife hazards are identified and mitigated in an adaptive manner. Major reviews will take the place of annual audits in the years that they occur.

Table 4. Indicators to be considered during internal audits.

Performance indicators	Monitoring	Measurement	Triggers	Improving the system
Total number of wildlife strikes	The total number of wildlife strikes in the vicinity of the Airport are recorded by ASA. This data is checked against the ATSB database for accuracy on a monthly basis.	Bird strikes are represented as the number of strikes per 10,000 movements.	An increase in wildlife strikes of 20% in any comparable month will trigger a review of the implementation of the WHMP and procedures.	The WHMWG will review and implement where necessary recommendations for changes to the WHMP or the implementation of the system as a consequence of a trigger event.
Wildlife strikes causing damage	The total number of wildlife strikes in the vicinity of the Airport are recorded by ASA. This data is checked against the ATSB database for accuracy on a monthly basis.	Quantifying whether strikes are damaging to aircraft is important, in that it measures the severity of the strike in monetary terms. This includes the cost or repair, lost revenue during repair, lost time for inspections etc.	Increase in damaging strikes over a 12-month period will trigger a review of the WHMP and its implementation.	The WHMWG will review and implement where necessary recommendations for changes to the WHMP or the implementation of the system as a consequence of a trigger event.
Wildlife counts	Wildlife counts are undertaken regularly to monitor the activity of wildlife on the airfield.	Wildlife species and their respective quantities are recorded in relation to defined areas on the airfield.	Short-term changes in wildlife numbers may indicate seasonal changes in populations due to breeding and migratory cycles. This will trigger a review of operational response in line with the risk. Changes from year to year may indicate changes in climatic or environmental factors or may indicate the effectiveness of WHMP management measures. Significant changes in this longer-term pattern will trigger a review of the WHMP and its implementation.	The Airport may review long-term trends and changes in bird numbers to assess the efficacy of the WHMP and its implementation. Where necessary, recommendations for changes to the WHMP and its implementation will be made.

3 Assessing Wildlife Risk

Alice Springs Airport has adopted a three-step approach to assessing and reducing the risk wildlife post to aircraft. These are further defined in the following sections:

1. **Hazard Identification** – including a broad assessment of the airport's hazard profile, including aircraft movements, the habitat and activities that attract wildlife both on and off-airport, the species most commonly observed on and off-airport, and wildlife strike trends.
2. **Wildlife Hazard / Risk Assessment** – based on the data and information collected relating to wildlife numbers, behaviour, characteristics and/or strikes for each species encountered on and around the airport.
3. **Wildlife Management Plan** – addresses high-risk species as identified by airport personnel and strike data history (refer to Attachment 1). The plan provides a summary of each species' ecology and attractions to the Airport. This information can be used to inform management priorities and programs to minimise wildlife risk to airport operations.

3.1 Hazard Identification

3.1.1 Desktop Assessment and Strike Trend Analysis

All known documents and resources relating to wildlife hazard mitigation at ASA were reviewed to improve understanding of wildlife hazards, management and unique wildlife circumstances at ASA. Databases, resources and documents reviewed are listed below.

- Atlas of Living Australia (wildlife database search) – Fauna Atlas NT
- Previous strike history from the Australian Transport and Safety Bureau (ATSB)
- Northern Territory cadastral data
- Northern Territory vegetation and watercourse mapping
- Current ASA WHMP (Biodiversity Australia, 2023)
- Airport Development Group (ADG) Wildlife Hazard Committee Meeting minutes
- Alice Springs Airport, species cull records
- Confirmed and suspected strike history

3.1.2 On-airport Wildlife Surveys

Alice Springs Airport have assessed onsite airport attracting habitats, operational practices, and water availability that could create favourable habitat that may increase the abundance and activity of high-risk species, and consequently increase interference / collision risk with airport operations.

The on-airport field assessment component of the review was conducted in August of 2024. During this time, airport operational staff were queried regarding their roles in wildlife related airport standard operating procedures, understanding of wildlife hazards and other relevant information. AROs

conducted walk-throughs of their daily wildlife management routines, wildlife surveillance procedures, and associated data collection procedures.

Wildlife surveys were conducted on-airport so to increase understanding of the species that typically pose risk to aviation operations on the airfield. Surveys were undertaken using the standard wildlife monitoring protocol practiced by ASA's ARO's. A number of external resources were reviewed to gain a more complete understanding of the different types of wildlife that may pose a threat to ASA at different times of the year.

3.1.3 Off-airport Wildlife Surveys

Alice Springs Airport have assessed offsite attracting habitats in the areas surrounding the aerodrome. Off-airport sites that are known to present additional hazard to ASA were formally reviewed by desktop assessment and an on-ground survey over a two-day period in August 2024. For the purposes of continuity, sites visited included those designated in the ASA WHMP (2023), as well as additional sites identified during this desktop assessment. Each site was reassessed according to the NASF Guideline C, Attachment 1 – Managing the Risk of Wildlife Strikes in the Vicinity of Airports. Sites known to present a higher risk than reflected by this framework were elevated a risk category (e.g. reclassified from moderate to high).

3.2 Wildlife Hazard Risk Assessment

3.2.1 Biennial Wildlife Risk Assessment

This WHMP uses the Bird Risk Assessment Model for Airports and Aerodromes to assess the probability and consequences of a strike event in relation to a bird species body mass, flocking characteristics, flight behaviour, and abundance on or near an airfield. This method assesses the probability and consequences of a strike event in relation to a bird species' body mass, flocking characteristics, flight behaviour and abundance on or near an airport or aerodrome.[1] The Paton 'probability x consequence' matrix is provided in Table 5. The rules governing the 'consequence' and 'likelihood' classifications are provided in Attachment 3.

For the purposes of ASA's wildlife hazard risk assessment, three datasets were used to determine the likelihood of strike associated with each species;

1. 'Relative strike frequency' (informed by ASA's internal suspected and confirmed bird strike reports from 2014 to 2023 and data from the ATSB National Aviation Occurrence Database)
2. 'Relative abundance' (informed by ASA's AVCRM harassment data from November 2023 to October 2024)
3. 'Relative abundance' (informed by BA Aviation's on airfield wildlife surveys conducted in August 2024 and May 2023)

Further detail is provided in Attachment 3 and the results of the wildlife hazard risk assessment for the 2023 review are included in Table 9 – ASA Wildlife Hazard Rankings.

It is relevant to note that the results of the wildlife hazard risk assessment in this WHMP must be viewed in the context of the broader ASA SMS. The hazard rankings of individual species should be interpreted relative to one another and not relative to other non-wildlife related hazards present at ASA. Other wildlife-related hazards at ASA must be determined using the ASA Risk Management Procedure (Attachment 4). For more information on ASA's risk assessment framework, and the related wildlife activity risk assessment, see Attachment 4.

[1] *Paton, D. C., 2010.* Bird Risk Assessment Model for Airports and Aerodromes, Revision 3. *Published by Australian Aviation Wildlife Hazard Group.*

Table 5. Bird Risk Assessment model for Airports and Aerodromes risk assessment matrix.

Consequence of a strike	Probability/Likelihood of a strike			
	Very High	High	Medium	Low
Extreme	extreme	extreme	very high	high
Very high	very high	high	high	medium
High	high	high	medium	medium
Medium	medium	medium	low	low
Low	low	low	negligible	negligible
Very low	negligible	negligible	negligible	negligible

3.3 Wildlife Management Plan

The results of the Hazard Identification and Risk Assessment were used to inform a Wildlife Management Plan, detailed in Section 6. Individual Species Management Plans are provided in Attachment 1.

4 Hazard Identification

4.1 Desktop Assessment and Strike Trend Analysis

Data collated by ASA personnel were assessed on two-year (2022 - 2023) and ten-year (2014-2023) temporal scales. The results of these assessments are described below.

4.1.1 Species Strike Trends

The Black kite was the most frequently struck species during the 2022 – 2023 review period, comprising 30.36% of all known strikes (excluding strikes for which species was unknown or not identified). The brown falcon was the second most frequently struck species with 19.64% of strikes followed by nankeen kestrel with 17.86%, both Australian pratincole and black-faced woodswallow recorded 7.14% of all strikes which were identified. (Figure 4).

Strikes for which the species was unknown or ambiguously identified comprised 31.71% of total strikes at ASA for the 2022 – 2023 review period.

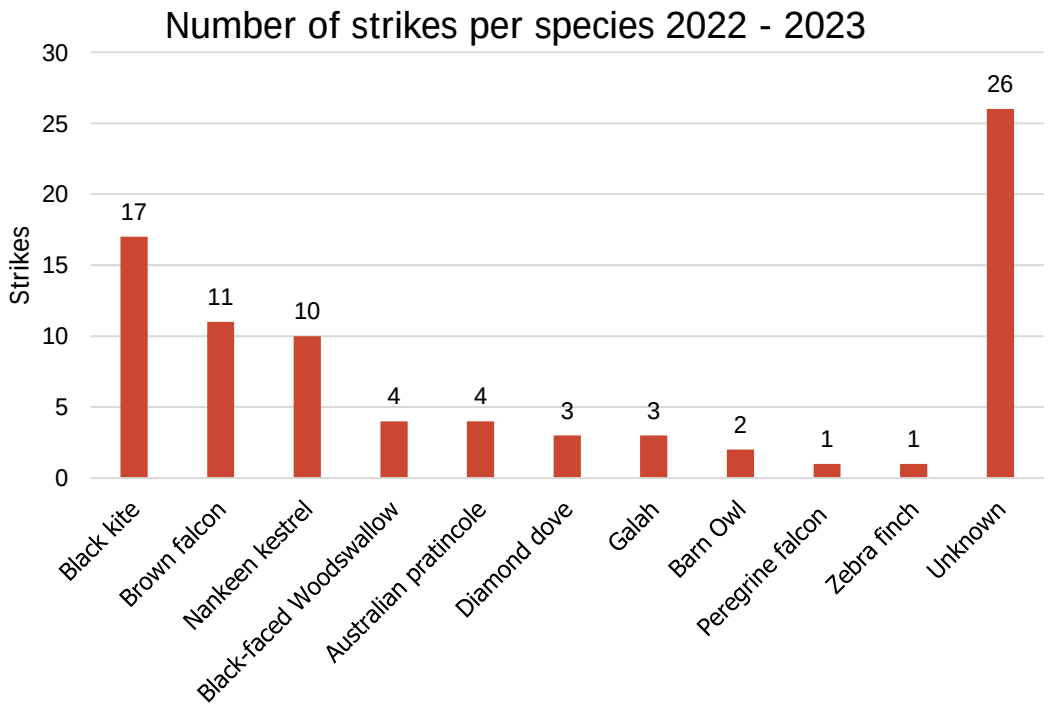


Figure 4. Species struck at ASA from 2022 and 2023.

The ASA strike register and the ATSB National Aviation Occurrence Database included 82 Confirmed strikes between January 2022 and December 2023 (Table 6). Ten species exhibited an increasing strike trend when comparisons between the two- year and ten-year averages were made. Species that exhibited a large increase were three raptor species which were black kite, brown falcon and nankeen kestrel. (Figure 5).

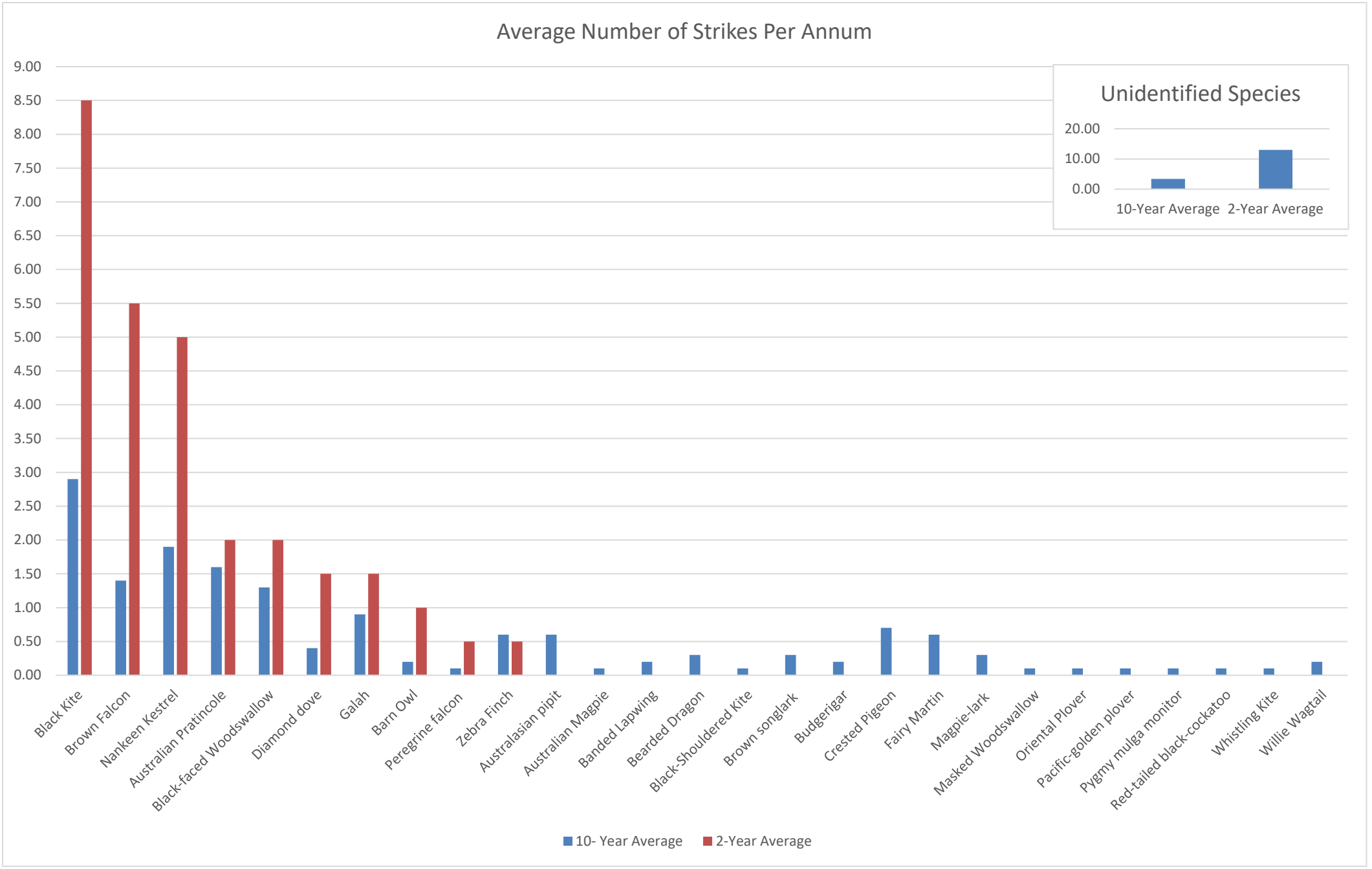


Figure 5. Average number of confirmed strikes per annum, compared on ten and two-year temporal scale

Table 6. Species strike history 2014 – 2023.

Species Common Name	Scientific Name	Strike History				Trend (average strikes per annum)
		Strikes 2014-2023	2014-2023 Average	Strikes 2022-2023	2022-2023 Average	
Unknown	-	34	3.40	26	13.00	Increasing
Australasian pipit	*Anthus novaeseelandiae*	6	0.60	0	0.00	Decreasing
Australian Magpie	*Gymnorhina tibicen*	1	0.10	0	0.00	Decreasing
Australian Pratincole	*Stiltia isabella*	16	1.60	4	2.00	Increasing
Banded Lapwing	*Vanellus tricolor*	2	0.20	0	0.00	Decreasing
Barn Owl	*Tyto alba*	2	0.20	2	1.00	Increasing
Bearded Dragon	*Pogona vitticeps*	3	0.30	0	0.00	Decreasing
Black Kite	*Milvus migrans*	29	2.90	17	8.50	Increasing
Black-faced Woodswallow	*Artamus cinereus*	13	1.30	4	2.00	Increasing
Black-Shouldered Kite	*Elanus axillaris*	1	0.10	0	0.00	Decreasing
Brown Falcon	*Falco berigora*	14	1.40	11	5.50	Increasing
Brown songlark	*Cincloramphus cruralis*	3	0.30	0	0.00	Decreasing
Budgerigar	*Melopsittacus undulatus*	2	0.20	0	0.00	Decreasing
Crested Pigeon	*Ocyphaps lophotes*	7	0.70	0	0.00	Decreasing
Diamond dove	*Geopelia cuneata*	4	0.40	3	1.50	Increasing
Fairy Martin	*Petrochelidon ariel*	6	0.60	0	0.00	Decreasing
Galah	*Eolophus roseicapilla*	9	0.90	3	1.50	Increasing
Magpie-lark	*Grallina cyanoleuca*	3	0.30	0	0.00	Decreasing
Masked Woodswallow	*Artamus personatus*	1	0.10	0	0.00	Decreasing
Nankeen Kestrel	*Falco cenchroides*	19	1.90	10	5.00	Increasing
Oriental Plover	*Charadrius veredus*	1	0.10	0	0.00	Decreasing
Pacific-golden plover	*Pluvialis fulva*	1	0.10	0	0.00	Decreasing
Peregrine falcon	*Falco peregrinus*	1	0.10	1	0.50	Increasing
Pygmy mulga monitor	*Varanus gilleni*	1	0.10	0	0.00	Decreasing
Red-tailed black-cockatoo	*Calyptorhynchus banksii*	1	0.10	0	0.00	Decreasing
Whistling Kite	*Haliastur sphenurus*	1	0.10	0	0.00	Decreasing
Willie Wagtail	*Rhipidura leucophrys*	2	0.20	0	0.00	Decreasing
Zebra Finch	*Taeniopygia guttata*	6	0.60	1	0.50	Decreasing
Totals (less unattributed species strikes)		155	15.50	56	28.00	Increasing
Totals (including all strikes)		189	18.90	82	41.00	Increasing

4.1.2 Monthly Strike Trends

From 2014 to 2023, the average number of strikes per month has generally been between one and three, with the peak month occurring in December and January (Figure 6). In 2022, strikes occurred mostly in the warmer months, January to April and October to December. In 2023, strikes were also noticeably higher in the warmer months of January-February and December with 59% of strikes occurring in January and February. This increase is likely attributed to increased rainfall due to wet season rain events often attributed to cyclones that push inland, this in turn increases insect abundance and seed growth on the airfield creating an attractant to bird species.

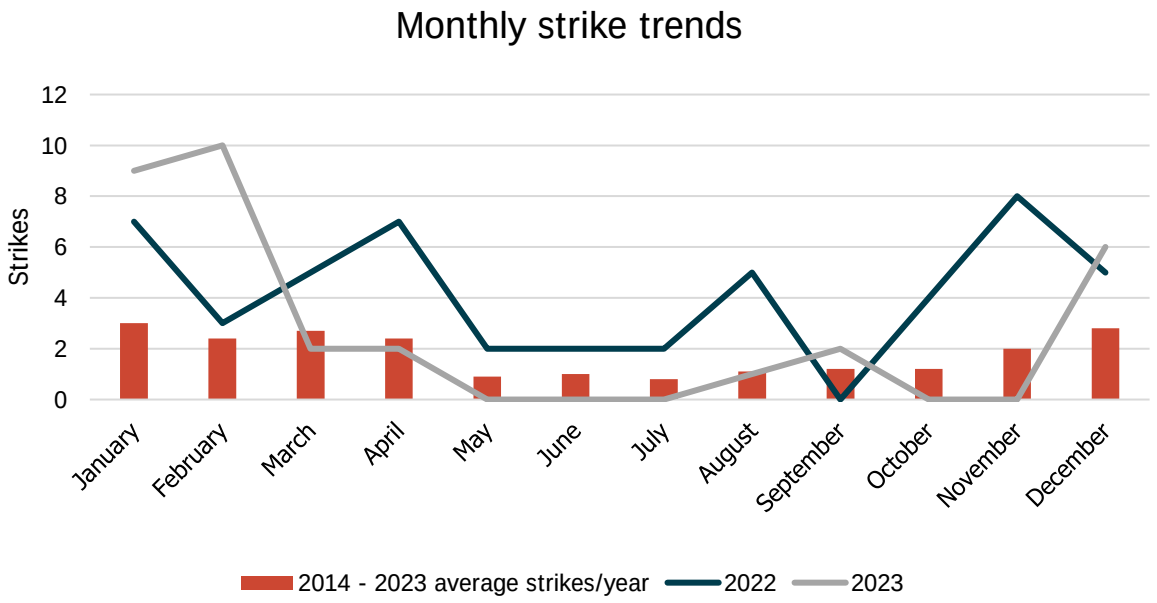


Figure 6. Monthly wildlife strike trends at ASA.

4.1.3 Timing and Outcomes of Strikes

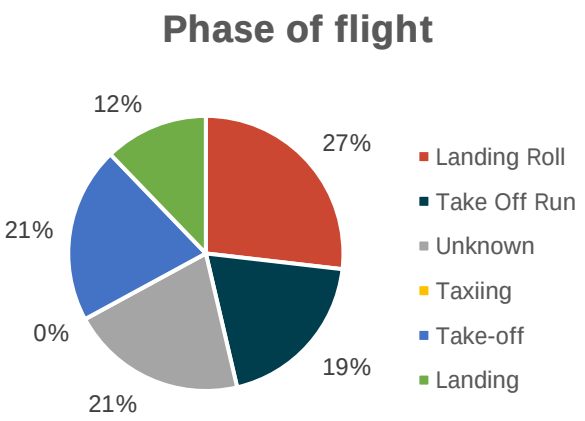


Figure 7. Phase of flight in which wildlife strikes occurred.

Between 2022 and 2023, 39.02% of wildlife strikes were recorded as landing or landing roll, 40.24% of strikes were recorded as occurring in the take-off run or take-off. One strike was attributed to taxiing. (Figure 7).

Of the eighty-two strikes reported during the 24-month period, sixteen strikes had an effect on the flight or aircraft. Three aircraft were grounded pending inspection or repair and a further four aborted take-off and three had a precautionary landing. There were six other strikes that an effect on flight was not detailed however had minor damage recorded to the strikes. (Figure 8).

