135 Badgerys Creek Road
Wildlife Hazard Assessment

October 2025

Revision 02

Bradfield Corporation Pty Ltd

AVISURE
aviation | wildlife | safety

Executive Summary

Bradfield Corporation Pty Ltd engaged Avisure to review the designs for a mixed-use development at 135 Badgerys Creek Road; within the 3km wildlife buffer zone from Western Sydney International Airport, and comment on the potential wildlife attraction and how this may contribute to the wildlife strike risk to Western Sydney International Airport when it becomes operational in 2026. The site will be developed in three stages:

1. Hotel, Tavern, Plaza on the Eastern side of site
2. Hotel, Supermarket/retail Commercial, Childcare, Medical centre, Co-working spaces Residential, Proposed N-S internal Street
3. Ground Floor Café, Residential, Communal facilities, Public Domain surrounding Creek.

Avisure prepared this Wildlife Hazard Assessment following a desktop review of relevant documents, including the site's proposed design, relevant aviation regulations and standards, and a range of guidance material specific to managing off-airport wildlife hazards.

The assessment:

- Describes the obligations relating to the development in the Western Sydney Aerotropolis Phase 2 Development Control Plan (November 2022), Aviation Safeguarding Guidelines Western Sydney Aerotropolis and surrounding areas, the National Airports Safeguarding Framework Guideline C, the State Environmental Planning Policy (Western Sydney Aerotropolis Parkland City) section 4.19 Wildlife hazards, Aerotropolis and Mamre Road Precincts – Bird and Bat Monitoring Strategy, and associated planning documents.
- Describes the legal framework and summaries a variety of support and guidance material.
- Reviews the site's design to provide comment on its potential wildlife attraction and advice for mitigation.
- Assesses the facility's potential wildlife attraction.
- Recommends wildlife monitoring and hazard management.

The Development Control Plan's wildlife buffers is based on the two parallel runways. The proposed development will be located within the 3km wildlife buffer as defined by the Development Control Plan. Under the Development Control Plan, developments must have a written assessment of the wildlife that is likely to be present on the land within 13km of Western Sydney International Airport.

Key features of the development pose a low to high risk of wildlife attraction as identified in the Aerotropolis Aviation Wildlife Safeguarding Framework and some, such as ponds, should be mitigated within 3km of Western Sydney International Airport. This advice is supported in a number of other

aviation guidance documents. For the project to meet the requirements of relevant guidelines and practices, there is a need to ensure that significant numbers of birds and other wildlife that present a hazard to aircraft are not attracted to the site.

Key findings of the review:

- The Gung Gung Pond and associated stream is likely to attract wildlife. Mitigation would require treating banks with steep sides and/or armouring the banks. In some circumstances, netting can be introduced. However, it is a second order watercourse and the Gung Gung section of the watercourse has been assessed as a “river” and is to be retained and rehabilitated for the portion of the reach which constitutes a ‘river’ under the WM Act 2023. This area should be made no more attractive to hazardous bird species than it is at present.
- The use of certain tree species such as Eucalyptus spp. and Acacia spp., in landscaping, have been removed from the proposal as it was likely to attract hazardous wildlife such as flying-foxes and increase the strike risk. A review and update of the final landscaping plan is required to minimise wildlife attraction. This can be undertaken as part of the post approval process, prior to the issue of the relevant Construction Certificate.
- During the construction phase, there is potential for wildlife attraction to excavated areas and areas that may become inundated. In addition, worker food waste, if not discarded appropriately may attract wildlife to the site. A Construction Environmental Management Plan should address these issues, unless construction will be completed prior to the aerodrome operations commencing.
- Once the site is operational, potential food waste from waste bins or feeding of wildlife by the public could increase wildlife attraction and associated strike risk if not managed well. Any waste bins installed on site must be enclosed to prevent access by scavengers such as ravens and ibis, and signs installed to inform the public that feeding of wildlife is prohibited.

Section D.7 of the Development Control Plan requires specified land uses1F[1] within the 3km wildlife buffer to assess the wildlife hazard (this report) and to prepare a Wildlife Management Plan. The specified land use does not include this development and, therefore, a Wildlife Management Plan is not required.