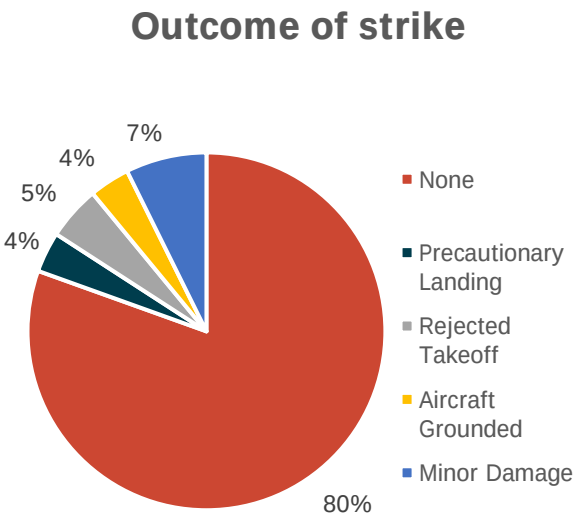


Figure 8. Outcomes of all strikes reported from 2022 to 2023.

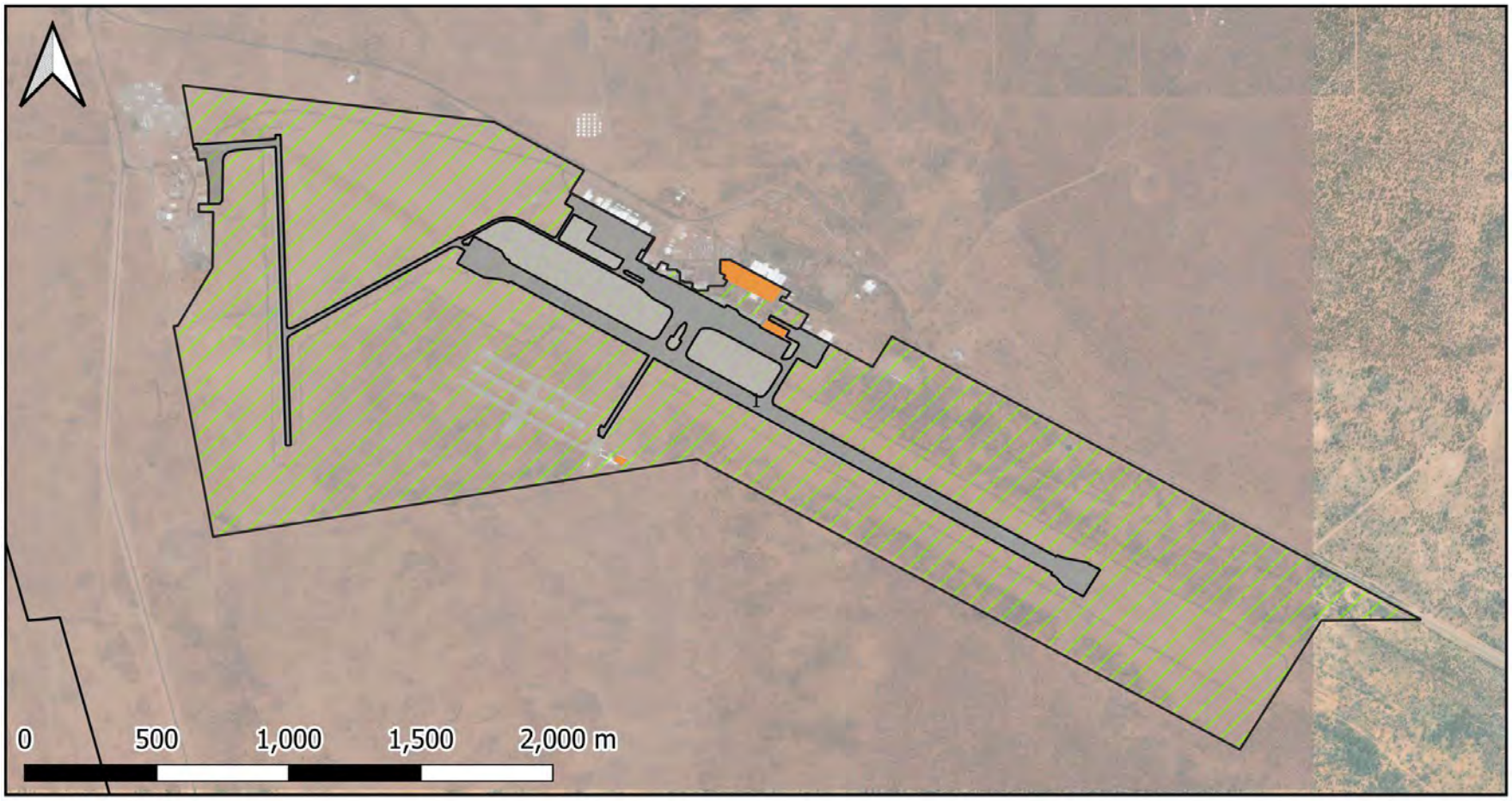
4.2 On-airport Hazards

Alice Springs Airport supports a range of artificial habitats that attract a variety of wildlife species. These features include ancillary structures, water retention/ponding areas, grassed areas, stockpiles, aircraft storage and free-standing vegetation. Hazards identified have been listed and described in Table 7.

Locations of on-airport wildlife attractants have been shown in Figure 9.

Table 7. On-airport wildlife attractants at ASA.

Attractant	Description
Ancillary Structures	Fences, buildings and other infrastructure, such as gables and signage, provide a potential perching apparatus for raptors and wood swallows.
Water retention areas (various locations on site)	After significant rainfall events, water may pond in various areas around the airport. These areas may be attractive to both small and large local waterbirds. Generally, drains do not incur blockages; however, filling of notable areas may be required if hazards persist
Grassed Areas	Seeding grass around the airport presents feeding opportunities for a variety of avian and terrestrial species that may present a wildlife hazard to ASA. Grass surrounding the runway and taxiways requires consistent management that is adaptive to climatic conditions (i.e., periods of high rainfall will require more frequent grass management and period of drought may require less frequent mowing).
Stockpiles	Uncleared stockpiles consisting of leafy and woody debris may provide habitat for reptiles or small mammals, which may in turn attract larger predatory birds. These should be cleared shortly after accumulation to prevent habitat usage by any wildlife (e.g., bearded dragons have been observed to use stockpiles on site). Some birds have also been observed perching on stockpiles and associated debris.
Long-term aircraft storage	Aircraft stored at Alice Springs Airport by Asia Pacific Aircraft Storage can provide nesting opportunities for species including woodswallow and nankeen kestrel. Additionally, the aircraft provide areas for birds to perch in particular birds of prey such as nankeen kestrel and brown falcon.
Free-standing trees/ stand-alone vegetation	Stand-alone trees may provide perching habitat for raptors. Black kites have been observed utilizing stand-alone trees.



This mapping is to be considered indicative only and all derivations (e.g. vegetation communities) are at best approximations and subject to errors including individual interpretation and reliance on information provided to Bio Aus where were not independently verified. All information is intended to be indicative only and no reliance for extrapolation, mapping, etc. should be placed upon this map without independent validation of the information by the user. Bio Aus takes no responsibility for any sudsequent error losses etc. that may arise from use of this data without independent verification.

Project Manager: AW

Drawn By: AD

Date: 31-08-2021

CRS: EPSG: 4326 - WGS 84

Figure Name: On-airport Hazards

Client: Northern Territory Airports Pty Ltd

Site: Alice Springs Airport

Legend

- Airport boundary
- Ancillary Structures
- Airside grassed areas
- Paved surfaces
- Runway

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Page: 1 of 1

Job Number: AV3450

Scale: 1:15000

Revision: 2

Figure 9. On-airport hazards at ASA.

4.1.2 Off-airport Hazards

Natural habitats for birds in the Alice Springs region include; wetland areas, ephemeral watercourses, and open grasslands suitable for feeding/grazing. Attractive modified habitat types include waste management facilities, sewage treatment facilities, golf clubs, sports ovals, and nature parks. There is considerable variation in the types of species that occupy these different habitats. A description of these sites has been provided in Table 8. The locations of each site (coloured by respective hazard ranking) are depicted in Figure 10. Vegetation communities surrounding the airport are shown in Figure 11.

Table 8. Description of wildlife-attracting sites within 13km of ASA.

Land use & NASF Risk Ranking	Distance from Airport	Level of attraction	Description	Fauna Observed	Recommended Action
Ilparpa Swamp and adjacent Alice Springs Waste Stabilisation Ponds Classification: Sewage/Wastewater treatment facility and Conservation Area - wetland **NASF Risk Ranking: High**	8 km northwest	High	This site provides an ideal habitat for waterbird feeding due to shallow water conditions and presence of significant invertebrate life. Sewage pond is able to sustain large populations of high-risk species (e.g., black swans, Australian wood ducks and pacific black ducks).	• Black swan • Crow • Australasian coot • Black kite • Galah • Australian wood-duck • Pacific-black duck	**Monitor:** Monitoring of site by external consultant quarterly to detect changes in wildlife numbers and potentially hazardous species.
Amoonguna Waste Management Facility Classification: Putrescible waste facility **NASF Risk Ranking: High**	5.5 km northeast	High	Provides permanent food source capable of sustaining local wildlife populations for long periods of time. Its close proximity to the Amoonguna Waste Treatment Ponds provide an ample water resource to support resident populations of scavengers such as corvid species.	• Torresian crow • Magpie-lark • Black kite	**Mitigate:** Maintain ongoing discourse with waste management facility and provide input into revisions to wildlife management procedures if wildlife hazards on site increase. **Monitor:** Monitoring and exchange of information on a quarterly basis (e.g., stakeholder meetings) with waste management personnel.

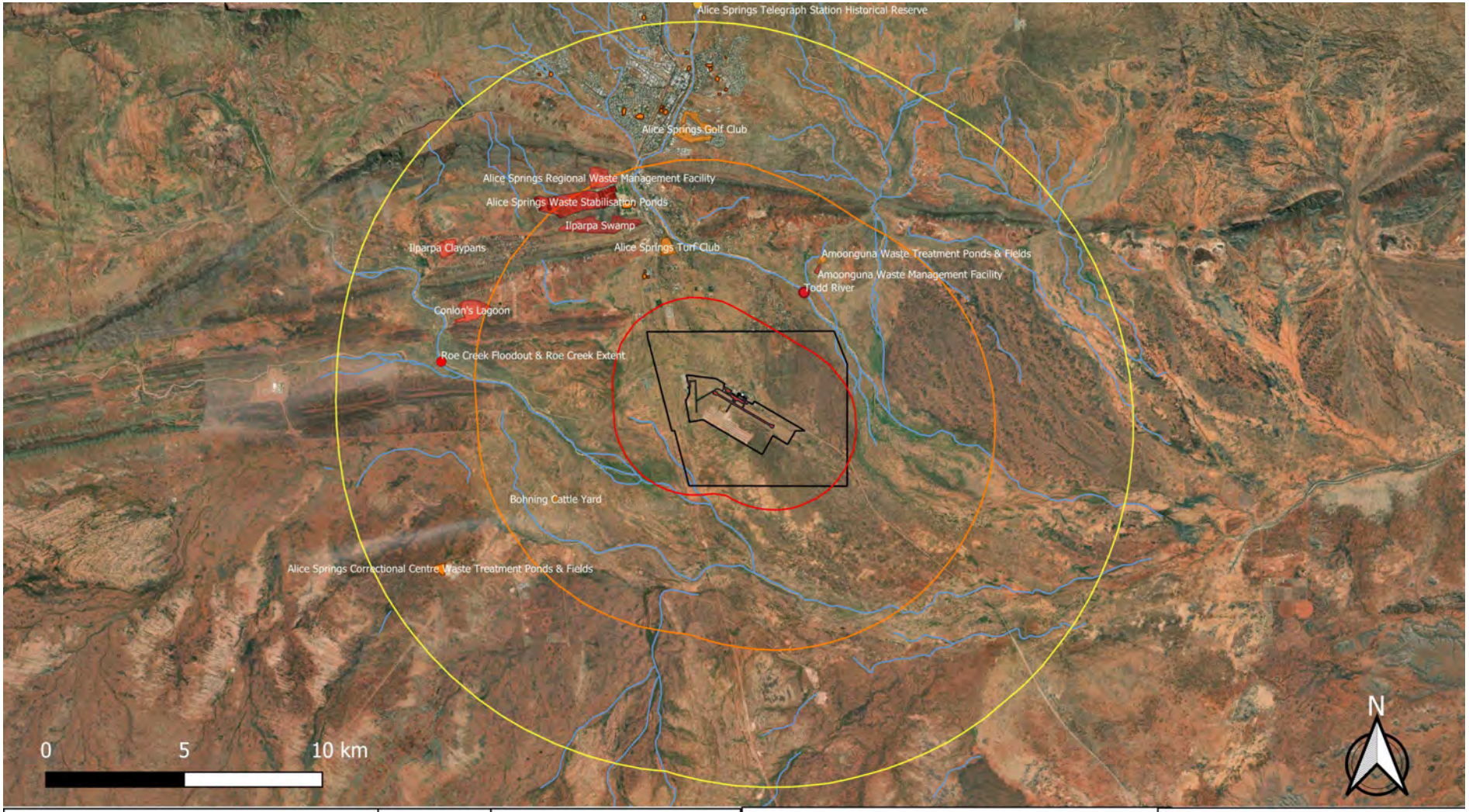
Land use & NASF Risk Ranking	Distance from Airport	Level of attraction	Description	Fauna Observed	Recommended Action
Alice Springs Regional Waste Management Facility Classification: Putrescible waste facility **NASF Risk Ranking: High**	8 km northwest	High	Provides permanent food source capable of sustaining local wildlife populations for long periods of time.	• Masked lapwing • Torresian crow • Magpie-lark • Black kite • Little crow	**Mitigate:** Maintain ongoing discourse with waste management facility and provide input into revisions to wildlife management procedures if wildlife hazards on site increase. **Monitor:** Monitoring and exchange of information on a quarterly basis (e.g., stakeholder meetings) with waste management personnel.
Conlon's Lagoon Classification: Conservation area - wetland **NASF Risk Ranking: High**	7.9 km northwest	High	Large ephemeral claypan and swamp area that fills after periods of rain and capable of supporting high numbers of aquatic bird species.	• Not surveyed	**Mitigate:** Mitigation is typically recommended for wetlands in close proximity of airports; however, mitigation is difficult given the size and nature status of this waterbody. Regular monitoring of this site is recommended (particularly during the breeding season) to quantify the risk level that this site poses to airport operations will assist in resource allocation.
Roe Creek Floodout & Roe Creek Extent Classification: Conservation area - wetland **NASF Risk Ranking: High**	9 km west	High	Interspersed wattles and densely packed eucalypts with hollows may provide excellent habitat for some parrot species. The surrounding area may provide nesting habitat for birds of prey. Many nests observed in the area.	• Australian ringneck • Black-faced wood swallow • Willy wagtail • Double barred finch • Magpie-lark • Camel	**Mitigate:** Mitigation is typically recommended for wetlands in close proximity of airports; however, mitigation is difficult given the size and nature status of this waterbody. Regular monitoring of this site is recommended (particularly during the breeding season) to quantify the risk level that this site poses to airport operations will assist in resource allocation.

Land use & NASF Risk Ranking	Distance from Airport	Level of attraction	Description	Fauna Observed	Recommended Action
Ilparpa Claypans Classification: Conservation area – wetland & dryland **NASF Risk Ranking: High**	6 km northwest	High	Numerous small ephemeral claypans may attract waterbirds following rain events. May attract terrestrial fauna and various species of vertebrate pest during dry season.	• Wild dog (domestic mixed breed) • Camel	**Monitor:** Quarterly monitoring and regular spot checks are recommended to detect changes in wildlife activity. The site has potential to host populations of terrestrial fauna (e.g; dogs and cats) that may encroach on airport land.
Nearby Watercourses Classification: Conservation area – wetland **NASF Risk Ranking:** High	Various	High	Small, ephemeral nearby watercourses, flood and pondage areas may present a risk to the airport following periods of heavy rainfall.	• N/A	**Monitor**: Monitor where necessary and reactively mitigate if airport risk profile changes or increases (e.g; inspect airport surrounds for ponding areas following periods of heavy rainfall).
Alice Springs Telegraph Station Classification: Conservation area – wetland and dryland **NASF Risk Ranking: High**	13 km north	High	Small semi-permanent waterbody that may attract waterbirds. Presence of grasslands is attractive to galah.	• Galah • Crested pigeon • Australian ringneck • Willy wagtail • Torresian crow	**Monitor:** Monitor quarterly.
Todd River Classification: Conservation area - wetland **NASF Risk Ranking: High**	8 km north	High	Intermittent river that rises in the MacDonnell Ranges and flows southeast (320 km), passing through Heavitree Gap and Alice Springs.	• Australian ringneck • Black-faced wood swallow • Willy wagtail • Torresian Crow • Galah • Double barred finch • Magpie-lark	**Mitigate:** Mitigation is typically recommended for wetlands in close proximity of airports; however, mitigation is difficult given the size and nature status of this waterbody. Regular monitoring of this site is recommended (particularly during the breeding season) to quantify the risk level that this site poses to airport operations will assist in resource allocation.

Land use & NASF Risk Ranking	Distance from Airport	Level of attraction	Description	Fauna Observed	Recommended Action
Amoonguna Waste Stabilisation Ponds Classification: Sewage/Wastewater treatment facility **NASF Risk Ranking: Moderate**	5.9 km northeast	Moderate	This site has two treatment ponds and an adjacent treatment field, its close proximity to the Amoonguna Waste Management Centre creates a combined attractant with abundant food and water sources.	• Black swan • Torresian crow • Australasian coot • Black kite • Galah • Australian wood-duck • Pacific black-duck	**Monitor:** Monitoring of site by external consultant quarterly to detect changes in wildlife numbers and potentially hazardous species.
Alice Springs Correctional Centre Waste Stabilisation Ponds Classification: Sewage/Wastewater treatment facility **NASF Risk Ranking: Moderate**	10.9 km southwest	Moderate	This site has five treatment ponds and adjacent treatment fields. The ponds could create an attractant to aquatic birds such as pacific-black duck, grey teal and other wading species.	• Not surveyed	**Monitor:** Monitoring of site by external consultant quarterly to detect changes in wildlife numbers and potentially hazardous species.
Bohning Cattle Yard Classification: Cattle/Dairy Farm **NASF Risk Ranking: Moderate**	5.9 km southwest	Moderate	This site has approximately six acres of holding yards for temporary storage and feeding of cattle. During extended periods of use could attract high numbers of scavenging species.	• Galah • Black kite • Torresian crow • Willie wagtail • Wedge-tailed eagle	**Monitor:** Monitoring of site by external consultant quarterly to detect changes in wildlife numbers and potentially hazardous species.
Alice Springs Golf Course Classification: Golf course **NASF Risk Ranking: Moderate**	10 km northeast	Moderate	Golf club with manicured grasslands and two small waterbodies on site.	• Magpie-lark • Willy wagtail • Crow • Pacific-black duck • Pied cormorant	**Monitor:** Monitor quarterly. Grasslands may attract insectivorous and frugivorous species.

Land use & NASF Risk Ranking	Distance from Airport	Level of attraction	Description	Fauna Observed	Recommended Action
Alice Springs Turf Club Classification: Racetrack **NASF Risk Ranking: Moderate**	Various	Moderate	Grassed track. Horse feed has the potential to attract opportunistic scavengers.	• Masked lapwing • Magpie-lark • Yellow-throated miner • Little crow • Black kite	**Monitor:** Monitor quarterly.
Sports Ovals Classification: Park/playground **NASF Risk Ranking: Moderate**	Various	Moderate	Irrigated parks and grasslands with manicured or landscaped vegetation.	• Masked lapwing • Magpie-lark • Little crow • Little corella • Galah • Yellow-throated miner	**Monitor:** Irrigated grasslands may attract insectivorous and frugivorous species.

*It should be noted that wildlife surveys were completed in May 2023 and August 2024 and may not be fully representative of the species profile likely to utilise each site.



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Project Manager: SB	Figure Name: NASF Guideline C. Wildlife Attractant Sites
Drawn By: SB	Site: Alice Springs Airport
Date: 07/07/2023	Client: Airport Development Group
Map Projection: MGA Zone 56	
Datum: GDA94	

Legend

- Sports Oval
- High Attractant Site
- Medium Attractant Site
- Watercourse
- Airfield Perimeter
- 3km NASF Radius
- 8km NASF Radius
- 13km NASF Radius

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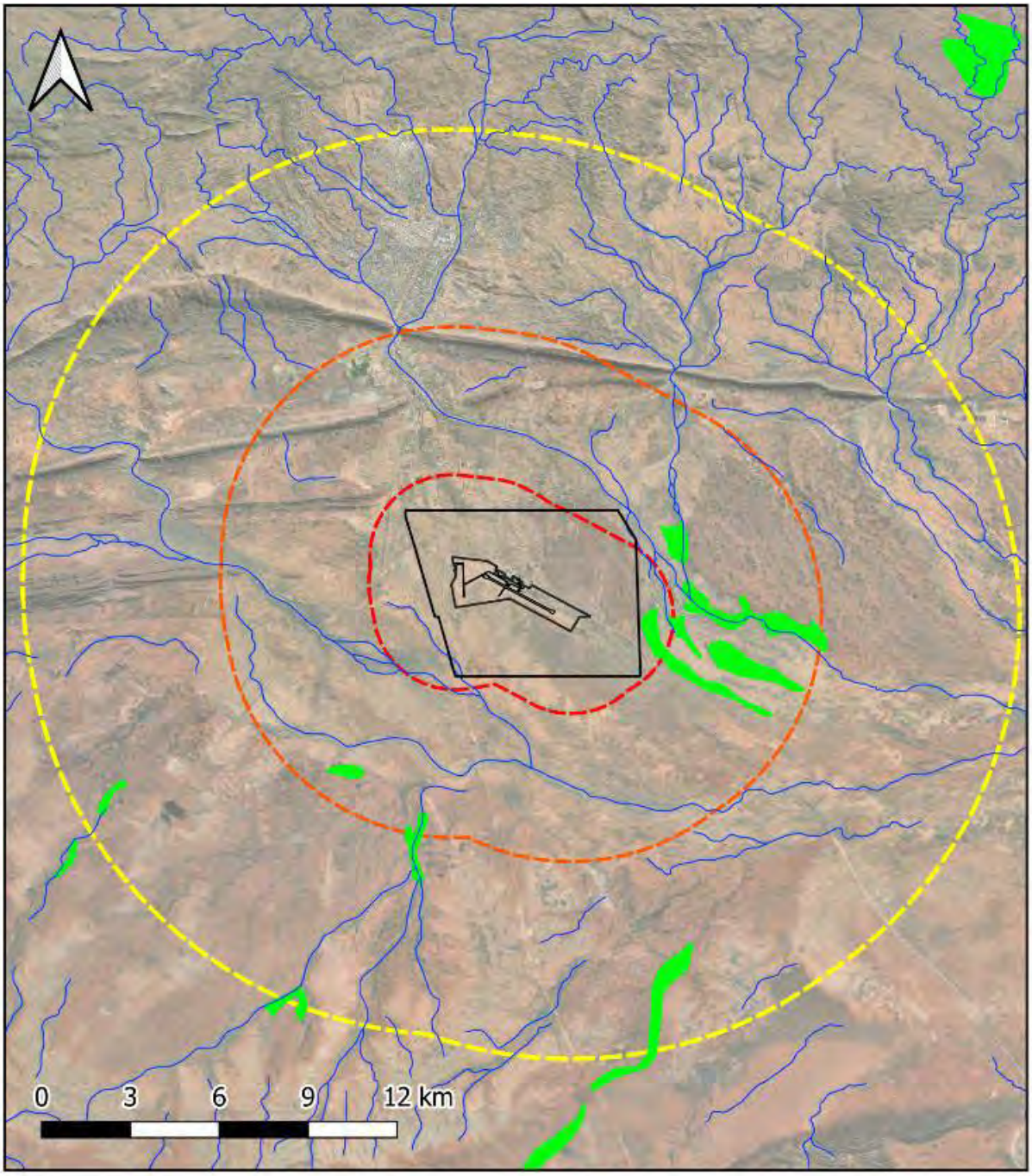
QGIS

Job Number ANT5756	Scale: 1:135170
Page: 1 of 1	Variation A

Figure 10. Off-airport hazards.



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Project Manager: AW

Drawn By: AD

Date: 15-06-2021

CRS: EPSG: 4326 - WGS 84

Alice Springs Airport

Vegetation Communities

Forest Or Shrub

NASF Assessment Radii

3 km

8 km

13 km

Figure Name: Vegetation communities

Site: Alice Springs Airport

Client: Northern Territory Airports Pty Ltd

Scale:	Job Number:	Revision:
1:130000	AV3450	1

Figure 11. Vegetation communities within 13km of ASA.

5 Wildlife Hazard Risk Assessment

5.1 Biennial Wildlife Risk Assessment

Wildlife strike records are an important source of information for determining the hazards present at airports. The information collected allows an assessment of species struck and trends across years, seasons, months and time of the day. For more information on how ASA's wildlife risk assessment model was conducted, refer Attachment 3: Bird Risk Assessment model for Airports and Aerodromes.

In 2022, the total confirmed strikes (50 Strikes) per 10,000 aircraft movements was 27.47 (assuming 18,200 aircraft movements). In 2023, the total confirmed strikes (32 Strikes) per 10,000 aircraft movements was 17.10 (assuming 18,716 aircraft movements). Strikes per 10,000 movements have recorded a decrease in 2023 when compared with 2022 (27.47/10,000) and 2021 (21.91/10,000) in 2020.

The complete risk assessment is shown in Table 9. The dataset for the risk assessment in 2023 was expanded to include the results of the 2023 and 2024 on airfield surveys conducted by BA Aviation and 12 months of AVCRM data supplied by Alice Springs Airport. Using multiple datasets enables a broader picture of the wildlife hazard at Alice Springs Airport.

The likelihood rank for each of the three data sets was compared and the highest rank of the three was used to calculate the hazard ranking of each species.

Key changes to the risk assessment in 2023 include the addition of nineteen species of which six species are high and very-high hazard ranked species, these species are listed below;

- Masked Lapwing (Very-high)
- Wedge-tailed eagle (High)
- Torresian crow (High)
- Little crow (High)
- European rabbit (High)
- Australian ringneck (High)

Twelve species recorded an increase in hazard ranking from 2022 with six species increasing from Medium to High and one species increasing from Medium to Very-high.

- Australian Magpie (Medium – High)
- Banded Lapwing (Low – Medium)
- Barn Owl (Low – Medium)
- Black-Shouldered Kite (Medium – High)
- Brown songlark (Negligible – Low)
- Budgerigar (Low – Medium)
- Diamond dove (Negligible – Low)
- Feral cat (Medium – High)
- Magpie-lark (Medium – High)
- Oriental Plover (Medium – High)
- Red-tailed black-cockatoo (Medium – Very-High)
- Whistling Kite (Medium – High)

One species, little corella remained in the WHMP despite not recording any strikes or not being observed in observation/survey data due to prevalence of strikes at other airports and previous observations.

Table 9. ASA wildlife hazard rankings 2022 – 2023.

Species Common Name	Scientific Name	Consequence						Likelihood									Hazard Rank
		Mass (g)	Mass Score	Flock Score	Flight Score	Consequence Score	Consequence Rank	10 Year Strike History (2014 - 2023)		Strike History (2022-2023)		Strike Trend	Strike Likelihood Rank	Harassment Data Likelihood Rank	BA Aviation Surveys Likelihood Rank	Highest Likelihood Rank	
Galah	*Eolophus roseicapilla*	330	8	4	2	64	**EX**	**9**	**5.81%**	**3**	**5.36%**	**Decreasing**	VH	VH	VH	**VH**	**EX**
Masked lapwing	*Vanellus miles*	360	8	2	2	32	**VH**	**-**	**-**	**-**	**-**	**-**	-	H	VH	**VH**	**VH**
Red-tailed black-cockatoo	*Calyptorhynchus banksii*	720	8	2	2	32	**VH**	**1**	**0.65%**	**0**	**0.00%**	**Decreasing**	M	VH	VH	**VH**	**VH**
Australian magpie	*Gymnorhina tibicen*	330	8	2	1	16	**H**	**1**	**0.65%**	**0**	**0.00%**	**Decreasing**	M	H	VH	**VH**	**H**
Australian ringneck	*Barnardius zonarius*	220	8	2	1	16	**H**	**-**	**-**	**-**	**-**	**-**	-	M	VH	**VH**	**H**
Black kite	*Milvus migrans*	625	8	1	2	16	**H**	**29**	**18.71%**	**17**	**30.36%**	**Increasing**	VH	VH	-	**VH**	**H**
Black-shouldered kite	*Elanus axillaris*	290	8	1	2	16	**H**	**1**	**0.65%**	**0**	**0.00%**	**Decreasing**	M	-	VH	**VH**	**H**
European rabbit	*Oryctolagus cuniculus*	1600	16	2	1	32	**VH**	**-**	**-**	**-**	**-**	**-**	-	-	H	**H**	**H**
Feral cat	*Felis catus*	5000	32	1	1	32	**VH**	**-**	**-**	**-**	**-**	**-**	-	H	H	**H**	**H**
Little crow	*Corvus bennetti*	485	8	2	1	16	**H**	**-**	**-**	**-**	**-**	**-**	-	VH	-	**VH**	**H**
Magpie-lark	*Grallina cyanoleuca*	90	4	2	2	16	**H**	**3**	**1.94%**	**0**	**0.00%**	**Decreasing**	H	VH	VH	**VH**	**H**
Nankeen kestrel	*Falco cenchroides*	185	4	2	2	16	**H**	**19**	**12.26%**	**10**	**17.86%**	**Increasing**	VH	H	H	**VH**	**H**
Oriental plover	*Charadrius veredus*	95	4	4	1	16	**H**	**1**	**0.65%**	**0**	**0.00%**	**Decreasing**	M	H	-	**H**	**H**
Torresian crow	*Corvus orru*	550	8	2	1	16	**H**	**-**	**-**	**-**	**-**	**-**	-	VH	VH	**VH**	**H**
Wedge-tailed eagle	*Aquila audax*	3950	16	1	2	32	**VH**	**-**	**-**	**-**	**-**	**-**	-	M	-	**M**	**H**
Whistling kite	*Haliastur sphenurus*	910	8	1	2	16	**H**	**1**	**0.65%**	**0**	**0.00%**	**Decreasing**	M	H	H	**H**	**H**
Australian pratincole	*Stiltia isabella*	65	4	2	1	8	**M**	**16**	**10.32%**	**4**	**7.14%**	**Decreasing**	VH	VH	-	**VH**	**M**
Banded lapwing	*Vanellus tricolor*	185	4	2	1	8	**M**	**2**	**1.29%**	**0**	**0.00%**	**Decreasing**	H	-	VH	**VH**	**M**
Barn owl	*Tyto alba*	355	8	1	1	8	**M**	**2**	**1.29%**	**2**	**3.57%**	**Increasing**	H	-	-	**H**	**M**
Black-faced woodswallow	*Artamus cinereus*	40	2	2	2	8	**M**	**13**	**8.39%**	**4**	**7.14%**	**Decreasing**	VH	VH	VH	**VH**	**M**

Species Common Name	Scientific Name	Consequence						Likelihood									Hazard Rank
		Mass (g)	Mass Score	Flock Score	Flight Score	Consequence Score	Consequence Rank	10 Year Strike History (2014 - 2023)		Strike History (2022-2023)		Strike Trend	Strike Likelihood Rank	Harassment Data Likelihood Rank	BA Aviation Surveys Likelihood Rank	Highest Likelihood Rank	
Brown Falcon	*Falco berigora*	625	8	1	1	8	M	14	9.03%	11	19.64%	Increasing	VH	H	H	VH	M
Budgerigar	*Melopsittacus undulatus*	30	2	4	1	8	M	2	1.29%	0	0.00%	Decreasing	H	VH	-	VH	M
Crested pigeon	*Ocyphaps lophotes*	205	8	1	1	8	M	7	4.52%	0	0.00%	Decreasing	H	H	VH	VH	M
Little corella	*Cacatua sanguinea*	560	8	4	1	32	VH	-	-	-	-	-	-	-	-	L	M
Monitor lizard sp.	*Varanus sp.*	5000	16	1	1	16	H	-	-	-	-	-	-	M	-	M	M
Mulga parrot	*Psephotus varius*	62	4	2	1	8	M	-	-	-	-	-	-	-	VH	VH	M
Oriental pratincole	*Glareola maldivarum*	75	4	2	1	8	M	-	-	-	-	-	-	H	-	H	M
Pacific-golden plover	*Pluvialis fulva*	150	4	4	1	16	H	1	0.65%	0	0.00%	Decreasing	M	-	-	M	M
Pied butcherbird	*Cracticus nigrogularis*	140	4	2	1	8	M	-	-	-	-	-	-	-	H	H	M
Southern boobook	*Ninox boobook*	300	8	1	1	8	M	-	-	-	-	-	-	H	-	H	M
Tawny frogmouth	*Podargus strigoides*	680	8	1	1	8	M	-	-	-	-	-	-	-	H	H	M
Bearded dragon	*Pogona vitticeps*	510	8	1	1	8	M	3	1.94%	0	0.00%	Decreasing	M	M	-	M	L
Black-Faced cuckooshrike	*Coracina novaehollandiae*	115	4	1	1	4	L	-	-	-	-	-	-	M	H	H	L
Brown songlark	*Cincloramphus cruralis*	74	4	1	1	4	L	3	1.94%	0	0.00%	Decreasing	H	H	-	H	L
Cockatiel	*Nymphicus hollandicus*	94	4	2	1	8	M	-	-	-	-	-	-	M	-	M	L
Diamond dove	*Geopelia cuneata*	35	2	2	1	4	L	4	2.58%	3	5.36%	Increasing	H	H	-	H	L
Fairy martin	*Petrochelidon ariel*	11	1	2	2	4	L	6	3.87%	0	0.00%	Decreasing	H	-	-	H	L
Masked woodswallow	*Artamus personatus*	35	2	2	2	8	M	1	0.65%	0	0.00%	Decreasing	M	-	-	M	L
Microbats	*Microchiroptera*	10	1	2	2	4	L	-	-	-	-	-	-	-	VH	VH	L
Pallid cuckoo	*Cacomantis pallidus*	88	4	1	1	4	L	-	-	-	-	-	-	-	H	H	L
Peregrine falcon	*Falco peregrinus*	890	8	1	1	8	M	1	0.65%	1	1.79%	Increasing	M	-	-	M	L

Species Common Name	Scientific Name	Consequence						Likelihood									Hazard Rank
		Mass (g)	Mass Score	Flock Score	Flight Score	Consequence Score	Consequence Rank	10 Year Strike History (2014 - 2023)		Strike History (2022-2023)		Strike Trend	Strike Likelihood Rank	Harassment Data Likelihood Rank	BA Aviation Surveys Likelihood Rank	Highest Likelihood Rank	
Yellow-throated miner	*Manorina flavigula*	65	4	1	1	4	**L**	**-**	**-**	**-**	**-**	**-**	-	-	H	**H**	**L**
Australasian pipit	*Anthus novaeseelandiae*	32	2	1	1	2	**VL**	**6**	**3.87%**	**0**	**0.00%**	**Decreasing**	H	H	VH	**VH**	**N**
Inland thornbill	*Acanthiza apicalis*	7	1	2	1	2	**VL**	**-**	**-**	**-**	**-**	**-**	-	-	H	**H**	**N**
Pygmy mulga monitor	*Varanus gilleni*	80	4	1	1	4	**L**	**1**	**0.65%**	**0**	**0.00%**	**Decreasing**	M	-	-	**M**	**N**
Striated pardalote	*Pardalotus striatus*	11	1	2	1	2	**VL**	**-**	**-**	**-**	**-**	**-**	-	-	H	**H**	**N**
Willie wagtail	*Rhipidura leucophrys*	20	1	1	1	1	**VL**	**2**	**1.29%**	**0**	**0.00%**	**Decreasing**	H	H	VH	**VH**	**N**
Zebra finch	*Taeniopygia guttata*	12	1	2	1	2	**VL**	**6**	**3.87%**	**1**	**1.79%**	**Decreasing**	H	VH	VH	**VH**	**N**

6 Wildlife Management Plan

Alice Springs Airport employs a number of techniques for both active and passive management of wildlife at the Airport. A brief summary of each type is provided below.

Procedures (PROs) have been developed to provide the details and background for correct and safe implementation of these management strategies. A brief summary of each has been provided in Table 10.

Table 10. Summary of wildlife management procedures.

Procedure & Delegation	Description	Frequency
Wildlife Management Procedures – Section 2: Wildlife Surveillance **ARO**	Patrols are carried out daily by the ARO which determine the numbers and types of species present on the airside of the aerodrome to assess the current hazard level – wildlife observed during Patrols are dispersed accordingly. Designated counts (Wildlife Routine Counts) are carried out once per day. Wildlife observations are completed opportunistically during other activities.	Before aircraft movements and opportunistically Daily
Wildlife Management Procedures – Section 3: Assess and Communicate Hazards **ARO**	ASA Airside Operations Officers conduct daily bird counts at the airport to determine the numbers of wildlife present on the airport. Which is then used to determine the harassment level required to maintain safe operational standards of the Airport. This daily risk assessment also determines whether a NOTAM is required.	Daily
Wildlife Management Procedures – Section 3: Assess and Communicate Hazards **ARO**	In the event of an identified hazard on or in the near vicinity of the Airport, steps are taken to remove, or alternatively advise pilots of the hazard via NOTAM.	As required
Wildlife Management Procedures – Section 4: Active Management **ARO**	This procedure primarily deals with active management and details the dispersal guidelines; identifying priority areas; the types of tools and harassment methods available for dispersing/removing wildlife, including culling (lethal control) of wildlife.	Before aircraft movements As required
Wildlife Management Procedures – Section 4: Active Management **ARO**	Culling (or lethal control) is an important wildlife management tool and should be considered when trying to remove Moderate to Very High-risk species, in particular when other methods have been carried out with no effect. It can also be used to reinforce other dispersal methods.	As required or during periods of unusually high wildlife activity involving difficult to disperse species.
Wildlife Management Procedures – Section 4: Active Management **ARO**	Wildlife that establishes breeding and nesting territories on the airside can create strike hazards. The removal of eggs and nests deters birds from establishing territories on the airside as well as limiting the breeding success. This process may apply to territorial species such as masked lapwing and bush-stone curlew.	As required – during breeding season.

Procedure & Delegation	Description	Frequency
Wildlife Management Procedures – Section 4: Active Management **ARO & External Consultant**	Terrestrial wildlife may present a considerable hazard to aircraft operations. Where a risk is identified during monitoring, external contractors should be contracted to manage the hazard.	When contracted
Wildlife Management Procedures – Section 4: Active Management **ARO**	All wildlife has the potential to carry disease; safe handling of injured or sick; and of wildlife remains is essential to ensure that you do not put yourself at risk of injury or illness.	When a strike occurs When deceased animals are handled
Wildlife Management Procedures – Section 6: Manage Wildlife Strikes **ARO & Airport Manager**	Wildlife strikes are classed as routine reportable incidents under the Transport Safety Investigation Regulations 2003 (Section 2) and must be reported to the ATSB within 72 hours of occurring. Reporting wildlife strikes is an important aspect of wildlife hazard management, though even more important is getting the information right. Accurate reporting assists with collating statistical information, and accurate species identification can assist with risk assessments and effective hazard management. Struck wildlife should always be identified as close to species level as possible.	After wildlife strikes
Wildlife Management Procedures – Section 6: Manage Wildlife Strikes **ARO & Airport Manager**	A Significant Strike Investigation is a detailed analysis of wildlife strikes that attempts to answer the question of why the strike occurred. Although it is not a regulatory requirement, determining the exact sequence of events may reduce the chances of recurrence. A Significant Strike Investigation is generally instigated by the Airport Manager or other senior Operations Staff in response to significant strike event(s).	After significant strikes

Entire procedures can be found in Appendix 1.

6.1 Passive Management

6.1.1 Exclusion

The management of animals is a high priority for ASA due to the extreme safety issues associated with wildlife on the airfield. Alice Springs Airport personnel maintain the airside perimeter fences in good order to reduce the opportunity for terrestrial wildlife entering the airport. All gates and access points to the airfield are kept closed at all times with swipe card access.

6.1.2 Habitat Modification

The most effective method used to reduce wildlife numbers at the Airport is to reduce the number of attractants available to the wildlife. Due to broad climatic conditions experienced within ASA, environmental management aimed at reducing the desirability of on-site habitat needs to be considered on a site-by-site and temporal basis.

6.1.3 Detection

The ability to see and avoid wildlife on the airport can vary depending on the size and coloration of certain species as well as the operational limitations of aircraft in proximity to the ground. The following list outlines the detection measures undertaken by ASA personnel.

- Assessment of off-airport wildlife attracting developments;
- Regular wildlife patrols and inspections of the airfield;
- Wildlife counts, observations and bird population monitoring on the airport; and
- Provision of materials aimed at increasing accuracy of wildlife detection.

6.2 Active Management

6.2.1 Harassment & Culling

Wildlife harassment and dispersal from the runways and the surrounding airfield is the most effective and immediate tool in wildlife hazard management. Control activities are based on a priority rating with a concentric approach from the runway. The runway and associated undershoots are the main priority for hazard mitigation. The runway strips are the second priority, the surrounding area the third priority, and so forth. In all cases, the ARO is to assess the situation and decide upon the safest and most effective method of active wildlife hazard management, which include:

- *Vehicle, sirens, and horns*: Provides a negative auditory stimulus that acts as an immediate method for moving birds and terrestrial animals off the runway or taxiway.
- *Stock whip*: Provides a negative auditory stimulus and negative visual cue for wildlife in the vicinity of the harasser.
- *Bird Distress Calls*: Scarecrow Patrol, megaphone type equipment with distress calls and other noises.
- *Pyrotechnic Cartridges*: Non-lethal rounds that produce both negative auditory and visual stimuli. Can be deployed at short notice.
- *Gas Canon/Shotgun Simulator*: Handheld/portable 'gas powered' device that produces a simulated shotgun sound. Safe and easy to deploy and can be used in situations, locations or conditions (e.g., at night) that are not suitable for firearms to be used. Note that the use of this method does not require a Firearms Licence.
- *Live Rounds*: Culling with live rounds is used to reinforce the effects of other methods or to remove an imminent hazard. Alice Springs Airport's Firearms Procedures dictate the guidelines for storage and general use of firearms on the airfield.
- *Trapping*: Used when an increase of sightings and/or reports of animals, particularly terrestrial species, has occurred. Trapping activity is carried out by specialist contractors and in accordance with ASA's protected wildlife permit.

6.3 Recording and Reporting

6.3.1 Data Recording

The purpose of wildlife data collection is to provide evidence-based justification for management actions and to demonstrate WHMP processes are in place to routinely detect and, where feasible, remove hazards. The wildlife hazard management database is managed and overseen by the ASA Airport Manager. Use of the AVCRM tablet application has improved wildlife management data collection by improving systematic data collection. Data relating to wildlife presence and abundances can be used to generate graphs and figures within the program. ARO's are responsible for entering data into the database, including strikes, counts and harassment. If a DNA sample is taken, the results are entered by the ASA Airport Manager once received.

Reports, documents and other information is accessible through the ASA Public Drive and Share point.

6.3.2 Reporting

Routine reporting ensures that all staff and managers are equipped with the information needed to adapt hazard management activities and the WHMP when required. The following reports and documentation outlined in Table 11 are completed and distributed (as required) by the relevant staff. Operations Staff also have informal reporting and discussions about local conditions during toolbox meetings.

Table 11. Regular reporting documents and responsibilities.