1 Specified land uses are agricultural produce industry, agriculture, aquaculture, camping ground, garden centre, intensive livestock agriculture, intensive plant agriculture, livestock processing industry, plant nursery, recreation facility (outdoor), recreational facility (major), recreational area, sewage treatment plant, waste or resource management facility, waste or resource transfer station, and water storage facility.

Table of Contents

Abbreviations

AGL	Above Ground Level
BDA	Bradfield Development Authority
BS	Benchmark Solutions
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations
DCP	Development Control Plan
HDPE	High-Density Polyethylene
IBSC	International Bird Strike Committee
MOS	Manual of Standards
NASF	National Airports Safeguarding Framework
PO	Performance Outcomes
RSI	Regional Stormwater Infrastructure
SEPP	State Environmental Planning Policy
WSI	Western Sydney International Airport

1. Introduction

1.1 The wildlife strike issue

The consequence of wildlife strikes with aircraft can be very serious. Wildlife strikes have caused 1,000 human fatalities and 759 aircraft losses since the beginning of aviation (Shaw & Dolbeer 2025). Wildlife strikes, which involve more than just the repair of damaged engines and airframes, cost the commercial civil aviation industry an estimated US$1.2 billion per annum (Allan 2002), and an estimated AUD$11.9 million per year in Australia (Parsons 2022). Even apparently minor strikes which result in no obvious damage can reduce engine performance, cause concern among aircrew and add to airline operating costs.

The main factors determining the consequences of a strike are the number and size of animals struck, the combined closing speed at which the strike occurred, the phase of flight when struck and the part of the aircraft hit. Generally, the larger the animal, the greater the damage. Large animals have the ability to destroy engines and windshields and cause significant damage to airframe components and leading edges. Strikes involving more than one animal (i.e., a multiple strike) can be serious, even with relatively small wildlife, potentially disabling engines and/or resulting in major accidents. While total mass struck and impact site on the aircraft are important strike consequence considerations, final impact speed is the most significant determinant as impact force varies exponentially with the square of closing speed.

Strike risk depends on the probability of colliding with wildlife and the consequence to the aircraft if collision occurs. The probability of a wildlife strike occurring increases as the number of wildlife and aircraft operating in the same airspace increases. Strike probability also increases with airspeed. In practice, this means that the likelihood of colliding with a bird inflight increases when operating at high speed below 5000’ above ground level (AGL), which is where the majority of birds operate. Wildlife density, and therefore strike probability, increases with decreasing height above the ground. Aircraft operating at low altitudes over, or near, wildlife attracting areas will significantly increase strike probability.

In civil aviation around 93% of strikes occur at or below 3500’ AGL (Dolbeer 2011), with 96% of flying-fox strikes recorded at or below 1000’ AGL (Parsons et al. 2008). Consequently, management focusses largely on terminal airspace and management responsibility has typically resided with aerodrome operators. However, aircrew and air traffic controllers should be engaged in strike risk and mitigation processes, and high-risk operations consider predicted or observed wildlife movement patterns. It is also critical that external stakeholders, including wildlife authorities, local planning authorities and land users, are engaged to monitor and mitigate wildlife hazards, and that both on- and off-aerodrome hazards are critically assessed. Consequently, it is important that surrounding land managers are aware of wildlife strike issues and that all stakeholders become involved in the process of reducing the hazard. Effective management of wildlife-attracting land uses adjacent to aerodromes is imperative to safe aircraft operations.

1.2 Project background

Bradfield Corporation has proposed the development of a mixed-use development, located at 135 Badgerys Creek Road on Lot 7 DP243457, within 3km of Western Sydney International Airport (WSI) (Figure 1).

The site, comprising of 2.02 hectares within the Liverpool City Council Local Government Area and the Western Sydney Aerotropolis, will deliver support the anticipated growth and demand for housing to the Bradfield City Centre, located adjacent to this development, and provide high level amenities for people who live, work and visit the city centre (Figure 2). The development will be located approximately 250m to the future Bradfield Metro Station and 4km to WSI. Due to the adjacent location to the Bradfield City Centre, the proposed development will incorporate alike principles, ensuring cohesive development of the Aerotropolis Core Precinct.

Figure 1: Location of 135 Badgerys Creek Road relative to Western Sydney International Airport

Bradfield Corporation Pty Ltd

135 Badgerys Creek Road Wildlife Hazard Assessment

AVISURE
aviation | wildlife | safety

Job number: 250904
Revision: 0
Author: AS
Date: 05/10/2025

GDA 2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 2020
Units: Meter

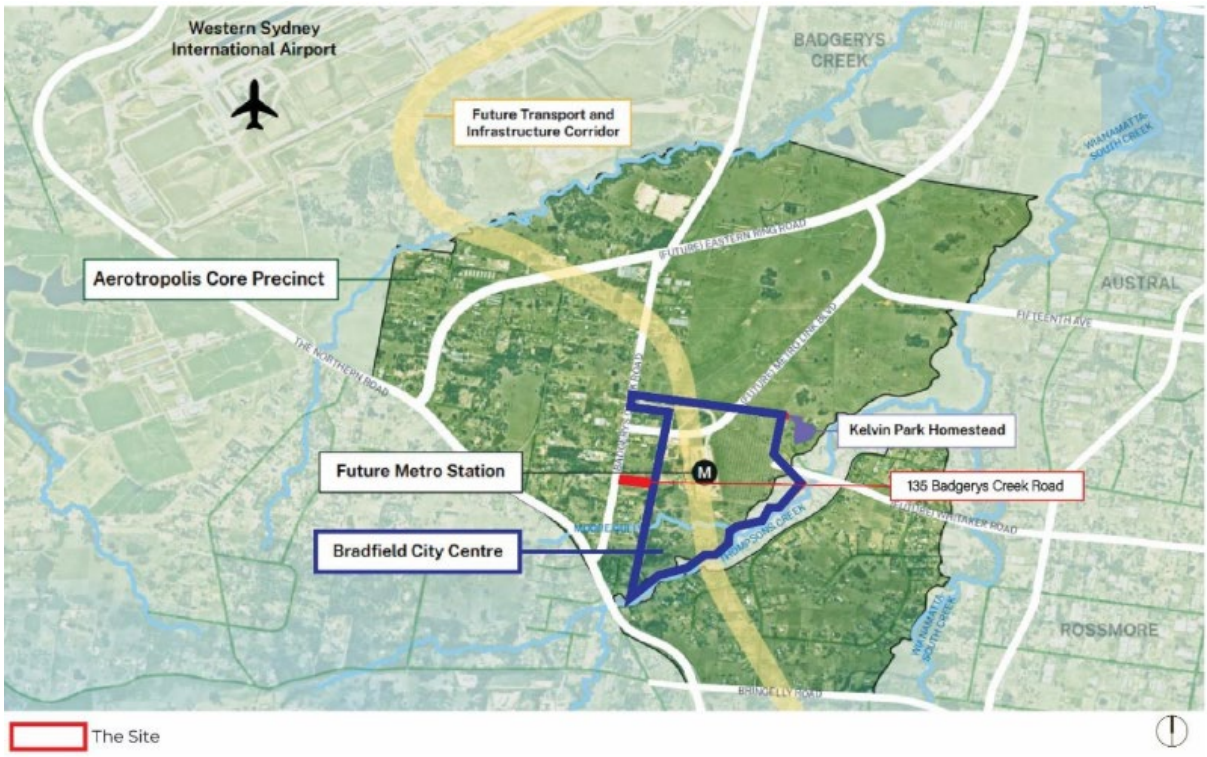

Figure 2. The proposed site within the Aerotropolis Core Precinct (source: Ethos Urban, 2024).

The site will be developed in three stages (Figure 3):

1. Hotel, Tavern, Plaza on the Eastern side of site
2. Stage 2: Hotel, Supermarket/retail Commercial, Childcare, Medical centre, Co-working spaces Residential, Proposed N-S internal Street
3. Ground Floor Café, Residential, Communal facilities, Public Domain surrounding Creek.