Reporting	Frequency	Comments	Who
Aerodrome Serviceability Inspection Checklist	Daily	Information is recorded in AVCRM and is used to determine minimum harassment methods/resources required.	ARO
NOTAM	When an unusually high bird hazard is present at the Airport	A Notice to Airmen (NOTAM) is issued when an unusually high wildlife hazard is present at the Airport. The NOTAM must include species details. The Airport procedure for issuing NOTAM must be followed.	ARO or Airport Manager
Wildlife Counts	As specified in airport procedures	Data to be collected and entered into AVCRM database by AROs.	ARO
Wildlife harassment and dispersal techniques	As required	Data relating to harassment methods used are to be entered into the AVCRM database. Resultant data is used to investigate effectiveness of the technique along with providing information to Parks and Wildlife as dictated by permit requirements.	ARO

Reporting	Frequency	Comments	Who
Wildlife strike reporting	Refer to strike definitions for reporting	All suspected and confirmed wildlife strikes to aircraft, are reported to the Australian Transport Safety Bureau (ATSB) and aircraft operator within 72 hours of incident, including when a carcass or bird remains are found on the aircraft movement area. If a strike occurs, a Wildlife Notification form is completed. This is emailed to the ATSB and aircraft operator. The hardcopy is then filed in the Wildlife Strike Folder. If any incident or accident has eventuated, an ATSB incident form must also be completed. ATSB information must be crossed checked with the AVCRM database when information is received by ATSB.	Engineers Pilots ARO Airport Manager Ground staff
Significant Strike Reporting	As required	A “significant wildlife strike” may be deemed to have occurred when: • There is damage evident on the aircraft due to a strike; • There is an effect on flight; • More than one bird is involved; or • At the discretion of the Airport Manager	Airport Manager

6.3.3 Airline Reporting Requirements

It is essential to ensure that all data collected is correct and accurate. Airlines and aircraft operators must ensure that they check data provided to them through strike reports (whether confirmed or suspected) and notify ASA of any changes or corrections required. Wildlife Management Procedures – Section 6: Manage Wildlife Strikes provides detail about strike reporting requirements.

7 Further Investigations

7.1 Trials

The Airport will consider all application for trials to reduce bird activity at the Airport. Applications are submitted and reviewed by the WHMWG. A trial application must include (but not be limited to):

- measurable outcomes;
- risk assessment, including ensuring maintaining CASA compliance with MOS 139 throughout the trial;
- implementation and management of the trial; and
- trial period and costs.

After the WHMWG have reviewed the application, the working group will either: in writing, refuse to conduct the trial due to safety concerns or submit the proposal to the Airport Manager for approval. The Airport Manager has the authority to stop the trial if at any time aircraft safety is at risk. Trial applications are evaluated against the risk matrix priority species and the projected outcomes/benefits as well as risks.

7.2 Research priorities

Occasionally an in-depth research requirement will be identified. This may be related to a proposed change in airfield passive wildlife management (e.g., grass height, habitat species composition, insect invasion), at which time a small-scale research project may be initiated to provide an indication of which option works best in the overall framework of wildlife management at the Airport.

Any necessary studies associated with changes to passive wildlife management techniques will be documented in this section in future revisions of this WHMP. Documentation will comprise a research summary (as an appendix) including the research purpose and objectives, methods, timelines, staff and expected/actual outcomes.

8 Recommendations

The relationship between wildlife hazard management and strike risks at ASA are generally very well understood and managed. Operational staff are able to accurately identify wildlife, associated hazards, and required management strategies.

The environmental context of ASA, including the changing environmental conditions between seasons, necessitates a highly adaptive and reactive framework for wildlife management on the airport. The surrounding vegetation and grasslands serve as high-value habitat for an array of high and moderate risk species.

For the 2021 – 2022 review period, ASA achieved 93.7% compliance against the CASA MOS 139 Part 17 Compliance audit (Attachment 6). Further recommendations for improving wildlife hazard management practices at ASA are included in Table 12.

Table 12. Recommendations for wildlife hazard management at ASA.

Recommendation	Justification	Responsibility	Implementation Timeframe
Active Management			
Increased use of varied harassment methods	Persistent and varied harassment of some species may prove more effective than consistent lethal take. “Education” of certain species (e.g., Australian magpies) can ensure that resident wildlife develop a learned aversion to the airfield and prevent new “naïve” animals from assuming the territory/niche of culled species.	ARO	Short term
Increased use of DNA testing of strike remains and blood snarges.	To reduce the instances of unidentified strikes, DNA samples should be obtained and sent for analysis, increased identification of species helps to formulate management strategies to reduce the instances of wildlife strikes with that species.	ARO/Airport Manager	Short term
Conduct monthly wildlife hazard stakeholder meetings	Monthly meetings should be conducted to review current management methods, current wildlife issues, discuss and review data captured relating to strikes, harassment and wildlife surveys.	Airport Manager	Short term
Conduct quarterly review of harassment, survey and wildlife strike data.	A quarterly review of current wildlife and strike data should be presented at the monthly stakeholder meeting every quarter. This will help ascertain any trends of wildlife activity and to be able to react to any increased hazards.	External consultant & Airport Manager	Short term

Recommendation	Justification	Responsibility	Implementation Timeframe
Provision of specified wildlife hazard management training for the airport management team.	The aerodrome operator must create training records for its monitoring and reporting personnel to show compliance with Part 17 of the MOS 139. Each record must be kept in safe custody for a period of at least 3 years after the record was created.	Airport Manager	Short term
Passive Management			
Targeted habitat modification	While harassment is recommended, passive management strategies are likely to be more effective in deterring certain species from utilizing airport habitat. Consistent management of grass on site will assist in limiting habitat for insects and help reduce attractiveness of site to wood swallows and galah. Removal of unused perching habitat on site may limit use of the airfield and surrounds for feeding and roosting. Disruption of breeding sites following period of heavy rainfall may assist in discouraging local populations from using airport land (although permit requirements must be considered before implementation of such management).	Airport Manager	Long term
Review current grass/vegetation management program.	A review of the current vegetation slashing/management program is recommended. Current methods used are not aligned with best practice on airfields. Directional and mosaic slashing provided an attractant to granivorous species and provided cover for other small species making detection and dispersal less effective. Slashing is recommended to occur before seed heads present and to maintain grass below 150mm within the gable markers and 300mm elsewhere on the airfield.	Airport Manager	Short term
Stakeholder Relations			
Specification of the liaison arrangements for local planning authorities within a radius of at least 13 km from the aerodrome reference point.	There is a need for an increase in collaboration between off-airport stakeholders and airport personnel. Some form of quarterly engagement (e.g; meetings, scheduled site visits, etc.) can help improve wildlife management at ASA through increased awareness of local conditions.	Airport Manager	Short-medium term

Recommendation	Justification	Responsibility	Implementation Timeframe
Monitoring			
Conduct on-airport wildlife monitoring as part of serviceability inspections	As part of the aerodrome serviceability inspection, the aerodrome operator must monitor and record at least the following: (a) the presence and behaviour of wildlife on the aerodrome; (b) wildlife activity that is visible: (i) in the vicinity of the aerodrome; or (ii) from the aerodrome.	ARO External consultant Airport Manager	Short-medium term
Implementation of a formalized wildlife count methodology	It has been noted that current wildlife monitoring is difficult to implement. Simplification of this methodology (or provision of additional support tools for AROs) may assist in ensuring accurate data collections and recording.	External consultant Airport Manager ARO	Short-medium term
Conduct off-airport monitoring	Due to the varied seasonal conditions in Alice Springs, local wildlife compositions and abundances are likely to remain in flux. Formal quarterly monitoring of nearby, high-hazard off-airport sites can (e.g., sewage ponds) can help increase efficiency of proactive management strategies on-airport.	External consultant Airport Manager	Short-medium term
Permit Compliance			
Increase number of species on Permit to Take Wildlife for Commercial Purposes	Adding high risk species to future permit applications will assist in streamlining adaptive management and increasing speed of implementation timeframes when required. Addition of nankeen kestrels, masked wood swallows and other high to moderate risk species to the permit is recommended.	ASSM and Airport Manager	Short term

9 Reference Documentation

Alice Springs Airport Pty Ltd, August 2010, “Alice Springs Airport Master Plan Final 2009”, PO Box 796 Alice Springs, NT 0871 Australia.

Alice Springs Airport Pty Ltd, March 2010, “Alice Springs Airport Environment Strategy Final 2009”, PO Box 796 Alice Springs, NT 0871 Australia.

Damon Pyke, EcOz Environmental Services, September 2010, “Alice Springs Airport Prohibited and Restricted Plant Species List”, GPO Box 381 Darwin, NT 0801 Australia.

Glen Ewers, EcOz Environmental Services, April 2013, ““Alice Springs Airport Species Management plan (Draft)” GPO Box 381 Darwin, NT 0801 Australia.

Tom Reilly, David van den Hoek and Damon Pyke, EcOz Environmental Services, November 2010, “Airside Grassland Plant Identification Booklet, Version 4”, GPO Box 381 Darwin, NT 0801 Australia.

Steve Eldridge, Desert Wildlife Services, December 2010, “Alice Springs Airport Bird Monitoring Program Survey Protocol and Results of Survey 1” PO Box 4002, Alice Springs NT 0871 Australia.

CASA, Wildlife Hazard Management Advisory Circular, AC 139.C-16 v1.0, June 2023, GPO Box 2005 Canberra ACT 2601.

CASA, Part 139 (Aerodromes) Manual of Standards 2019, March 2024, GPO Box 2005 Canberra ACT 2601.

Avisure proprietary Limited, May 2011, “Alice Springs Airport Wildlife Management Audit and Review May 2011” PO Box 404 West Burleigh, QLD 4219 Australia.

Steve Eldridge, Desert Wildlife Services, May 2011, “Alice Springs Airport Bird Monitoring Program Survey Protocol and Results of Survey 1” PO Box 4002, Alice Springs NT 0871 Australia.

Tom Reilly, EcOz Environmental Services, May 2012, “ASA Pocket Guide for Bird ID – Internal Use only”, GPO Box 381 Darwin, NT 0801 Australia.

David Paton, University of Adelaide, March 2010, “Bird Risk Assessment Model for Airports and Aerodromes”, The University of Adelaide, South Australia 5005 Australia.

10 Attachments and Appendices

Attachments

Attachment 1: Species Management Plans

Attachment 2: Strike History

Attachment 3: Bird Risk Assessment Model for Airports and Aerodromes

Attachment 4: ADG Risk Register – WHMP ASA

Attachment 5: Roles and Responsibilities

Attachment 6: WHMP Audit Tables - 2023

Appendices

Appendix 1: Wildlife Hazard Management Procedures

Attachment 1: Species Management Plans

Image source: www.birdlife.org.au

Galah

Eolophus roseicapilla

Hazard Ranking:	Extreme
Mass (g):	330
Strikes 2022 - 2023:	3
Flocking tendency:	Highly sociable bird that flocks and feeds in large groups. Form permanent pair bonds. Likely to be observed in large quantities when present on the airfield.
Preferred habitat:	Widespread throughout Australia, inhabiting a number of different habitat types.
Breeding season:	February to July.
Diet:	May consume seeds, fruits, berries, grasses, insects and larvae. May also favour seeds of grasses and cultivated crops. Commonly feed on ground in airport environments.

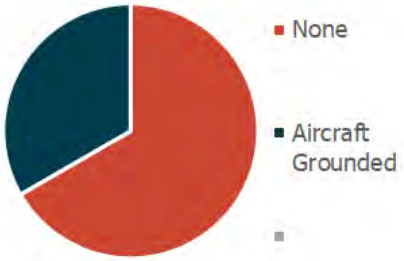
Active Management: Remove immediate hazards, particularly large flocks, using physical dispersal and harassment methods. Continual negative reinforcement is often required.

Passive Management: Maintain grass heights between 150 to 300mm. Mowing should be timed to reduce availability of grass seed.

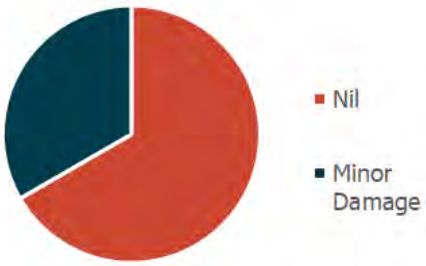
Monitoring: Commonly observed during monitoring activities. Easily distinguished by its unmistakable grey and pink plumage.

General Recommendations: Lethal control of this species may be required following increases in abundance on the airfield. Increasing harassment time-frames prior to aircraft movements may assist in reducing strike incidence with this species.

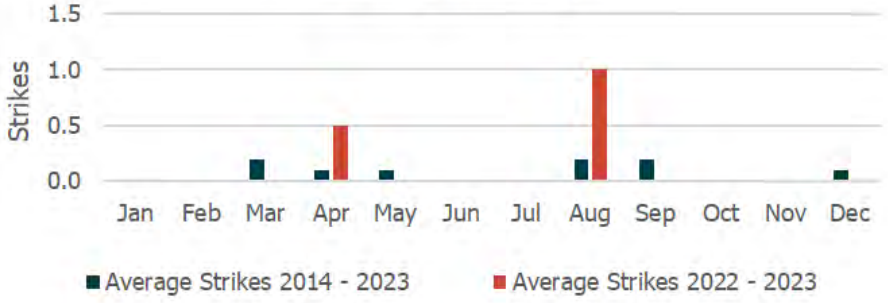
Effect on flight



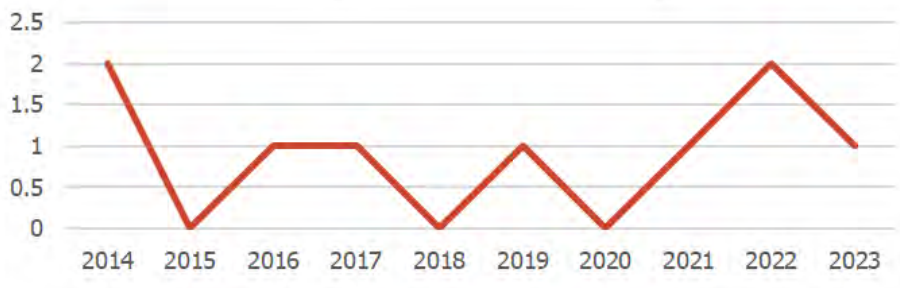
Damage to aircraft



Strike History



Ten-year strike history



Masked Lapwing

Vanellus miles

Image source: www.birdlife.org.au

Hazard Ranking:	Very-High
Mass (g):	360
Strikes 2022 - 2023:	0 Nil strikes recorded in preceding 10 years
Flocking tendency:	Normally reside in pairs, but will form large flocks outside of the breeding season.
Preferred habitat:	Prefer to breed in modified grasslands, including airport environments. Inhabits marshes, mudflats, beaches and grasslands.
Breeding season:	November to May.
Diet:	Primarily insectivorous - most food is obtained just below the surface of the ground.

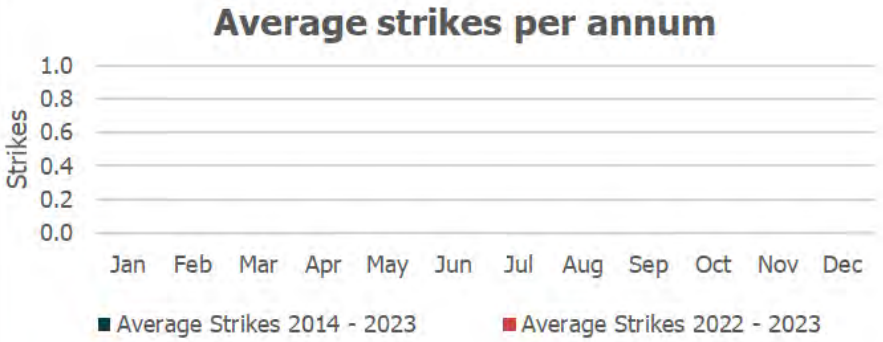
Active Management: This species may become very territorial during the breeding season. Territorial behaviour can be mitigated through the implementation of an egg and nest removal regime (although permit allowances should be considered prior to beginning such a program) in tandem with normal harassment activities.

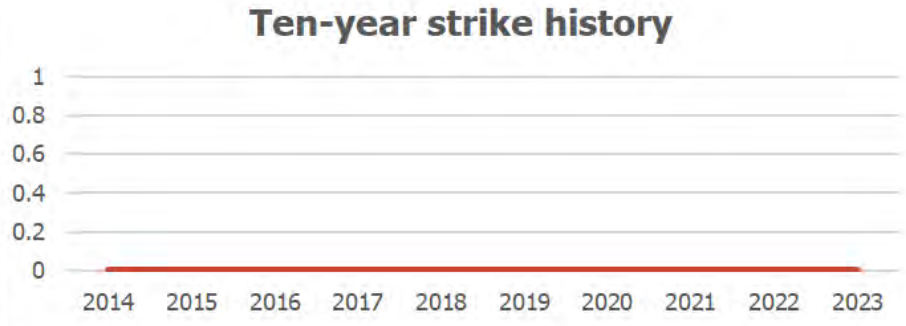
Passive Management: Maintaining grass heights ~300 mm may help discourage Masked lapwings from utilizing airside grasslands. Increasing grass height will lower this species' ability to detect predators, nest and forage. Discourage breeding behaviour and nesting (removal of egg and nests should be conducted as early as possible to reduce territorial behaviour).

Monitoring: Masked lapwings are present at ASA throughout the year.

General Recommendations: Persistent day-time and night-time harassment activities - including egg and nest destruction - are likely to limit this species' use of airport land. Use of thermal imagery to aid in detection of this species' movements during nighttime hours and increase accuracy of harassment efforts when this species is most active.

Nil strikes recorded in the preceding ten years, included in hazard table due to prevalence in on airfield surveys and harassment.





Red-tailed black-cockatoo

Calyptorhynchus banksii

Image source: www.birdlife.org.au

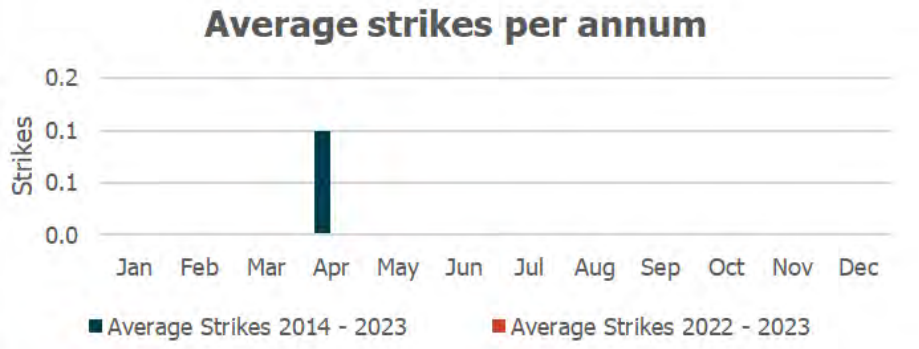
Hazard Ranking:	Very-High
Mass (g):	720
Strikes 2022 - 2023:	0 Nil strikes recorded in 2022 - 2023
Flocking tendency:	Often forms large flocks, although may also occur in pairs and trios.
Preferred habitat:	Eucalyptus forests or woodlands. Often seen in adjacent areas of woodlands or shrublands, especially if they have experienced fire recently.
Breeding season:	March to September.
Diet:	Predominantly grass seeds and seeds extracted from the hard seed pods of Eucalyptus, Casuarina and Banksia trees. Occasionally feed on insect larvae.

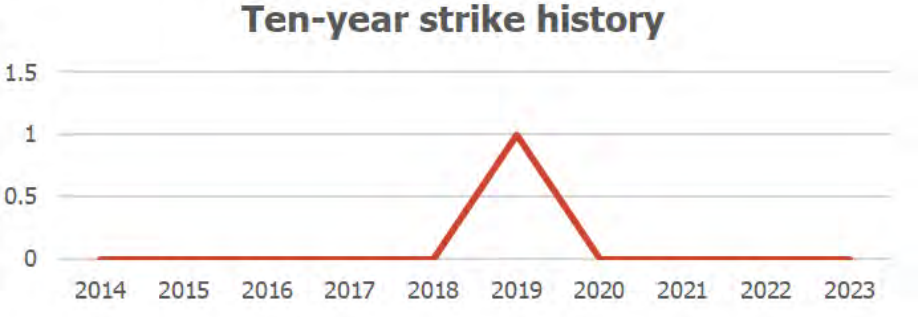
Active Management: As this species may form large flocks, initiation of harassment activities before flocks form, when only small numbers of birds are present, can help mitigate strike risk.

Passive Management: Red-tailed black-cockatoos are attracted to sites with high seed availability. Ensure that no preferred fodder species from the Eucalyptus, Casuarina or Banksia genera are available on the airport.

Monitoring: Red-tailed Black-cockatoos are described as dispersive, meaning that they move away from where they were born to where they breed. They may also breed in separate locations to where they reside. They also appear to move around in response to seasonal food availability. Flocks of this species are often seen flying high, returning from feeding areas to roost sites in large trees along the banks of rivers or streams.

General Recommendations: Removal of preferred fodder vegetation if present on airport land. Issue or an ERSA or NOTAM may be required if flocks are continually observed flying near the airport.





Australian magpie

Gymnorhina tibicen

Image source: www.birdlife.org.au

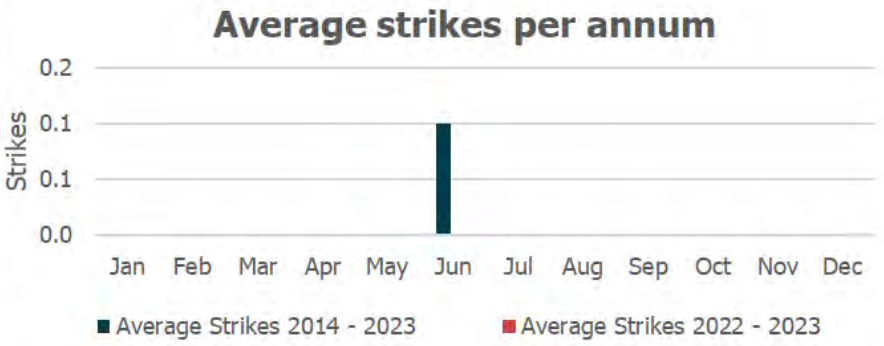
Hazard Ranking:	High
Mass (g):	330
Strikes 2022 - 2023:	0 Nil strikes recorded in 2022 - 2023
Flocking tendency:	Breed in pairs. Territories may include large numbers of birds (up to 20).
Preferred habitat:	Reside in areas with a combination of trees and open areas. Common in modified grasslands, such as airport environments.
Breeding season:	June to December - may display territorial nesting behaviour during this time.
Diet:	Primarily insectivorous - typically forages along the ground searching for insects and their larvae.

Active Management: Physical dispersal and harassment methods. This species may become very territorial during the breeding season. Nesting should not be permitted on the airfield.

Passive Management: Maintaining grass heights ~300 mm may help discourage foraging behaviour. Australian magpies can thrive in modified environments. Removal of perching infrastructure, food sources and breeding habitat can help to reduce their presence on site.

Monitoring: Identified by their distinctive black and white plumage, but may be confused with similar-looking species, such as the magpie-lark.

General Recommendations: Careful management of anthropogenic food sources and nesting areas. Removal of perching infrastructure (or provision of bird spikes in known perching areas) may help mitigate hazards associated with this species.



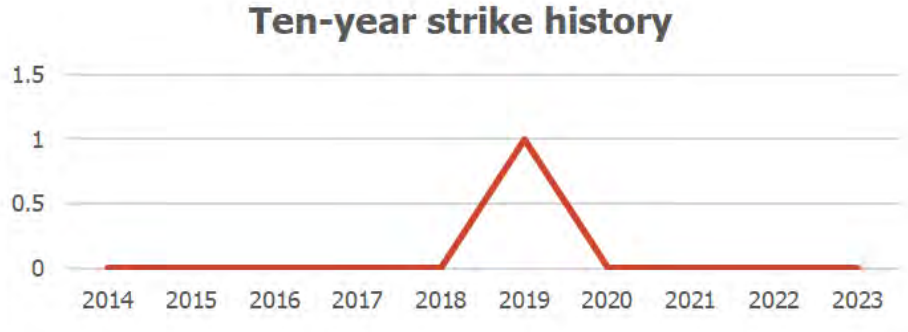


Image source: www.birdlife.org.au

Australian Ringneck

Barnardius zonarius

Hazard Ranking:	High	
Mass (g):	220	
Strikes 2022 - 2023:	0	Nil strikes recorded in preceding 10 years
Flocking tendency:	Normally reside in pairs, but will form small flocks.	
Preferred habitat:	Usually observed foraging on the ground during dawn and dusk and resting throughout the day. This species nests in hollow bearing trees and observed in pairs or small flocks.	
Breeding season:	August - December	
Diet:	Seeds, insects, nectar and fruit	

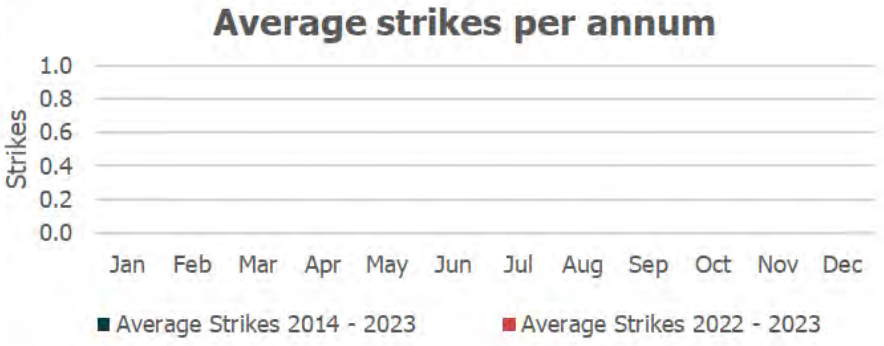
Active Management: Physical dispersal and harassment methods. Increased vigilance for this species in the early mornings and later afternoons.

Passive Management: Removal of woody debris, as this species may nest on rotting wood however prefers hollows. This species has been observed nesting in light towers at ASA. Consistent grass management and removal of seed heads, and any flowering vegetation within proximity of the site. This species feeds mainly on the ground, but may also feed in shrubs in the morning and later afternoon.

Monitoring: Present all year round, limited attractiveness airside if grass seed load kept low, however transiting birds elevate the strike hazard.

General Recommendations: Monitoring of hollows airside in vegetation and for nesting birds in airfield infrastructure. Keeping seed load low on the airfield to reduce foraging resource.

Nil strikes recorded in the preceding ten years, included in hazard table due to prevalence in on airfield surveys and harassment.



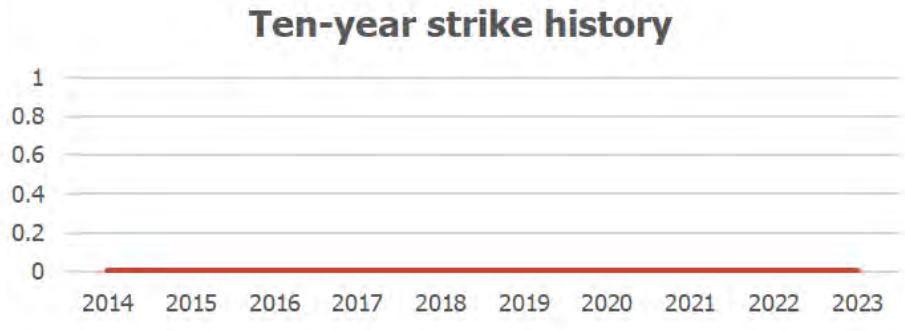


Image source: www.birdsinbackyards.net

Black kite

Milvus migrans

Hazard Ranking:	High
Mass (g):	625
Strikes 2022 - 2023:	17
Flocking tendency:	Normally solitary or in pairs, but may display gregarious behaviour and form large flocks, particularly for feeding.
Preferred habitat:	Open or partially wooded areas, typically near water. Often observed in large numbers near farmlands, abattoirs and landfills.
Breeding season:	Opportunistic can be year round but specifically from June to December.
Diet:	Opportunistic hunters and scavengers, feeding on fish, small birds, reptiles, mammals as well as insects and frogs.

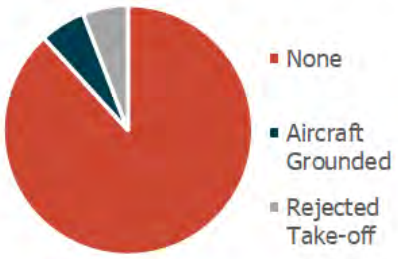
Active Management: Use of long-range pyrotechnics coupled with persistent negative audio and visual cues.

Passive Management: Remove carrion from airfield or from areas surrounding the airport immediately. Conduct controlled burning and grass cutting at night, when this species is not active. Increase harassment activities during and after controlled burns (to mitigate bird attraction to prey). Removal of perching infrastructure (particularly if it is observed to be in use by kites).

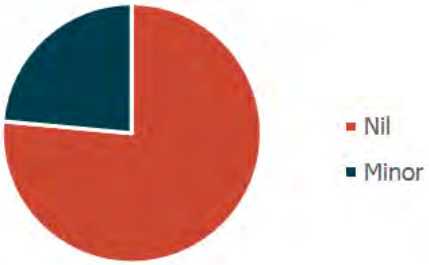
Monitoring: Differentiating black kites and whistling kites may be difficult due to their similar appearances. Black kites more commonly form large groups, and are slightly smaller in body size.

General Recommendations: Reduce potential for aerial activity (e.g.; foraging and thermalling) through use of long-range dispersal methods. Mowing activities should occur outside of daylight hours.

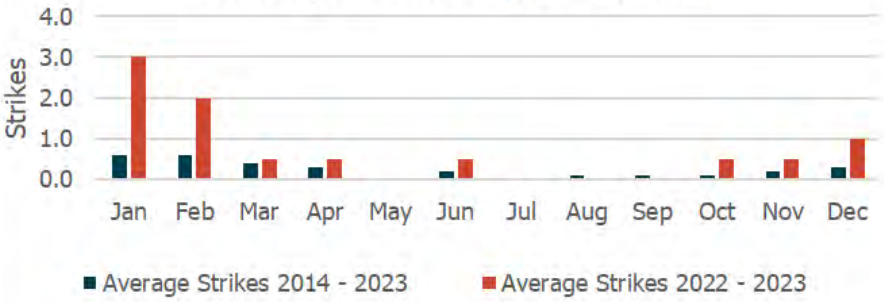
Effect on flight



Damage to aircraft



Average strikes per annum



Ten-year strike history

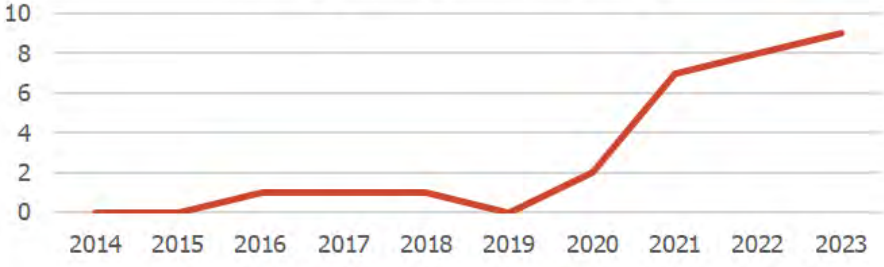


Image source: https://commons.wikimedia.org/

Black-shouldered kite

Elanus axillaris

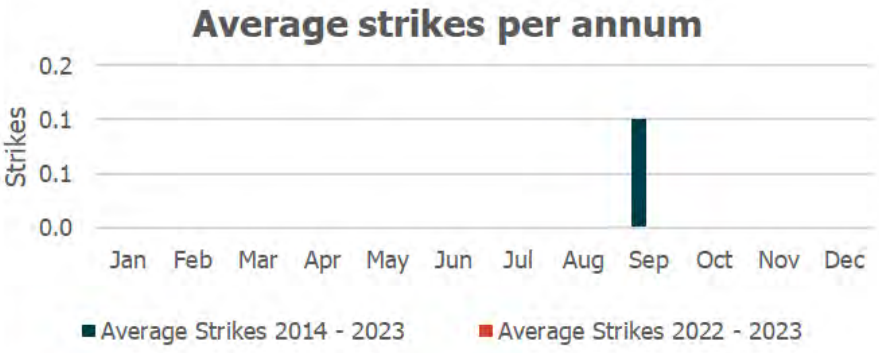
Hazard Ranking:	High	
Mass (g):	290	
Strikes 2022 - 2023:	0	Nil strikes recorded in 2022 - 2023
Flocking tendency:	Normally solitary or in pairs, but form lifelong monogamous pairs for breeding.	
Preferred habitat:	Prefers open grassland or open woodland habitat.	
Breeding season:	August to January, may have multiple clutches in good seasons.	
Diet:	Primarily feed on small mammals but will opportunistically take other small prey.	

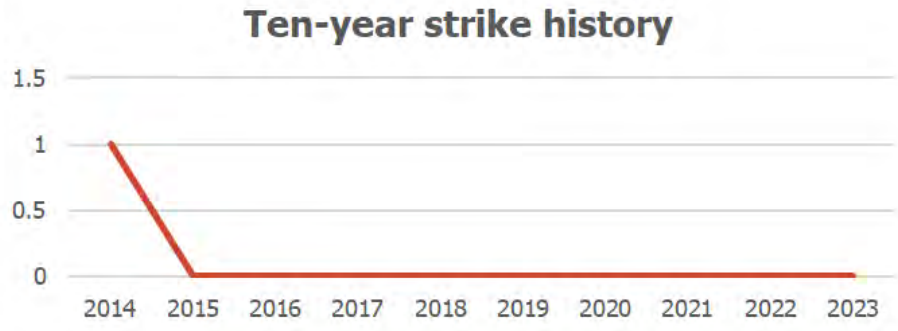
Active Management: Use of long-range pyrotechnics coupled with persistent negative audio and visual cues.

Passive Management: Removal of perching infrastructure (particularly if it is observed to be in use by kites).

Monitoring: A small distinctive raptor easily identifiable by its white and pale grey plumage with distinctive black shoulders. Will often hover similar to nankeen kestrels.

General Recommendations: Reduce potential for aerial activity (e.g.; foraging and thermalling) through use of long-range dispersal methods. Removal of perching locations or installation of anti-perching deterrents.





European Rabbit

Oryctolagus cuniculus

Image source: https://www.wallpaperflare.com/

Hazard Ranking:	High	
Mass (g):	1,600	
Strikes 2022 - 2023:	0	Nil strikes recorded in 2022 - 2023
Flocking tendency:	Can aggregate in groups of up to 10 individuals during breeding season.	
Preferred habitat:	Varied from deserts to open grasslands and coastal plains. Prefers habitat where there is soil for digging burrows.	
Breeding season:	Continuously, particularly if they have access to a regular food source.	
Diet:	Grasses, herbs, roots and seeds.	

Active Management: Immediate harassment will assist in mitigating imminent strike risks.

Harassment methods proven effective for this species include: pyrotechnics (short- and long-range), stock whips, on-foot approach (loud claps help), sirens, lights, starter pistols, and vehicular approach.

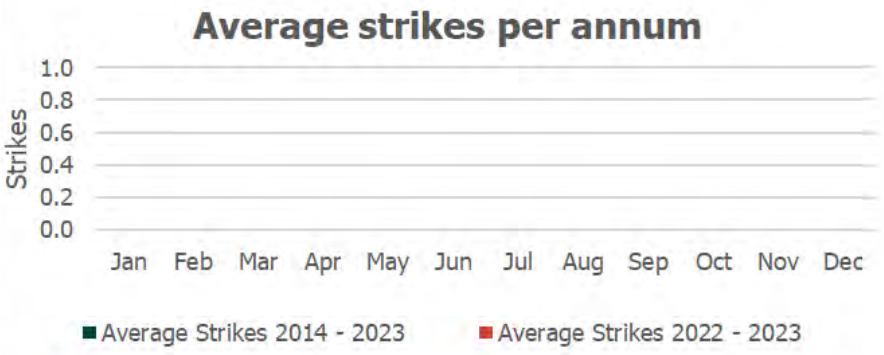
Culling of this species is recommended if numbers increase to a level that creates an increased strike hazard.

Passive Management: Regular fence inspections ensuring no breaches under fence to allow access of rabbits.
Maintain grass heights between 150 and 300 mm.
Review drainage to ensure minimal pooling of water or waterlogged areas (by filling depressions and increasing slope of drainage sides to 4:1).

Monitoring: Use of thermal camera to spot at night when they are most active.

General Recommendations: Trapping and culling to maintain the population low, use of thermal camera to monitor in movement areas.

Nil strikes recorded in the preceding ten years, included in hazard table due to prevalence in on airfield surveys and harassment.



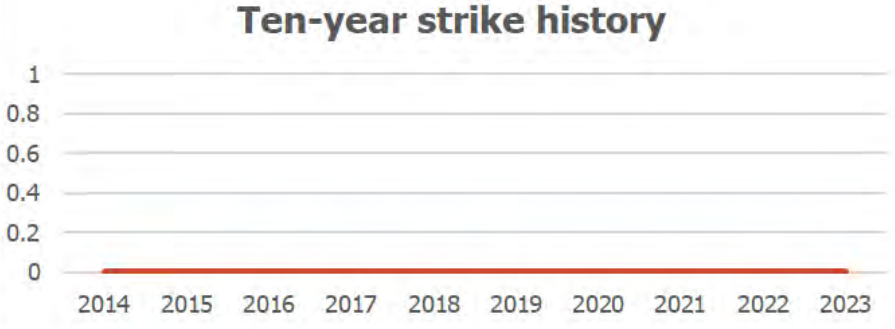


Image source: https://www.wallpaperflare.com/

Feral Cat

Felis catus

Hazard Ranking:	High
Mass (g):	5,000
Strikes 2022 - 2023:	0 Nil strikes recorded in 2022 - 2023
Flocking tendency:	Numbers of feral cats can vary depending on habitat, airport environments have the capacity to support a high number of feral cats.
Preferred habitat:	Found all over Australia in all habitat types, are well adapted to live in built up environments.
Breeding season:	Feral cats can breed at any time of the year and are capable of multiple litters.
Diet:	Opportunistic hunters and scavengers and will feed on a wide range of invertebrates, reptiles, mammals and birds up to their own size.

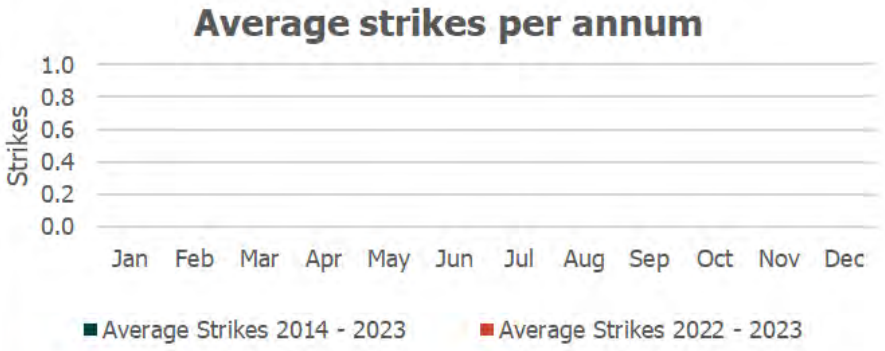
Nil strikes recorded in the preceding ten years, included in hazard table due to prevalence in on airfield surveys and harassment.

Active Management: Use of traps and lethal control of feral cats where safe to cull on sight. Use of thermal camera at night to monitor within the movement areas.

Passive Management: Regular surveys with thermal camera and traps used when sighted, discourage feeding of feral cats by aircraft operators. Ensuring bins are regularly emptied and use of bins that do not enable scavenging by feral mammals.

Monitoring: Use of thermal camera to spot at night when they are most active.

General Recommendations: Trapping and culling to maintain the population low, use of thermal camera to monitor in movement areas.



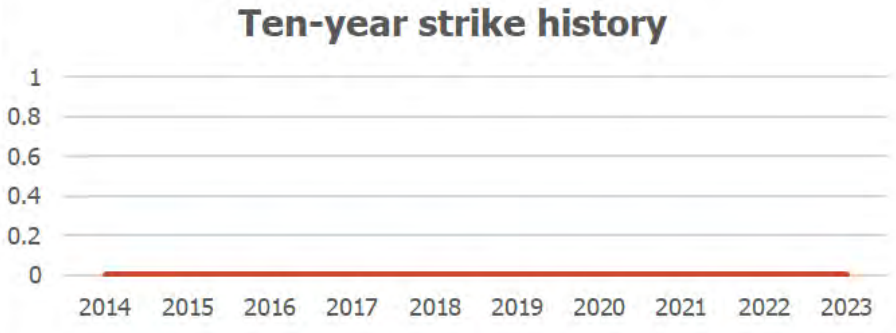


Image source: www.birdlife.org.au

Magpie-lark

Grallina cyanoleuca

Hazard Ranking:	High
Mass (g):	90
Strikes 2022 - 2023:	0 Nil strikes recorded in 2022 - 2023
Flocking tendency:	Form mated pairs during the breeding season. Often occur in high abundance in modified habitats.
Preferred habitat:	Found in almost all habitats except rainforests and the driest deserts of Australia.
Breeding season:	September to March.
Diet:	Insectivorous an will often forage on the ground in search of small invertebrates.

Active Management: Removal of nesting material during the breeding season (in accordance with permit allowances).

Passive Management: Maintaining grass heights ~300 mm may help discourage foraging behaviour. Magpie-larks can thrive in modified environments. Removal of perching infrastructure, food sources and breeding habitat can help to reduce their presence on site.

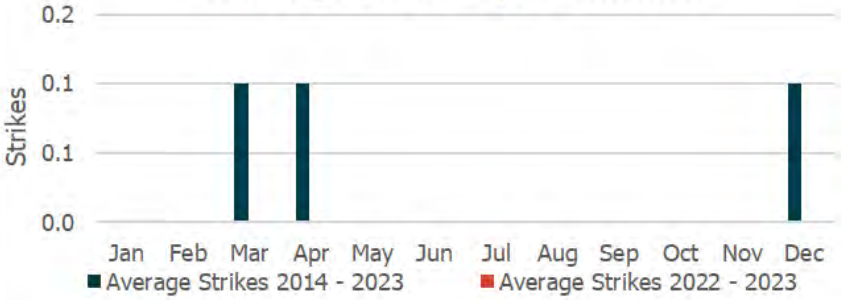
Monitoring: Identified by their distinctive black and white plumage, but may be confused with similar-looking species, such as the Australian magpie (which is larger in size).

General Recommendations: Careful management of anthropogenic food sources and nesting areas. Removal of perching infrastructure (or provision of bird spikes in known perching areas) may help mitigate hazards associated with this species.

Effect on flight

Damage to aircraft

Average strikes per annum



Ten-year strike history

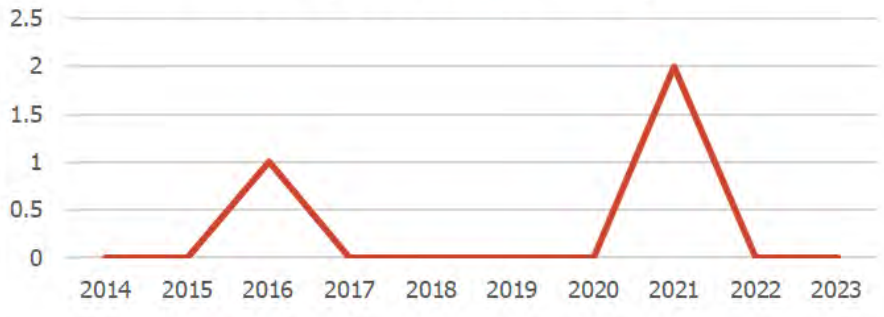


Image source: www.birdlife.org.au

Nankeen kestrel

Falco cenchroides

Hazard Ranking:	High
Mass (g):	185
Strikes 2021 - 2022:	10
Flocking tendency:	Generally a solitary raptor, unless in breeding pairs - although they may occur in high abundance in some habitats, such as airports.
Preferred habitat:	Open grasslands and woodlands, croplands and low shrublands. This species also has an affinity for modified grasslands, including airport environments.
Breeding season:	Eggs are laid in late winter and incubated by the female.
Diet:	Feeds on small mammals, birds and insects.