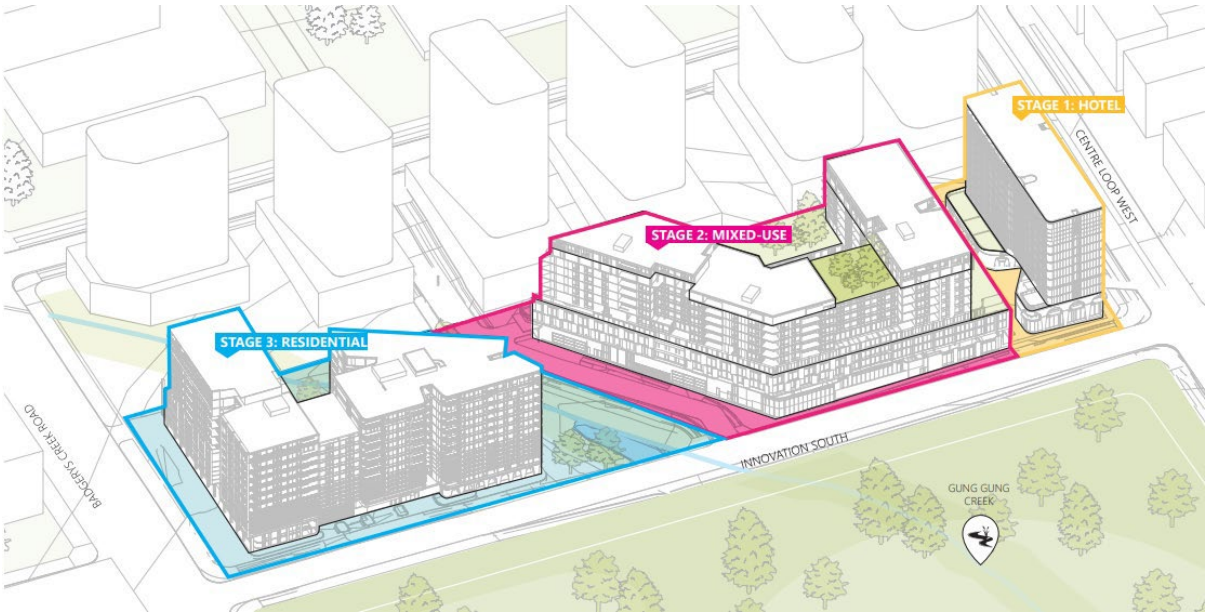

Figure 3. Proposed stage plan of the development (source: PLUS Architectural Design Report (2025).

The site is zoned as a Mixed-Use development and as it is located within the 3km wildlife buffer zone from WSI, it triggered an assessment in accordance with the State Environmental Planning Policy (SEPP) (Western Parkland City) 2021, and the Western Sydney Aerotropolis Development Control Plan (DCP) Phase 2.

1.3 Project scope

Bradfield Corporation engaged Avisure to review the proposed design, including landscaping and water features, comment on the potential wildlife attraction and how this may contribute to the wildlife strike risk at WSI. We cross referenced the proposed development with the National Airports Safeguarding Framework 2023 (NASF), the SEPP (Western Parkland City) 2021, the planning framework developed by the Western Sydney Planning Partnership and draw on a range of industry guidance and standards relating to land use in the vicinity of aerodromes. Avisure reviewed all available designs and documentation and delivered the Wildlife Hazard Assessment (this report) that summarises any potential wildlife hazards and presents mitigation options for consideration.

It is understood that the project must balance requirements related to the Blue-Green Infrastructure Framework and the Aerotropolis Aviation Safeguarding Framework which can create contradictions in required outcomes. This project and report take a balanced approach, with the NASF at its core, which affords the area amenity but minimises the wildlife threats to aviation.

1.3.1 Limitations and assumptions

1. The aerodrome and the surrounding Aerotropolis precincts are not fully constructed. Assumptions are made about wildlife species based on previous survey work on the WSI site and in its vicinity. The changing landscape during and after development will influence wildlife populations, however the existing information of which species are currently using the site and surrounds are a reasonable guide.
2. The airport is not yet operational and projected aircraft movements may change resulting in alternative timings for the second runway and other developments. Wildlife strike risk may change depending on the WSI operational profile and timing of aircraft movements.
3. Assumptions are made based on our understanding of the proposed facilities (which are a reference design and may change as detailed design progresses) and the nature of the site's attraction to wildlife.
4. The desktop analysis was done without a site visit or field surveys.
5. Designs related to the Gung Gung Pond were not provided for review. Recommendations provided were based on our experience at other off-airport developments and aerodromes.