Active Management: Use of long-range dispersal methods coupled with persistent negative audio and visual cues. May be difficult to disperse due to their high intelligence.

Passive Management: Remove carrion from airfield or from areas surrounding the airport immediately. Conduct controlled burning and grass-cutting at night, when this species is not active. Increase harassment activities during and after controlled burns (to mitigate bird attraction to prey). Removal of perching infrastructure, or provision of bird spikes in popular perching areas.

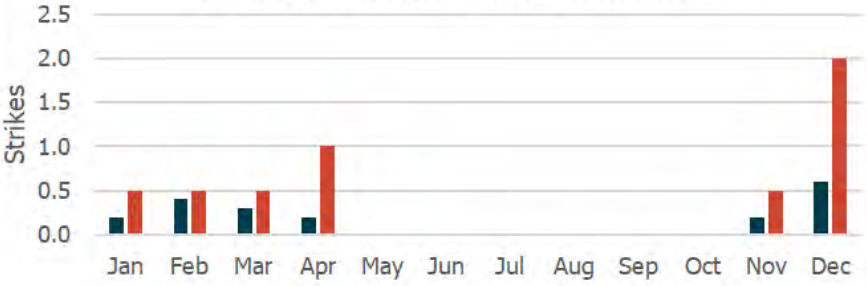
Monitoring: Abundant at the airport throughout the year. Strikes also occur throughout the year, with a peak in the early months. May be confused with other species of falcon or goshawk.

General Recommendations: Maintenance of grass heights between 150 - 300 mm will make it difficult for nankeen kestrels to detect prey. Removal or management of popular perching sites will also help reduce foraging opportunities for this species.

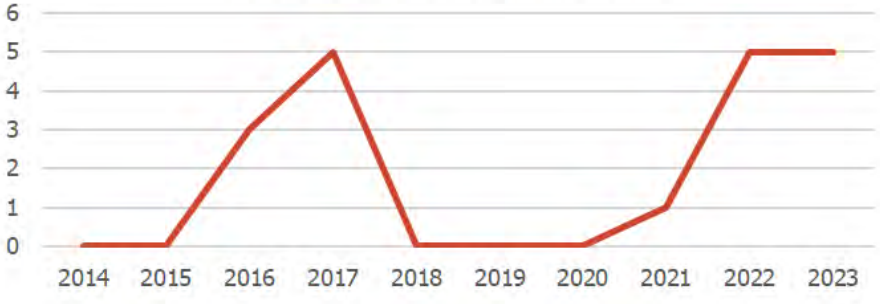
Effect on flight

Damage to aircraft

Average strikes per annum



Ten-year strike history



Oriental Plover

Charadrius veredus

Image source: https://commons.wikimedia.org/

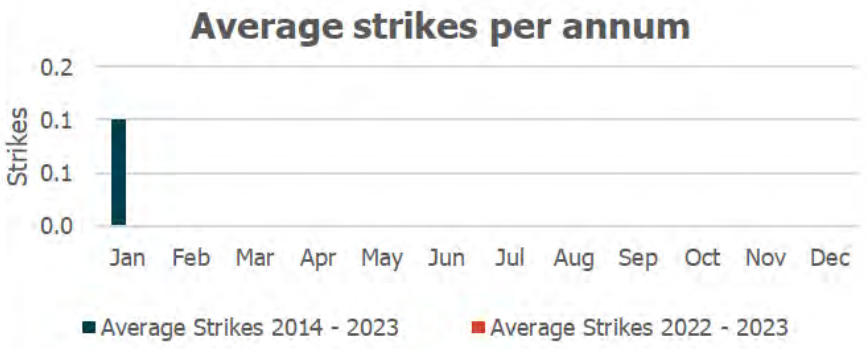
Hazard Ranking:	High	
Mass (g):	95	
Strikes 2022 - 2023:	0	Nil strikes recorded in 2022 - 2023
Flocking tendency:	Often in flocks of under 5 individuals but flocks can be 100+ birds	
Preferred habitat:	Open grasslands with sparsely vegetated short grass	
Breeding season:	April - July(Mongolia)	
Diet:	Insects	

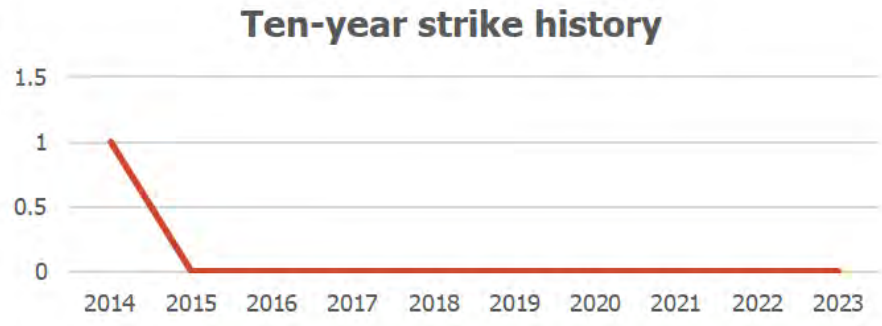
Active Management: Harassment methods proven effective for managing the Oriental Plover at airports include: vehicular approach, sirens, on-foot approach, stock whips, and pyrotechnics (both short- and long-range) for more persistent birds or larger flocks.

Passive Management: Maintain grass heights below 150mm within gable markers and maximum 300 mm around the airfield to aide in detection. Areas where they are observed to regularly congregate consider IVM treatment as they will only remain while there is ample insect supply.

Monitoring: This species is typically observed in flocks of 1-30 individuals, they prefer the grassed area opposed to the sealed surface but whilst transiting or if spooked the hazard of strike is increased.

General Recommendations: Regular and aggressive harassment if they are established. When first detected heavy and intense dispersal to encourage to continue to an alternative location to feed is recommended. Once established they can be difficult to move on whilst there is an abundant food source.





Torresian & Little Crow

Corvus orru & Corvus bennetti

Image source: www.birdlife.org.au

Hazard Ranking:	High
Mass (g):	485 - 550
Strikes 2022 - 2023:	0 Nil strikes recorded in preceding 10 years
Flocking tendency:	Can form flocks of up to twenty unparied individuals and share common roost sites.
Preferred habitat:	Open forests and woodlands, taller scrub lands and dry areas. Also found around farms and well adapted to the urban environment. Requires tall trees to nest typically.
Breeding season:	August to January
Diet:	Grain, fruit, insects and other invertebrates, eggs, anthropogenic food sources and carrion.

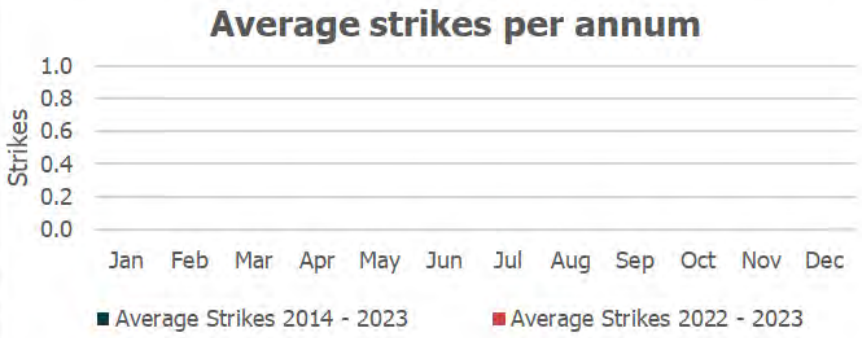
Active Management: Physical dispersal and harassment methods. Nesting should not be permitted on the airfield.

Passive Management: Maintaining grass heights ~300 mm may help discourage foraging behaviour. Crow species can thrive in modified environments. Removal of perching infrastructure, food sources and breeding habitat can help to reduce their presence on site.

Monitoring: Torresian crow are larger than the little crow in size, Torresian crow have a square tipped tail compared to the rounded tip of the little crow. Beak size differs between the two specie with the little crows beak being smaller in length than their head opposed to the Torresian with a bill longer than its head.

General Recommendations: Careful management of anthropogenic food sources and nesting areas. Removal of perching infrastructure (or provision of bird spikes in known perching areas) may help mitigate hazards associated with this species.

Nil strikes recorded in the preceding ten years, included in hazard table due to prevalence in on airfield surveys and harassment.



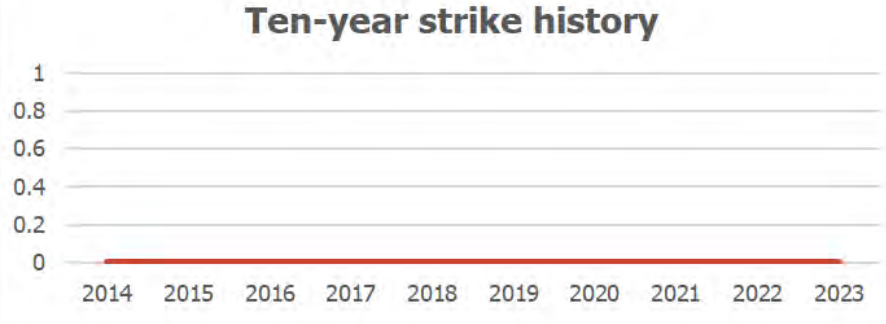


Image source: www.birdlife.org.au

Wedge-tailed Eagle

Aquila audax

Hazard Ranking:	High	
Mass (g):	3,950	
Strikes 2022 - 2023:	0	Nil strikes recorded in preceding 10 years
Flocking tendency:	Tends to fly solitary or in pairs.	
Preferred habitat:	Found from sea-level to the alpine regions, but prefers forest and wooded land and open country for hunting. Generally avoids coastal heath and rainforest	
Breeding season:	Year round	
Diet:	Live prey and carrion, rabbits, small mammals, reptiles birds and other mammals.	

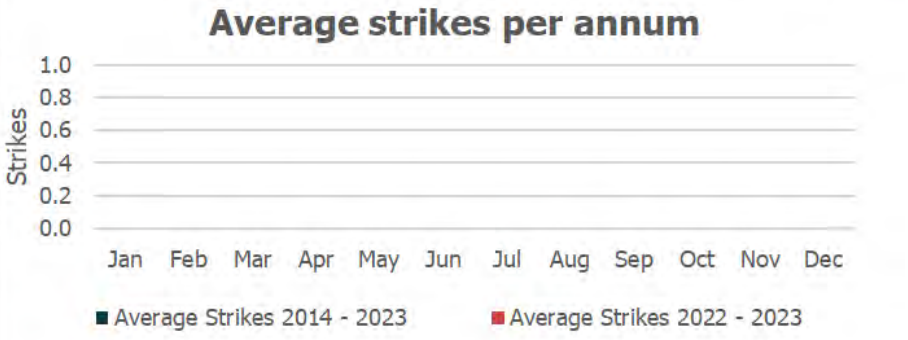
Active Management: Physical dispersal and harassment methods. Pyrotechnics (Short and long-range), lights, & stock whips.

Passive Management: Management of prey species such as rabbits and other small mammals and birds, which may lure eagles to the airfield. Remove all carrion attractants from the airfield to landfill. Reduce raptor perching options on airfield (remove unnecessary signs, dead trees etc.). Monitor transit paths (time of day/year, height of transit) and communicate hazards to airlines and aircraft operators.

Monitoring: Wedge-tailed eagles are present at ASA throughout the year.

General Recommendations: Monitoring of approaches and departures during RPT operations, removal of carrion and strike remains when ever located.

Nil strikes recorded in the preceding ten years, included in hazard table due to prevalence in on airfield surveys and harassment.



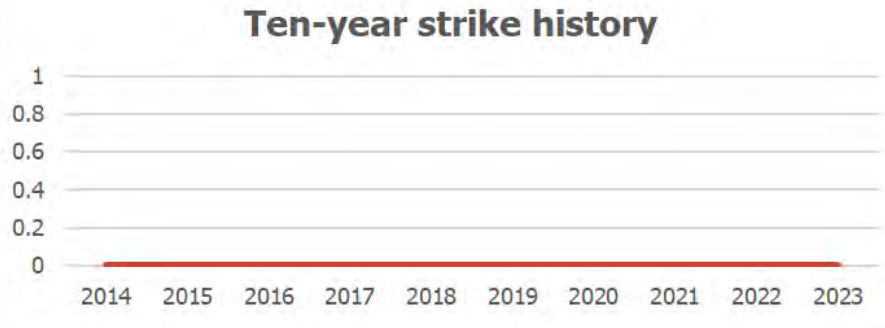


Image source: https://commons.wikimedia.org/

Whistling kite

Haliastur sphenurus

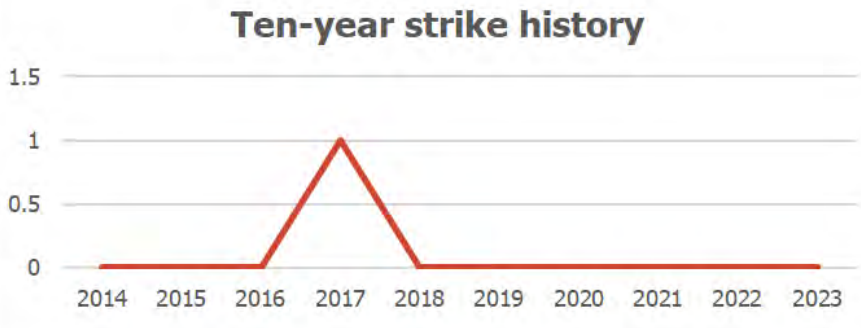
Hazard Ranking:	High
Mass (g):	910
Strikes 2022 - 2023:	0 Nil strikes recorded in 2022 - 2023
Flocking tendency:	Normally solitary or in pairs, but may display gregarious behaviour and form large flocks, particularly for feeding. Individual birds often found within flocks of black kites.
Preferred habitat:	Open or partially wooded areas, typically near water.
Breeding season:	Opportunistic can be year round but specifically from June to October.
Diet:	Opportunistic hunters and scavengers, feeding on fish, small birds, reptiles, mammals as well as insects and frogs.

Active Management: Use of long-range pyrotechnics coupled with persistent negative audio and visual cues.

Passive Management: Remove carrion from airfield or from areas surrounding the airport immediately. Conduct controlled burning and grass cutting at night, when this species is not active. Increase harassment activities during and after controlled burns (to mitigate bird attraction to prey). Removal of perching infrastructure (particularly if it is observed to be in use by kites).

Monitoring: Differentiating black kites and whistling kites may be difficult due to their similar appearances. Whistling kites tails are more rounded compared to the forked tail of a black kite, often their distinctive call is hear before sighting the bird.

General Recommendations: Reduce potential for aerial activity (e.g.; foraging and thermalling) through use of long-range dispersal methods. Mowing activities should occur outside of daylight hours.



Attachment 2: Strike history

Table 1. ASA annual wildlife strike trend summary for calendar years 2003-2023.

Year	Total no. strikes	No. strikes / 10,000 aircraft movements	Total no. damaging strikes	Comments (e.g., species most frequently struck, changes to airport reporting processes that may influence data)
2003	0*	0.0	0	No confirmed, six “suspected” but at least 4 should be regarded as confirmed.
2004	0*	0.0	0	No confirmed strikes, however 4 carcasses found on RWY listed as suspected and should be regarded as confirmed.
2005	0*	0.0	0	No confirmed strikes, however 4 carcasses found on RWY listed as suspected and should be regarded as confirmed.
2006	0	0.0	0	No strikes recorded for the entire year.
2007	15	6.3	1	No pattern.
2008	12	4.6	0	Includes 7 birds struck in 4 incidences on 1 day.
2009	9	8.4	0	A mixture of species.
2010	10	21.3	0	9 Zebra Finch in 1 flight. High rainfall year – mostly in Jan, Feb & Jun.
2011	40	15.7	0	22 Black Kites struck within the CY. One Bearded Dragon. High rainfall Jan- Mar.
2012	3	1.3	0	Too few strikes to analyse.
2013	9	4.3	0	A mixture of species.
2014	17	6.6	5	Seven different species.
2015	12	5.0	0	Most strikes classified as “unknown”.
2016	23	10.1	0	Most strikes with nankeen kestrels and zebra finches (three each). One strike with a brown falcon resulted in an aircraft returning to aerodrome.
2017	19	7.8	0	The Majority of strikes with nankeen kestrels. One strike with an Australian pratincole resulted in rejected take-off.
2018	14	18.47	0	Most strikes with Australian pratincole (3). Black-faced wood swallow and crested pigeon struck twice.
2019	4	6.14	0	One strike each with Galah, Red-tailed black cockatoo and Australian magpie. One strike with an unknown species.
2020	4	11.75	1	One strike with an Australian pratincole and black kite. One damaging strike with an unknown species.

2021	40	21.91	3	14 different species struck, 7 strikes involved black kite and 1 involved brown falcon. Four strikes involved more than one animal struck.
2022	50	27.47	4	13 different species struck, 8 strikes involved black kites and 9 involved brown falcon. Three strikes involved more than one animal struck.
2023	32	17.10	4	Seven different species struck, nine strikes involved black kites and five involved nankeen kestrel. Nine strikes were not identified to species level. Five strikes involved more than one animal struck.

Attachment 3: Bird Risk Assessment Model for Airports and Aerodromes

Consequence

Body Mass	Examples	Body Mass Score
< 20 g	Welcome Swallow	1
21-50 g	House Sparrow, Skylark	2
51-200 g	Common Starling, Magpie-Lark, Nankeen Kestrel	4
201-1000 g	Domestic Pigeon, Galah, Silver Gull, Australian Magpie, Masked Lapwing, small ducks	8
1-5 kg	White Ibis, Straw-necked Ibis, large duck	16
> 5 kg	Australian Pelican, Cape Barren Goose	32

Flock Size	Examples	Flock Score
Usually solitary or widely spaced	Nankeen Kestrel, Skylark	1
Often in loose flocks	Australian Magpie, Little Raven, Magpie-Lark, Welcome Swallow, Silver Gull	2
Often in tight flock	House Sparrow, Galah, Little Corella, lorikeets, ducks, ibis	4

Flight Behaviour	Examples	Flight Score
Rapid direct	Little Raven, Australian Magpie, ducks, ibis	1
Slow, meandering, erratic, hovering, maneuverable	Nankeen Kestrel, Galah, Common Starling, swallows, Magpie lark, Silver Gull, Australian Pelican, Masked Lapwing	2

Consequence Category	Consequence Score*
Extreme	64-128
Very High	32
High	16
Medium	8
Low	4
Very Low	1-2

* = body mass score x flock score x flight score

Likelihood

Abundance	Very High	High	Medium	Low
Quantitative				
Relative abundance (% of total birds counted)	>1	>0.1	>0.01	<0.01
Frequency of occurrence (% surveys species scored)	>75	50-75	25-50	<25
Area of occurrence (% airport land used)	>75	50-75	25-50	<25
Qualitative				
Abundance	Many	Some	Few	Occasional
Frequency of Occurrence	Most	Some	Few	Occasional
Area of Occupation	Most	Some	Few	Occasional
Seen close to runways	Often	Some	Occasionally	Rarely

Bird Strikes	Very High	High	Medium	Low
Quantitative				
Relative Frequency	>10%	5 – 10%	2 – 5%	<2%
Qualitative				
Apparent Frequency	Often	Some	Occasional	Rare/none

*Relative frequency of bird strikes at the airport was used for determining likelihood for the wildlife risk assessment for the 2022 – 2023 review period. Additionally, relative abundance in wildlife surveys and harassment data was compared to the strike data and the highest likelihood of the three data sets was adopted for each species. The categories for 'likelihood' were determined based off the percentage of each species representation in the overall number of bird strikes for which the species was identified at ASA (i.e., strikes involving 'unknown' species were omitted from the risk assessment). Thresholds for 'likelihood' have been determined in accordance with the Paton method, which stipulates that approximately ten species should be allocated "very high" or "high" hazard rankings.