Despite these limitations, Avisure could reasonably evaluate the potential wildlife attraction to 135 Badgerys Creek Road and provide recommendations to mitigate any identified risk to help safeguard WSI once operational.

2. Method

Avisure reviewed the following literature:

Site technical reports and designs:

- Scoping Report Mixed Use Development 135 Badgerys Creek Road (4 December 2024)
- 135 Badgerys Creek Road, Bradfield Creative Vision Façade Concept Design Report (25 August 2025)
- 135 Badgerys Creek Road, Bradfield NSW – Fauna and Flora Management Plan (29 September 2025)
- 135 Badgerys Creek Road, Bradfield NSW – Vegetation Management Plan (24 September 2025)
- 135 Badgerys Creek Road, Bradfield NSW – Weed Eradication Management Plan (24 September 2025)
- 135 Badgerys Creek, Bradfield – Plant Schedule Development Application
- 135 Badgerys Creek Road, Bradfield Landscape SSDA Design Report (September 2025)
- 135 Bradfield Creek, Bradfield Draft SSDA Landscape Architectural Drawing List (10 September 2025)
- Mixed-Use Development 135 Badgerys Creek Road, Bradfield Regulatory Compliance Report (5 August 2025)
- 135 Badgerys Creek Road, Bradfield NSW – Biodiversity Assessment (24 September 2025)
- 135 Badgerys Creek Road, Bradfield NSW – SSDA Design Program
- 135 Badgerys Creek Road Landscape and Open Space Design Strategy v1

Western Sydney Aerotropolis planning documents (and the associated legislative framework):

- SEPP (Western Parkland City) 2021.
- Western Sydney Aerotropolis Precinct Plan September 2024.
- Western Sydney Aerotropolis DCP – Phase 2 November 2022.
- Western Sydney Aerotropolis DCP – Phase 2 November 2022 - Appendices.
- Aviation Safeguarding Guidelines Western Sydney Aerotropolis and Surrounding Areas October 2021.
- *NSW Environmental Planning and Assessment Act 1979*.

- *NSW Damage by Aircraft Act 1952*.
- *NSW Workplace Health and Safety Act 2011*.

Other documents:

- Western Sydney Aerotropolis Wildlife Management Assessment Report, January 2020.

Aviation industry requirements, standards and guidance reports:

- Civil Aviation Safety Authority (CASA) Advisory Circular 139.C-16 v1.0 Wildlife Hazard Management.
- Civil Aviation Safety Regulations (CASR) Part 139 (Aerodromes) Manual of Standards (MOS) 2019.
- National Airports Safeguarding Framework Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports.
- International Birdstrike Committee (IBSC) Recommended Practices No. 1 Standards for Aerodrome Bird/Wildlife Control.
- International Civil Aviation Organization (ICAO) Doc 9137 Airport Services Manual. Part 3: Wildlife Control and Reduction.
- ICAO Doc 9184 Airport Planning Manual. Part 2: Land Use and Environmental Control.
- ICAO Annex 14 to the Convention on International Civil Aviation: Aerodromes, Volume 1 Aerodrome Design and Operation.

Following the desktop review of the documentation, Avisure:

- Consolidated all information.
- Evaluated the potential wildlife hazard based on the design.
- Identified recommendations to mitigate potential risks.
- Compiled the Wildlife Hazard Review Report (this report).

3. Obligations

3.1 Western Sydney Aerotropolis

Part 3 Section 21 of the SEPP (Precincts—Western Parkland City) 2021 states that development consent must not be grated to relevant development on land within 13km of WSI unless a written assessment of the wildlife that is likely to be present on site (this report) has been considered. Section 21 does not prohibit features such as wetlands and retail and residential infrastructure within the wildlife buffer zone[2].

Section 2.10.3 of the Western Sydney Aerotropolis DCP establishes the following wildlife hazard objective:

O1. Safeguard the airport from incompatible development that could compromise safe operations.

The DCP sets the Performance Outcomes (PO) and Benchmark Solutions (BS) to meet these objectives, Table 1.

Table 1. Western Sydney Aerotropolis Development Control Plan Performance Outcomes and Benchmark Solutions for wildlife hazard management.

	Performance Outcome	Benchmark Solution
PO1	Development does not attract wildlife which would create a safety hazard to the operations of the Airport.	1. All waste bins are designed and installed with fixed lids. 2. Any bulk waste receptacle or communal waste storage area is contained within enclosures that cannot be accessed by birds or flying foxes. 3. Any stormwater detention within the 3km and 8km wildlife buffer is designed to fully drain within 48 hours after a rainfall event. 4. Buildings and structures are designed to minimise the opportunity for roosting areas.
PO2	Landscaping does not attract wildlife that could create a safety hazard to the operations of the Airport.	1. Refer to Appendix B (of the DCP) for a list of suitable landscape species. 2. In areas within the 3km wildlife buffer but outside of the Parkland Priority Areas shown in Figure 8 (of the DCP), a report prepared by a suitability qualified and experienced ecologist is to be submitted with any application when the landscaping plan: a. Incorporates alternative landscape species not listed within Appendix B;

2 Under section 21, development for the following purposes is prohibited on land within the 3km wildlife buffer zone: livestock processing industries, turf farming, waste or resource management facilities that consist of outdoor processing, storage or handling of organic or putrescible waste. Prohibited developments outside of the 3km buffer are not specified under Section 21.

	Performance Outcome	Benchmark Solution
PO2		b. Incorporates landscape species denoted within the landscape species list; c. Will result in more than 5 trees being planted in 1 group (group refers to touching mature canopies); and/or d. Provides a spacing between a group of 5 or more trees that is less than 100m. 3. The ecologist report is to consider building, site, and water body design outcomes and/or landscape maintenance measures that will mitigate bird and flying fox attraction and roosting areas.

Appendix D.7 of the DCP (Aviation Safeguarding Assessment) details the matters and documents required as part of an aviation safeguarding assessment within the context of wildlife hazards. For mixed-use developments, these are as follows:

- Wildlife Hazard Assessment Reports must assess the wildlife attraction risk of the land use, the design of the building and ancillary works including proposed landscaping, water facilities (incl. stormwater infrastructure), waste management, and temporary risks associated construction activity.
- Landscaping within the Enterprise Zone and Agribusiness Zone must comply with Appendix B: Western Sydney Aerotropolis Landscape Species List, except where the property is subject to biodiversity certification conditions or identified as one of the key government commitments.

3.2 Aerotropolis Precinct Plan

Section 2.2. of the Aerotropolis Precinct Plan establishes the following objectives for the Aerotropolis Core:

05. Prioritise pedestrian and active transport within the Aerotropolis Core through infrastructure and amenity in the street network and the blue-green grid.

06. Enable residential development as part of a diverse mixed used sub-precinct in areas that are not impacted by airport noise and that benefit from proximity to Wianamatta-South Creek and Thompsons Creek.

Section 4.1 of the Aerotropolis Precinct Plan establishes the following objectives and requirements for proposed land use and structure plan:

LUO1. A mix of land uses are proposed that:

f. Respect and safeguard operations of the Western Sydney Airport.

LUO2. A blue-green framework is delivered as development occurs that:

a. Provides access to open space that meets the needs of works and residents, students and visitors

b. Preserves significant natural features including watercourses and remnant vegetation.

LU03. Subdivision and civil works design creates the urban structure and:

a. Reflects the Land Use Plan, Transport Network Plan and Blue-Green Infrastructure Framework

e. Includes space for greening the urban environment, including canopy cover and green, pervious landscape to manage water flows, water quality and local climate conditions.

LU04. Buildings are situated and designed to:

c. Reflect airport safeguarding requirements, accessibility for workers, and the functional requirements of businesses

f. Respond to natural features including retained vegetation and waterways.

LU4. Connect ridgelines to watercourses through linear streets that maintain and enhance visual connections, integrate canopy cover, deep soil, landscaping and water management.

LU7. Residential development in the Mixed-Use Zone is to be located:

a. Within 1km walking distance of Metro Stations; or

b. Within 400m of a bus stop or a Collector Street; and

c. Within 200m of open space.