Attachment 4: ADG Risk Register – WHMP ASA

Risk No.	Objective - What is the business objective / KPI?	Risk - what could prevent achievement of this objective?	Risk Owner - who is accountable for managing this risk?	Existing Controls	Risk Analysis Consequence (C) and Likelihood (L)				Proposed Controls - What more can be done to manage the risk	Status on implementation of proposed controls	Who is to finalise the action?	Finalisation Date	Risk Analysis (Consequence and Likelihood)			
					C	L	Score	Level of Risk					C	L	Score	Level of Risk
1	To reduce wildlife strikes to aircraft	**Grass cutting** some areas requiring grass cutting and located airside and are close to aircraft operations. Grass cutting may attract wildlife (e.g; species that forage for seeds to hunt for exposed prey, such as black kites or other raptors).	ASA	-Grass cutting undertaken after hours when aircraft activity is low -RWY inspections carried out during slashing activities -AROs monitor and harass as required -Grass cutting is stopped if an increased in wildlife strike risk is identified	MJ	UL	18.75	M	-Increased regularity of grass cutting as required	-	Airport Manager	-	MJ	UL	18.75	M
2	To reduce wildlife strikes to aircraft	**Airside waste disposal** Improper use and or maintenance of airside waste bins by tenants and operations can attract scavenging species	Airport Manager	-ARO inspect bins daily -Operations team are informed by maintenance if bins are overfilled	MJ	R	7.5	L	-	-	-	-	MJ	R	7.5	L

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					C	L	Score	Level of Risk					C	L	Score	Level of Risk
4	To reduce wildlife strikes to aircraft	**Earthworks** wildlife may be attracted to stockpiles as it provides foraging habitat and shelter for some species.	Airport Manager	-Construction Environment Management Plan and/or methods of Work Plans for all airfield works are required to assess chance of increased wildlife activity	MJ	R	7.5	L	-Removal of stockpiles	-	Airport Manager ASSM	Ongoing	MJ	R	7.5	L
5	To reduce wildlife strikes to aircraft	**Perches** buildings and other infrastructure provide perching habitat for a variety of species	Airport Manager ASSM	-Anti-perching devices are installed around the airport -Perching infrastructure considered in development of new designs	MJ	UL	18.75	M	-Audit on airfield conducted to determine areas in need of perching controls -Additional installation of spikes provided where necessary -Removal of unused airport infrastructure	Future action	Airport Manager ARO	Ongoing	MJ	R	7.5	L
6	To reduce wildlife strikes to aircraft	**Nesting** species nesting in operational areas increases likelihood of strikes	Airport Manager ARO	-Removal and destruction of nests from operational areas	MJ	R	7.5	L	-	-	-	-	MJ	R	7.5	L
7	To reduce wildlife strikes to aircraft	**Wild dogs** feral dogs on site present a strike risk	Airport Manager ARO	-Fence is configured to restrict entrance of dogs to airfield -Control programs are implemented if a need is identified	MJ	R	7.5	L	-	-	-	-	MJ	R	7.5	L

Risk No.	Objective - What is the business objective / KPI?	Risk - what could prevent achievement of this objective?	Risk Owner - who is accountable for managing this risk?	Existing Controls	Risk Analysis Consequence (C) and Likelihood (L)				Proposed Controls - What more can be done to manage the risk	Status on implementation of proposed controls	Who is to finalise the action?	Finalisation Date	Risk Analysis (Consequence and Likelihood)			
					C	L	Score	Level of Risk					C	L	Score	Level of Risk
8	To reduce wildlife strikes to aircraft	**Fencing** inadequate perimeter fencing can result in increased terrestrial wildlife hazard	ASSM EM Airport Manager ARO	-ARO regularly inspect ASA perimeter fence -Perimeter fence is repaired and maintained as needed -All access points are closed unless in use	MJ	R	7.5	L	-	-	-	-	MJ	R	7.5	L
9	To reduce wildlife strikes to aircraft	**Lighting** airport lighting attracts insects which attract predatory species (e.g; microbats and insectivorous birds)	ASSM Airport Manager	-Lighting designs must meet CASA regulations -Lights in terminal car park after prior observation that wildlife were attracted	MJ	R	7.5	L	-	-	-	-	MJ	R	7.5	L
10	To reduce wildlife strikes to aircraft	**Drainage** temporary waterbodies, including blocked waterways provide a necessary resource for wildlife and provide potential for wading birds	ASSM PM Airport Manager ARO	-Runway design includes grooving and a one-way flow water gradient -Daily inspections undertaken by AROS -Vegetation that may block drains is regularly removed	MJ	UL	18.75	M	-Ongoing inspections and monitoring is conducted to ensure blockages are managed	-	Airport Manager ARO	-	MJ	R	7.5	L
11	To reduce wildlife strikes to aircraft	**Decommissioned aircraft and not utilised storage** may provide perching or other habitat for wildlife	Airport Manager ASSM Property Manager	-AROs conduct regular monitoring for wildlife -Liaison occurs with aircraft operators as required	MJ	R	7.5	L	-	-	-	-	MJ	R	7.5	L

Risk No.	Objective - What is the business objective / KPI?	Risk - what could prevent achievement of this objective?	Risk Owner - who is accountable for managing this risk?	Existing Controls	Risk Analysis Consequence (C) and Likelihood (L)				Proposed Controls - What more can be done to manage the risk	Status on implementation of proposed controls	Who is to finalise the action?	Finalisation Date	Risk Analysis (Consequence and Likelihood)			
					C	L	Score	Level of Risk					C	L	Score	Level of Risk
12	To reduce wildlife strikes to aircraft	**Anthropogenic Sites Off-airport** may provide artificial resources for local wildlife populations, resulting in inflated risk for some high-risk wildlife	EM External Consultant	-Off-airport sites monitored biennially by external consultant as part of WHMP review	MJ	R	7.5	L	-Off-airport monitoring carried out by external consultants at selected high-risk sites. Changes in population sizes are reported to Airport Manager	-	EM External consultant	Ongoing	MJ	R	7.5	L
13	To reduce wildlife strikes to aircraft	**Landscaping On-airport** select landscaped areas on-airport may attract wildlife to the vicinity of the airport.	EM	-Modifications are made to landscaped areas where wildlife are regularly observed -Landscaped designs use non-attractive vegetation species -Liaison with external consultants occurs where advice is required	MJ	R	7.5	L	-	-	EM	Ongoing	MJ	R	7.5	L
14	To reduce wildlife strikes to aircraft	**Carcasses** scavenging or opportunistic wildlife may be attracted to carcasses on-airport land. Likely species include wild dogs, raptors and magpies.	Airport Manager ARO	-Removal of any carrion from airfield in accordance with WHMP PROs -Regular Aerodrome serviceability inspections -Installation of visual cues (e.g; bunting) to prevent entanglements in airport fencing	MJ	UL	18.75	M	-Regular review of WHM PROs -Serviceability Inspections	-	Airport Manager	Ongoing	MJ	UL	18.75	M

Risk No.	Objective - What is the business objective / KPI?	Risk - what could prevent achievement of this objective?	Risk Owner - who is accountable for managing this risk?	Existing Controls	Risk Analysis Consequence (C) and Likelihood (L)				Proposed Controls - What more can be done to manage the risk	Status on implementation of proposed controls	Who is to finalise the action?	Finalisation Date	Risk Analysis (Consequence and Likelihood)			
					C	L	Score	Level of Risk					C	L	Score	Level of Risk
15	To reduce wildlife strikes to aircraft Execution of effective wildlife management	**Wildlife count data** inaccurate or incorrect data obtained as a result of management may result in the implementation of poor management practices	Airport Manager ARO External consultant	-ARO carries out wildlife counts in accordance with Wildlife Count Procedure -ARO carries out daily checks to determine risk rating of strike -Wildlife Hazard Training	MJ	UL	18.75	M	-Refresher wildlife hazard management training for all staff -Internal annual assessment of AROS both internally and externally	-	Airport Manager ARO	Ongoing	MJ	R	7.5	L
16	To reduce wildlife strikes to aircraft Execution of effective wildlife management	**Wildlife Identification** incorrect identification of species struck or utilizing AA may result in ineffective management implementation	Airport Manager ARO External consultant	-Species unidentifiable following strikes are sampled for DNA -ARO carries out daily checks to determine risk rating of strike -Wildlife Hazard Training Bird ID Guide	MJ	UL	18.75	M	-Refresher wildlife hazard management training for all staff -Internal annual assessment of AROS both internally and externally	Quarterly analysis of wildlife trends ARO refresher	-	-	MJ	R	7.5	L

Risk No.	Objective - What is the business objective / KPI?	Risk - what could prevent achievement of this objective?	Risk Owner - who is accountable for managing this risk?	Existing Controls	Risk Analysis Consequence (C) and Likelihood (L)				Proposed Controls - What more can be done to manage the risk	Status on implementation of proposed controls	Who is to finalise the action?	Finalisation Date	Risk Analysis (Consequence and Likelihood)			
					C	L	Score	Level of Risk					C	L	Score	Level of Risk
17	To reduce wildlife strikes to aircraft	**Stakeholder Engagement** lack of effective communication with airport stakeholders may lead to ineffective management of the locality surrounding the airport	ASA Local government WHMC	-Ensure all stakeholders in the locality are included in the WHMC -Provide feedback to local authorities regarding new developments and revised land-uses -WHMP quarterly report distribution to key stakeholders -Regular WHMWG meetings	MJ	UL	18.75	M	-Increase communication with local government to ensure a framework is in place for assessing developments within 13km of airport	-	Airport Manager	-	MJ	R	7.5	L
18	To reduce wildlife strikes to aircraft	**Aircraft communications** absence of adequate warning systems may result in unsafe conditions for aircraft without pilot knowledge	ASA Local Government Local landholders WHMC	-ARO determination of Daily Wildlife Hazard Level procedure -ARO inform ATC of local wildlife hazards -ATC provide pilots information regarding local conditions -Issue of NOTAM if conditions ensue for an extended period of time -Provision of relevant ERSA -Aerodrome Serviceability checklist -Use of AVCRM	MJ	UL	18.75	M	-WHMWG to review PROs for determining and communication Daily/Weekly Wildlife Hazard Level	-	WHMWG		MJ	R	7.5	L

Risk No.	Objective - What is the business objective / KPI?	Risk - what could prevent achievement of this objective?	Risk Owner - who is accountable for managing this risk?	Existing Controls	Risk Analysis Consequence (C) and Likelihood (L)				Proposed Controls - What more can be done to manage the risk	Status on implementation of proposed controls	Who is to finalise the action?	Finalisation Date	Risk Analysis (Consequence and Likelihood)			
					C	L	Score	Level of Risk					C	L	Score	Level of Risk
19	To reduce wildlife strikes to aircraft Execution of effective wildlife management	**Wildlife Harassment and Dispersal** ineffective harassment may not mitigate or may increase the wildlife hazard in a particular area	Airport Manager ARO	-Completion of Certificate III Airside Operations - Wildlife Module. -Use of relevant PROs -Culling implemented if required -Implementation of trials and use of new equipment and research -Development of Species Management Plans -Increased resource allocation during periods of increased risk -Liaison with external consultants -Provision of harassment equipment and tools	MJ	UL	18.75	M	-Regular updates to Wildlife Harassment and Dispersal Techniques -PRO to ensure details remain current -Monthly WHM updates provided to operations staff -Continual review of harassment technique efficacy -Continued research into alternative harassment methods	-	Airport Manager	-	MJ	R	7.5	L

Risk No.	Objective - What is the business objective / KPI?	Risk - what could prevent achievement of this objective?	Risk Owner - who is accountable for managing this risk?	Existing Controls	Risk Analysis Consequence (C) and Likelihood (L)				Proposed Controls - What more can be done to manage the risk	Status on implementation of proposed controls	Who is to finalise the action?	Finalisation Date	Risk Analysis (Consequence and Likelihood)			
					C	L	Score	Level of Risk					C	L	Score	Level of Risk
20	To reduce wildlife strikes to aircraft	**Wildlife Management Training** inadequate training for staff could result in poor management of wildlife-related hazards	Airport Manager	24h/day rostering of competent staff Additional support available from other operations staff WHM PROs details wildlife management	MJ	UL	18.75	M	-Authorization of overtime and additional resources as required -Additional training annual review/assessments -Specialist training	-	Airport Manager ARO	-	MJ	R	7.5	L
21	Execution of effective wildlife management	**Wildlife Hazard Management Equipment** failure to identify resourcing shortfalls may lead to an inability to manage urgent wildlife hazards in a timely manner	Airport Manager ARO	-Firearms provided for lethal and non-lethal control -Equipment is regularly updated and improved following liaison with key suppliers	MJ	UL	18.75	M	-Reactive and proactive control completed regularly and there is regular discourse between operational staff and managers	-	Airport Manager	Ongoing	MJ	R	7.5	L
22	Execution of effective wildlife management	**Inadequate Staff Training** may result in staff injury and ineffective wildlife management	Airport Manager ARO	-Completion of Certificate III Airside Operations - Wildlife Module. -Use of relevant PROs -Completion of airside driver training and inductions	MJ	UL	18.75	M	-Refresher training for all airside operations staff -Additional training as required	-	Airport Manager ARO	Ongoing	MJ	R	7.5	L

Risk No.	Objective - What is the business objective / KPI?	Risk - what could prevent achievement of this objective?	Risk Owner - who is accountable for managing this risk?	Existing Controls	Risk Analysis Consequence (C) and Likelihood (L)				Proposed Controls - What more can be done to manage the risk	Status on implementation of proposed controls	Who is to finalise the action?	Finalisation Date	Risk Analysis (Consequence and Likelihood)			
					C	L	Score	Level of Risk					C	L	Score	Level of Risk
23	Execution of effective wildlife management	**Firearm Use** incorrect use of firearms for purposes of wildlife management may result in injuries to staff or others	Airport Manager WHS Advisor	-PROs for firearms and ammunition storage -established PPE requirements prevent injury severity. -All users are licensed -Firearm Safety Training -Review of firearms equipment	MJ	UL	18.75	M	-Refresher training course -Compliance with NT firearms licensing -Firearms training planned every two years	-	Airport Manager ARO	Ongoing	MJ	R	7.5	L
24	Execution of effective wildlife management	**Culling of Protected Animals** incorrect species ID could result in culling of protected species and breach of relevant permits	Airport Manager	-PROs in place for identification of wildlife -Current permit for lethal take of wildlife -Materials provided to aid in accurate identification of animals	MJ	UL	18.75	M	-Annual renewal of lethal take permit -Quarterly returns reporting wildlife culled on-airport -Annual review of wildlife culls	Parks and Wildlife Permit renewal	Airport Manager	Annually	MO	R	7.5	L

Risk Assessment Framework

Table 1. ASA Risk Assessment Matrix.

		Negligible (NG)	Minor (MR)	Moderate (M)	Major (MJ)	Catastrophic (C)
		1	2.5	5	7.5	10
Almost certain	10	10	25	50	75	100
Likely	7.5	7.5	18.75	37.5	56.25	75
Possible	5	5	12.5	25	37.5	50
Unlikely	2.5	2.5	6.25	12.5	18.75	25
Rare	1	1	2.5	5	7.5	10

Table 2. ASA Risk Assessment framework for defining wildlife strike 'likelihood'.

Likelihood of risk materialising	Abbreviation	Value	Probability	Definition
Almost certain	AC	10	> 90%	Expected to occur; almost inevitable
Likely	L	7.5	60% - 90%	Expected to occur in most circumstances; not surprised if it happens
Possible	P	5	40% - 60%	Might occur in some circumstances
Unlikely	UL	2.5	10% - 40%	Could occur in some circumstances; surprised if it happens
Rare	R	1	< 10%	May occur but only in exceptional circumstances; it would be highly unexpected

Table 3. ASA Risk Assessment framework for defining 'consequence'.

Score	Consequence categories				
	General description of consequence	Safety	Compliance	Corporate Image	Financial
Catastrophic 10	• Closure of whole or significant part of business, Board and/or executive resignations likely. • It will take more than 5 years for the business to recover. • Extensive attention from the Board and Executive is required to resolve disruption. Extensive use of Consultants Likely.	Multiple high-profile fatalities	Very serious regulatory outcome leading to cancellation of trading licences or criminal prosecution of directors/ officers of the organisation	Serious adverse public or media attention with ongoing national, international and local coverage. Long term damage to image.	Impact on annual profit will exceed $20m
Major 7.5	• Significant business continuity challenges for some activities • It will take between 3 and 5 years for the business to recover. • Extensive attention from the Board and Executive is required to resolve the disruption. Use of consultants likely.	Multiple fatalities and/or severe disability	Serious regulatory outcome leading to regulatory sanction and large fines being imposed. Unlikely to include criminal prosecution	Loss of credibility and confidence in organisation. National press interest. Significant public/political concern.	Impact on annual profit will exceed $8m but will be less than $20m
Moderate 5	• Significant disruption to some activities • It will take between 1 and 3 years for the business to recover. • Ongoing oversight from the Board and extensive inputs required from the Executive. Possible use of consultants to help resolve.	Preventable fatalities and/or severe permanent disabilities (>30%)	Threats of sanctions from regulatory body.	Limited damage to reputation Extended local press interest/regional press interest. Regional public/political concern.	Impact on annual profit will exceed $1m but will be less than $8m
Minor 2.5	• Some disruption to daily activities • It will take between 3 and 12 months for the business to recover. • The Board will be informed of Executive oversight and management initiatives. Consultants probably not required.	Localised incident with potential for hospitalisation	Fine or warning from regulators.	Minor adverse local public or media attention.	Impact on annual profit will exceed $0.5m but will be less than $1m
Negligible 1.0	• Minimal business impact • It will take less than 3 months for the business to recover. • Board: no need to be informed. Issue resolved at an operational level without the use of consultants.	Onsite first aid required	Small fine	Minimal public attention. No external damage to image and reputation.	Impact on annual profit will be less than $0.5m

Attachment 5: Roles and Responsibilities

Position (or entity)	Responsibilities
Airport Manager	• Overseeing the operations and maintenance of the Airport. • Giving consideration to advice from the WHMWG to minimise the risk of wildlife strikes to aircraft. • Developing, implementing and maintaining the Safety Management System of which wildlife hazard management is an integral part. • Overseeing the implementation of the WHMP. • Ensuring the wildlife hazard management system complies with all relevant legislation. • Ensuring compliance with relevant legislation. • Liaising with land use planning authorities as required. • Identifying resource requirements and seek budget allocation for identifying and managing wildlife hazards (including fencing). • Ensuring the WHMP aligns with the Aerodrome SMS. • Collecting, filing, considering and incorporating recommendations from audits conducted. • Member of the WHMWG. • Attending stakeholder meetings. • Collecting and analysing wildlife hazard data. • Reviewing and signing off on the Wildlife Hazard Management Plan, in consultation with the WHMWG. • Developing procedures. • Overseeing airside vegetation management.
Airport Reporting Officers (ARO)	• Member of the WHMWG. • Conducting wildlife counts and observations. • Conducting wildlife dispersal and control. • Reporting of Wildlife counts; strikes (ATSB); wildlife management activities and ammunition usage. • Removing carcasses from the airfield. • Collecting DNA sampling of blood or feathers if species cannot be identified; complete request for DNA Identification form. • Monitoring of wildlife activity and strike statistics and advising the Airport Manager when a change in wildlife level occurs. • Generating NOTAM to warn pilots of an increase in wildlife hazard. • Notifying ATC of specific wildlife hazards and any carcasses found on the movement area. • Liaising with Airline Ground Staff and/or Operations, passing on details of wildlife strikes. • Operating in accordance with WHMP and relevant company procedures. • Recording WHM activity in AVCRM. • Completing DNA sampling when required.
Ground Staff	• Ensuring garbage is disposed of appropriately and all bins are lidded on-airport.

Position (or entity)	Responsibilities
	• Operating in accordance with relevant company procedures. • Maintaining vegetation and appropriate grass lengths at the Airport. • Ensuring drains are clear of vegetation and/or water.
Environment Manager	• Member of the WHMC. • Member of WHMWG. • Assisting Airport Operations Manager and the Operations team with developing wildlife management plans and studies. • Facilitate habitat and wildlife studies to assist the understanding and management of wildlife hazards. • Liaising and maintain working relationship with land use planning authorities in conjunction with the Aerodrome Safety & Standards Manager and WHMWG. • Implementation of weed management programs. • Reviewing of the WHMP.
Wildlife Hazard Management Working Group (WHMWG)	• Continually reviewing the WHMP and procedures, ensuring system is effective and up to date. • Actively ensuring that wildlife activities do not affect the safe operation of aircraft by implementing approved recommendations to the system. • Reviewing risk assessments on wildlife species and of on-airport and off-airport facilities. • Providing updates on wildlife activity and trends to the WHMC. • Analysis of wildlife data collected. • Conducting and reviewing internal audits. • Reviewing external audit. • Reviewing recommendations to WHMP. • Investigating new technology to aid in the deterrence, detection and removal of wildlife.
Airport-appointed Biologist	• Member of the WHMC. • Assist and meet with WHMWG. • Providing expert advice on environmental aspects to the WHMC and advice the group of environmental issues. • Conduct surveys at ASA and surrounding wildlife attractions on a regular basis to assess wildlife populations and risks; vegetation and off-airport surveys. • Reviewing and recommending changes to WHMP as required. • Assessing and reviewing airport facilities when requested. • Assist with an annual audit of the WHMP and provide recommendations to improve wildlife management and reduce risks. • Assist to review data, trends and hazards, including risk assessments.
Air Traffic Control	• Providing a member to the WHMWG. • Notifying the ARO of specific wildlife hazards. • Liaising with ARO when significant bird harassment activities are necessary on the airfield. • Giving priority for ARO wildlife control activities except in case of an operational emergency. • Passing on all reports of aircraft wildlife strikes to the ARO immediately, including those involving military aircraft.

Position (or entity)	Responsibilities
Aircraft Operators	• Providing a representative to the WHMC when available. • Aircraft Crew passing on reports of wildlife strikes to ATC immediately to facilitate ARO control of the wildlife hazard. • Engineering and Ramp staff passing on reports of wildlife strikes to ATC and ARO immediately to facilitate ARO control of the wildlife hazard. • Submitting reports to the Operations department of the known wildlife strike information and damage to aircraft. • Providing WHMWG with updated strike data including damage information. • Completing DNA sampling when blood or feathers are evident on aircraft.
Other Airport Operators	• Reporting hazardous wildlife activity observed at or near the airfield to the ATC or the ARO. • Delivering all wildlife remains to the ARO. • Reporting all wildlife strikes to ATC and the ARO. • Limiting wildlife attractants on the airfield.
Local Government & Council Authorities and land managers in the vicinity of ASA	• Consider the potential for bird and animal hazard in the vicinity of the Airport. • Provide details of development proposals and land use changes within 13 km of ASA and consider potential of creation of potential wildlife hazards. • Attend annual WHMC.
Wildlife Hazard Management Committee (WHMC)	• Review wildlife strike data. • Review wildlife hazard management. • Forum for discussing recommendations from research and expert reports. • Assist in the development of strategies to minimise off-airport bird and wildlife issues. • Present Airline and Consultant Reports. • Review and recommend changes to the WHMP.

Attachment 6: WHMP Audit Tables – 2023

Table 1. CASA MOS 139 Part 17 Compliance audit.

Legislative Requirement or Competency	Related Tasks or Procedures	Responsibility	Timeframe	Compliance	Comments
CASA MOS Part 17.01 - Detection, monitoring and observation					
(1) The aerodrome operator must monitor and record at least the following: a) The presence and behaviour of wildlife on the aerodrome; b) Wildlife activity that is visible i. in the vicinity of the aerodrome; or ii. from the aerodrome; Note: For aerodromes with considerable wildlife hazards, a dedicated wildlife inspection, including wildlife counts, is recommended.	Wildlife Management Procedures – Section 2: Wildlife Surveillance	ARO	As required – ongoing	¨ N/A ¨ Non-Compliant ■ Compliant	Daily shift report provided by ARO at shift changeovers detailing activity. Observations recorded in AVCRM.
(2) The aerodrome operator, in consultation with the local planning authority, must attempt to monitor sites within 13 km of the aerodrome reference point that attract wildlife.	This WHMP	ARO	Annually	¨ N/A ¨ Non-Compliant ■ Compliant	Annual monitoring by an external suitably qualified person conducted as part of this WHMP. Quarterly surveys are recommended to capture seasonal trends.

(3) The aerodrome operator must attempt to monitor any reported wildlife aircraft strike events at, or in the vicinity of, the aerodrome.	Wildlife Management Procedures – Section 6: Manage Wildlife Strikes	ARO	After strikes or near misses occur	¨ N/A ¨ Non-compliant ■ Compliant	ASA records wildlife strikes into AVCRM and lodges strikes with the ATSB. There are a few strikes on the internal register and on the ATSB incident viewer that do not cross reference. This can be caused by delay in ATSB processing reports or civil operators lodging a strike and not informing the Airport Operations.

Legislative Requirement or Competency	Related Tasks or Procedures	Responsibility	Timeframe	Compliance	Comments
CASA MOS Part 17.02 - Wildlife hazard assessment and trigger criteria					
(1) Any detected wildlife hazard must be assessed for its potential risk to aircraft operations.	This plan	Airport Manager	Annually (internal audit)	¨ N/A ¨ Non-compliant ■ Compliant	Wildlife risk assessment completed as part of this WHMP.
		Consultant	Biennially (external audit)		
(2) If the aerodrome operator has a safety management system, or a risk management plan, mentioned in Chapter 25 or 26 respectively, the assessment must be conducted in accordance with the system or the plan.	Attachment 4 of this plan	Airport Manager	-	¨ N/A ¨ Non-compliant ■ Compliant	
(3) When conducting a wildlife hazard assessment, available data from the following must be considered: a) wildlife observations; b) reported aircraft strike events; c) reported aircraft near miss events. Note: If multiple wildlife hazards are identified, CASA recommends that wildlife species be ranked in their order of risk.	Wildlife Management Procedures – Section 2: Wildlife Surveillance This plan	Airport Manager	Annually (internal audit)	¨ N/A ¨ Non-compliant ■ Compliant	The wildlife hazard assessment contained herein incorporates data from wildlife observations, harassments, surveys, wildlife strike and near miss events.
		Consultant	Biennially (external audit)		
CASA MOS Part 17.03 - Wildlife hazard management plan triggers					
(1) For an aerodrome that, in the course of a financial year, has: a) 50,000 or more air transport passenger movements; or b) 100,000 or more aircraft movements; the aerodrome operator must prepare and implement a wildlife hazard management plan.	-	-	-	¨ N/A ¨ Non-compliant ■ Compliant	

Legislative Requirement or Competency	Related Tasks or Procedures	Responsibility	Timeframe	Compliance	Comments
(2) The plan must be prepared and implemented not later than 6 months after: a) for paragraph (1) (a) — the date of publication, by the Department, of the air transport passenger movement numbers indicating that, for the first time under this MOS, there have been 50 000 or more air transport passenger movements for the aerodrome for the financial year; or b) for paragraph (1) (b) — the date the aerodrome operator becomes aware of information indicating that, for the first time under this MOS, there have been 100 000 or more aircraft movements at the aerodrome in the course of the financial year.	-	-	-	■ N/A ¨ Non-compliant ¨ Compliant	
(3) If paragraph (2) (a) or (2) (b): a) applied to an aerodrome operator; and b) subsequently ceased to apply to the operator; and c) subsequently would have applied to the operator again if such application were deemed to be for the first time under this MOS; then the paragraph applies to the operator as if it were for the first time under this MOS.	-	-	-	■ N/A ¨ Non-compliant ¨ Compliant	
(4) Subsection (1) does not apply if: a) for aerodromes without scheduled international operations — wildlife hazard assessment demonstrates, using statistical and other data, that the wildlife hazard risk is low; and b) CASA, in writing, approves the assessment subject to conditions (if any). Note: For an aerodrome to which subsection (1) does not apply, but which has a high wildlife hazard management risk, CASA recommends the development of a wildlife hazard management plan.	-	-	Ongoing	■ N/A ¨ Non-compliant ¨ Compliant	

Legislative Requirement or Competency	Related Tasks or Procedures	Responsibility	Timeframe	Compliance	Comments
(5) CASA may direct an aerodrome operator in writing to prepare and implement a wildlife hazard management plan if CASA considers that this is necessary in the interests of aviation safety. Note: For CASA directions see regulation 11.245 of CASR. If required in the interests of aviation safety, CASA may revoke an approval given under paragraph (4) (b) and issue a direction under this subsection.	-	-	-	■ N/A ¨ Non-compliant ¨ Compliant	
(6) A wildlife hazard management plan must be included in, or referenced in, the aerodrome manual.	Aerodrome Manual	Airport Manager	As required	¨ N/A ¨ Non-compliant ■ Compliant	
CASA MOS Part 17.04 - Preparation of a wildlife hazard management plan					
(1) A wildlife hazard management plan must be prepared in consultation with a suitably qualified or experienced person, for example: a) an ornithologist, zoologist, biologist, ecologist; or b) a person with demonstrated expertise in the management of wildlife hazards to aviation.	This plan	Airport Manager	As required	¨ N/A ¨ Non-compliant ■ Compliant	This WHMP was updated by Biodiversity Aviation who are suitably qualified to update the WHMP.
(2) The wildlife hazard management plan must at least: a) identify the key aerodrome or contracted personnel and define their responsibilities or functions in the plan; and b) identify sources and locations of wildlife attraction: i. on the aerodrome; and ii. in the vicinity of the aerodrome; iii. which are likely to cause wildlife to transit the take-off, approach and transitional surfaces; and c) set out the procedures for the following in relation to wildlife hazards:	This plan	Airport Manager Consultant	Not applicable	¨ N/A ¨ Non-compliant ■ Compliant	Roles and responsibilities are identified in this table and summarised in Attachment 5. Sources and locations of wildlife attraction on and in the vicinity of the aerodrome are

Legislative Requirement or Competency	Related Tasks or Procedures	Responsibility	Timeframe	Compliance	Comments
i. detection; ii. monitoring; iii. risk assessment and analysis; iv. reporting to pilots through the AIP, NOTAM and ATC (if applicable); v. mitigation, including passive and active strategies; and d) specify the liaison arrangements for local planning authorities within a radius of at least 13 km from the aerodrome reference point; e) set out the aerodrome operator's strategy for wildlife hazard reduction; and f) include records of the qualifications and experience of key personnel identified in the plan.					defined in Section 4 of this plan. Procedures for detection, monitoring and risk assessment, analysis, reporting to pilots, passive and active mitigation strategies and provided in Appendix 1. Records of the qualifications for experience of key personnel are maintained by the Airport Manager. Liaison arrangements with Department if Infrastructure Planning and Logistics (DIPL) have a process in place to engage with the airport through the Operational Stakeholder Meetings (OSM)

Legislative Requirement or Competency	Related Tasks or Procedures	Responsibility	Timeframe	Compliance	Comments
(3) The aerodrome operator must: a) implement the wildlife hazard management plan; and b) keep the plan under continuous review.	This plan	Airport Manager	Ongoing	¨ N/A ¨ Non-compliant ■ Compliant	
(4) For subsection (3), a review of the wildlife hazard management plan must be conducted in each of the following circumstances: a) if an aircraft experiences multiple wildlife strikes; b) if an aircraft experiences substantial damage following any wildlife strike; c) if an aircraft experiences an engine ingestion of wildlife; d) if the ongoing presence of wildlife is observed on the aerodrome in size or in numbers reasonably capable of causing an event mentioned in paragraph (a), (b) or (c); e) at least every 12 months, but if during a period of 12 months the plan was reviewed under paragraph (a), (b), (c) or (d), at least every 12 months after that review.	This plan	Airport Manager	As required	¨ N/A ¨ Non-compliant ■ Compliant	This review has been prepared as part of the ASA WHMP review process. This plan outlines the specifications for WHMP review.
CASA MOS Part 17.05 - Wildlife Hazard Reporting					
(1) If the presence of wildlife is assessed as constituting an ongoing hazard to aircraft, the aerodrome operator must advise the AIS provider in writing to include an appropriate warning notice in the AIP-ERSA in accordance with Chapter 5 of this MOS. Note: Reports to the Australian Transport Safety Bureau following a wildlife strike event are also required in accordance with the Transport Safety Investigation Regulations 2003.	Wildlife Management Procedures – Section 3: Assess and Communicate Hazards	Airport Manager	As required	¨ N/A ¨ Non-compliant ■ Compliant	
(2) Without affecting subsection (1), if a wildlife hazard is assessed as being: a) at a higher risk than usual; and b) of a short-term or seasonal nature;	Wildlife Management Procedures – Section 3: Assess and Communicate Hazards	Airport Manager ARO	As required	¨ N/A ¨ Non-compliant ■ Compliant	

Legislative Requirement or Competency	Related Tasks or Procedures	Responsibility	Timeframe	Compliance	Comments
i. then the aerodrome operator must ensure that a timely NOTAM warning of the hazard is given to pilots using the aerodrome. Note: See CASA Advisory Circular (AC) 139.C-16: Wildlife Hazard Management at aerodromes, as existing from time to time and freely available on the CASA website, for details on what information CASA recommends should be included in the NOTAM.					
(3) Without affecting subsection (1) or (2), if a wildlife hazard is assessed as being a serious and imminent threat to aviation safety at an aerodrome, the aerodrome operator must ensure that pilots using the aerodrome are directly advised on CTAF or UNICOM.	Wildlife Management Procedures – Section 3: Assess and Communicate Hazards	ARO	As required	¨ N/A ¨ Non-compliant ■ Compliant	
CASA MOS Part 17.06 - Wildlife Hazard Mitigation					
The aerodrome operator must implement controls to mitigate wildlife hazard risks within the boundary of the aerodrome. Note 1: For the management of hazards outside of the aerodrome boundary, see subsection 17.01 (2) and paragraph 17.04 (2) (d). Note 2: For the management of hazards from land-based wildlife CASA recommends continuous fencing around the aerodrome boundary, or otherwise containing the movement area.	Wildlife Management Procedures – Section 4: Active Management This plan	Airport Manager ARO	Ongoing	¨ N/A ¨ Non-compliant ■ Compliant	It is recommended that a fence inspection schedule and procedure be formalised and form part of the ARO's regular duties.

Legislative Requirement or Competency	Related Tasks or Procedures	Responsibility	Timeframe	Compliance	Comments
CASA MOS Part 17.07 - Training					
(1) Wildlife hazard monitoring and reporting personnel must be trained to competently do the following: a) conduct wildlife observations and identify high-risk species; b) assess wildlife populations and describe their behaviour; c) record information; d) collect any remains of a wildlife strike on the aerodrome; e) attempt to facilitate the identification of: i. any wildlife involved in a strike event; and ii. any resulting damage to an aircraft; f) report the outcomes of observation, monitoring and strike collection activities. Note: To perform their roles properly, CASA recommends that monitoring personnel have access to wildlife identification materials and equipment such as a field guides, identification books, scopes or binoculars, active management tools, carcass handling tools, identification kits and relevant PPE.	Wildlife Management Procedures – Sections 2 to 6 This plan	Airport Manager ARO	Ongoing	¨ N/A ■ Non-compliant ¨ Compliant	Regular wildlife counts and recording of wildlife harassment have not been performed as per the Wildlife Management Procedures. High number of unidentified bird strikes identified in data.
(2) Personnel engaged in wildlife hazard mitigation must be trained to competently: a) engage in active wildlife management without causing a hazard to aviation safety; and b) assess the effectiveness of any mitigation measures that are taken.	Wildlife Management Procedures – Sections 2 to 6 This plan	Airport Manager ARO	Ongoing	¨ N/A ¨ Non-compliant ■ Compliant	Deemed compliant based upon skills and experience demonstrated in 2023's review process.
(3) The aerodrome operator must create training records for its monitoring and reporting personnel to show compliance with subsections (1) and (2). Each record must be kept in safe custody for a period of at least 3 years after the record was created.	-	Airport Manager Training provider	Ongoing	¨ N/A ¨ Non-compliant ■ Compliant	Training records are stored electronically by ASA.

Table 2. International Bird Strike Committee (IBSC) – Best Practice Standards compliance audit.

IBSC Standard (2006)	Compliance	Comments
Standard 1 A named member of the senior management team at the airport should be responsible for the implementation of the bird control program, including both habitat management and active bird control.	¨ N/A ¨ Non-compliant ■ Compliant	The Airport Manager is responsible for the implementation of the bird control program.
Standard 2 An airport should undertake a review of the features on its property that attract hazardous birds/wildlife. The precise nature of the resource that they are attracted to should be identified and a management plan developed to eliminate or reduce the quantity of that resource, or to deny birds access to it as far as is practicable. Where necessary, support from a professional bird/wildlife strike prevention specialist should be sought. Documentary evidence of this process, its implementation and outcomes should be kept.	¨ N/A ¨ Non-compliant ■ Compliant	This WHMP consists of a review of features on and surrounding the airfield that may attract hazardous birds and/or wildlife.
Standard 3 A properly trained and equipped bird/wildlife controller should be present on the airfield for at least 15 minutes prior to any aircraft departure or arrival. Thus, if aircraft are landing or taking off at intervals of less than 15 minutes there should be a continuous presence on the airfield throughout daylight hours. The controller should not be required to undertake any duties other than bird control during this time. Note that for aerodromes with infrequent aircraft movements, 15 minutes may not be long enough to disperse all hazardous birds/wildlife from the vicinity of the runway. In this case the controller should be deployed sufficiently in advance of the aircraft movement to allow full dispersal to be achieved. At night, active runways and taxiways should be checked for the presence of birds/wildlife at regular intervals and the dispersal action taken as needed.	¨ N/A ¨ Non-compliant ■ Compliant	A team of AROs undertake wildlife management activities on a daily basis.

IBSC Standard (2006)	Compliance	Comments
Standard 4 Bird control staff should be equipped with bird deterrent devices appropriate to the bird species encountered, the numbers of birds present, and to the area that they need to control. Staff should have access to appropriate devices for removal of birds/wildlife, such as firearms or traps, or the means of calling on expert support to supply these techniques at short notice. All staff should receive proper training in the use of bird control devices.	¨ N/A ¨ Non- compliant ■ Compliant	AROs are equipped to manage wildlife as per Wildlife Management Procedure – Section 4: Active Management
Standard 5 Airport bird/wildlife controllers should record the following at least every 30 minutes (if air traffic is sufficiently infrequent that bird patrols are more than 30 minutes apart, an entry should be made for each patrol carried out). • areas of the airport patrolled, • numbers, location and species of birds/wildlife seen, • action taken to disperse the birds/wildlife, • results of the action. More general information such as the name of the bird controller on duty, time on and off duty, weather conditions etc. should be recorded at the start of a duty period.	¨ N/A - Non-compliant ■ Compliant	Entries are made in AVCRM of harassment activities.
Standard 6 Bird/wildlife incidents should be defined in three categories: • Confirmed strikes - Any reported collision between a bird or other wildlife and an aircraft for which evidence in the form of a carcass, remains or damage to the aircraft is found. Any bird/wildlife found dead on an airfield where there is no other obvious cause of death (e.g., struck by a car, flew into a window etc.). • Unconfirmed strikes - Any reported collision between a bird or other wildlife and an aircraft for which no physical evidence is found. • Serious incidents - Incidents where the presence of birds/wildlife on or around the airfield has any effect on a flight whether or not evidence of a strike can be found.	¨ N/A ¨ Non- compliant ■ Compliant	ASA records strikes as 'confirmed' or 'suspected' and conducts Significant Strike Investigation & Reporting where a wildlife strike has had an adverse impact on air traffic.

IBSC Standard (2006)	Compliance	Comments
Standard 7 Airports should establish a mechanism to ensure that they are informed of all bird/wildlife strikes reported on or near their property. The total number of bird strikes should never be used as a measure of risk or of the performance of the bird control measures at an airport. Airports should ensure that the identification of the species involved in bird strikes is as complete as possible. Airports should record all bird strikes and include, as far as they are able, the data required for the standard ICAO reporting form. National Regulators should collate bird strike data and submit this to ICAO annually.	¨ N/A ¨ Non-compliant ■ Compliant	Bird strikes are reported to the ATSB and reviewed by the Airport Manager. Some inconsistencies between ATSB and ASA data was present, this can possibly be attributed to operators submitting strikes to ATSB and not informing ASA or ATSB records not being processed due to a backlog.
Standard 8 Airports should conduct a formal risk assessment of their bird strike situation and use the results to help target their bird management measures and to monitor their effectiveness. Risk assessments should be updated at regular intervals, preferably annually.	¨ N/A ¨ Non-compliant ■ Compliant	This WHMP includes a formal risk assessment used to help target bird management measures carried out by AROs. Risk assessments are reviewed on an annual and biennial basis.
Standard 9 Airports should conduct an inventory of bird attracting sites within the ICAO defined 13km bird circle, paying particular attention to sites close to the airfield and the approach and departure corridors. A basic risk assessment should be carried out to determine whether the movement patterns of birds/wildlife attracted to these sites means that they cause, or may cause, a risk to air traffic. If this is the case, options for bird management at the site(s) concerned should be developed and a more detailed risk assessment performed to determine if it is possible and/or cost effective to implement management processes at the site(s) concerned. This process should be repeated annually to identify new sites or changes in the risk levels produced by existing sites. Where national laws permit, airports, or airport authorities, should seek to have an input into planning decisions and land use practices within the 13km bird circle for any development that may attract significant numbers of hazardous birds/wildlife. Such developments should be subjected to a similar risk assessment process as described above and changes sought, or the proposal opposed, if a significant increase in bird strike risk is likely to result.	¨ N/A ¨ Non-compliant ■ Compliant	This WHMP has identified features surrounding the airfield that may attract hazardous birds and/or wildlife. Currently these sites are only surveyed when the WHMP is being reviewed, it is recommended these sites are surveyed quarterly.

Table 3. ASA System Requirements internal compliance audit.

System Requirement	Details	Responsibility	Frequency	Performance Indicator	Compliance	Comments
WHMP meetings	Meetings held annually and minuted	Airport Manager	Annually - ongoing	Annual meetings (or as agreed)		
Bird strike reporting	All bird strikes delivered to ASA WHMC and ATSB	Airport Manager Airside Reporting Officer ADM	As required	All strikes entered into database with all available information		
Bird strike analysis	All bird strike trends analysed	Airport Manager WHMWG Consultant	Monthly - ongoing Annually	Bird strike data analysed and communicated to the ADM/ARO		
Bird Management Training	Yearly training sessions for relevant personnel conducted?	Airport Manager	Yearly - ongoing	1 training session per year for system and procedures		
Firearm Safety Training	Firearm safety training undertaken biennially?	Airport Manager	As required	1 training session undertaken every 2 years (valid for 5 years)		
Permit and Licensing	All permits of wildlife management activities kept valid	Airport Manager	As required - ongoing Permit yearly	All permits kept valid		
Record of Activities	All records kept in database?	Airport Manager, ADM Airside Reporting Officer	Daily	All records entered into database, strikes, counts, harassment		
Update Aerodrome Manual	Aerodrome Manual updated to reflect plan?	Airport Manager	Annually - ongoing	Aerodrome Manual updated once per year or as required		
Review Proposed Land-use Changes	All proposed land-use changes within 13 km of DIA / ASA with potential to increase the risk of bird	Aerodrome Safety & Standards Manager Environment Manager	As required	Where risk increase is likely, proposals are modified or refused.		

System Requirement	Details	Responsibility	Frequency	Performance Indicator	Compliance	Comments
	strike are scrutinized appropriately			Operations Manager retains documentation.		
Duty Airside Operations Officer - Bird Counts	Bird counts are undertaken as per procedure and recorded in database	Airside Reporting Officer	As specified in procedures	All data entered into database		
Professional bird surveys	Professional bird surveys undertaken as required	Airport Manager Environment Manager	As required - ongoing	All professional surveys conducted and analysed		
Off-airport surveys / assessment	All off-airport surveys undertaken	Environment Manager	Yearly	Off-airport survey / assessment conducted and documented		
Runway Inspections and bird checks	All wildlife hazards detected and managed according to procedures	Airside Reporting Officer Other operational staff as required	Daily - ongoing	All hazards detected and removed		
Records	Records of wildlife related activities kept in AVCRM	Airside Reporting Officer	As required - ongoing	All records entered into AVCRM		
Wildlife remains	All wildlife carcasses on or adjacent to movement areas detected, removed, and reported. DNA sample collected as required.	Airside Reporting Officer	As required - ongoing	All carcasses detected, removed, and recorded		
Runway Inspections and bird patrols	Daily perimeter fence inspections	Airside Reporting Officer (ADM as required)	Daily - ongoing	Nil breaches of fence by large and medium-sized animals		
Grassland Areas	Trail grassland areas being maintained at 200 to 300 mm (Darwin only)	Airside Reporting Officer Airport Manager (Defence meetings)	As required - ongoing	Grass length greater than 200mm and less than 300mm		

System Requirement	Details	Responsibility	Frequency	Performance Indicator	Compliance	Comments
Drainage	Monitor drains for attractiveness to birds during periods of high rainfall	Airside Reporting Officer	As required - ongoing	Drains monitored		
Buildings	Monitor buildings for bird perching	Airside Reporting Officer	As required - ongoing	No major bird perches are allowed to form on buildings		
Update Wildlife Hazard Management Plan	Update Wildlife Hazard Management Plan Annually	Airport Manager Head of Operations WHMWG	Annually - ongoing	Wildlife Hazard Management Plan updated Annually		
Records of Review	Records of review and audits documented	Airport Manager	Annually - ongoing	Records kept yearly		

Appendix 1: WHMP Procedures

ASA have developed a number of operating procedures that provide additional detail and guidelines for the day-to-day implementation of wildlife hazard management and other airside operating procedures.

These procedures may be reviewed and amended at any time.

Procedures include:

Section 1 – Overview
Section 2 – Wildlife Surveillance
- Wildlife Patrol
- Wildlife Observations
- Wildlife Routine Counts

Section 3 – Assess and Communicate Hazards
Section 4 – Active Management
- Traps and Snares
- Wildlife Harassment
- Wildlife Culling
- Safe Handling of Wildlife
- Euthanasia
- Carcass Handling and Disposal

Section 5 – Passive Management
- Attractant Monitoring and Reduction

Section 6 – Manage Wildlife Strikes
- Wildlife Strike Response
- Carcass Identification
- Wildlife Strike Reporting
- Significant Strike Investigation

Section 7 – Supporting Information
Section 8 – Appendices