The blue and green systems of the waterways, riparian areas, bushland, open spaces, tree canopy and private gardens, stormwater and water quality management, and public and private recreation opportunities for the Aerotropolis. Section 4.5 of the Aerotropolis Precinct Plan establishes the following objective and requirement for the Blue-Green Infrastructure Framework:

BGO1. To integrate blue and green systems across the Aerotropolis for water quality management, biodiversity and recreation.

BG1. Development is to contribute to the establishment of the blue-green infrastructure framework for the Aerotropolis in accordance with Figure 5 [of the Blue-Green Infrastructure Framework].

Section 4.5.3 of the Aerotropolis Precinct Plan establishes the following objectives for public domain and canopy cover:

BG02. Achieve the targets in the Region Plan of 40% tree canopy cover across the Aerotropolis by 2036.

3.3 NSW Government Parkland Vision Priority Areas

The 135 Badgerys Creek Road development falls within the NSW Government's Parkland Vision Priority Area. As part of the Bradfield City Centre development, and the Aerotropolis core, the government's commitment is:

Heart of Aerotropolis Core:	Within the Aerotropolis, all land within the proposed mixed-use zone as well as additional land linking key activity/movement corridors must achieve the Parkland vision. This area will capture a regional park shown in an indicative location. A strategic outcome for the Aerotropolis Core precinct is to contribute to urban canopy and maximise connections to the Wianamatta-South Creek corridor and Blue-Grid Green.

3.4 Western Sydney Aerotropolis Wildlife Management Assessment Report

The Aerotropolis Aviation Wildlife Safeguarding Framework was adapted from the NASF for use in the Western Sydney Aerotropolis planning framework and guidance material. The report included subdividing the NASF's wildlife buffers to reduce the number of wildlife infringing critical aircraft airspace by restricting land use activities on the northwest side of the airport. Subdividing the wildlife buffers applied more stringent mitigation which aimed to reduce the movement of birds across the airfield (i.e. northwest to southeast and vice versa).

Applicable guidance from the draft Western Sydney Aerotropolis Wildlife Management Assessment Report for water retention and for landscaping are provided in Table 2. The development is located within Sub-area A2 and is identified as a key government commitment area.

3.5 Other Regulations, Standards and Guidance

There are a number of other national and international requirements and guidance documents that recognise land use in the vicinity of an aerodrome can contribute significantly to the wildlife hazard levels and safety of aircraft operations. Appendix A provides the detail.

Table 2. Aerotropolis Aviation Wildlife Safeguarding Framework (modified from the NASF for the Western Sydney Aerotropolis). The sub-area locations of the development are highlighted in green. Source: Avisure, 2020.

Asset Type	Land Use	Standard Instrument Definition	Wildlife Attraction Risk	Western Sydney Aerotropolis: Actions for Existing Developments					Western Sydney Aerotropolis: Actions for Proposed Developments / Changes to Existing Developments				
				3 km radius (Area A) Sub-area A1	3 km radius (Area A) Sub-area A2	8 km radius (Area B) Sub-area B1	8 km radius (Area B) Sub-area B2	13 km radius (Area C)	3 km radius (Area A) Sub-area A1	3 km radius (Area A) Sub-area A2	8 km radius (Area B) Sub-area B1	8 km radius (Area B) Sub-area B2	13 km radius (Area C)
	Conservation and Natural Areas												
Gung Gung Pond	Wetland	Wetland	High	Mitigate	Mitigate	Mitigate	Monitor	Monitor	Conditional	Mitigate	Mitigate	Monitor	Monitor
Riparian Areas	Natural Areas	Environmental facility or environmental protection works	Low	Monitor	Monitor	Monitor	No Action	No Action	Mitigate	Monitor	Mitigate	No Action	No Action
	Utilities												
Rain Gardens	Stormwater management facilities	Water storage facility	Low	Monitor	Monitor	Monitor	No Action	No Action	Mitigate	Monitor	Mitigate	No Action	No Action
Waterway rehabilitation	Waterway	Waterway	Moderate	Mitigate	Monitor	Monitor	Monitor	Monitor	Mitigate	Mitigate	Mitigate	Monitor	Monitor
	Commercial												
Outdoor eateries	Fast food / drive-in / outdoor restaurant	Food and drink premises	High	Mitigate	Mitigate	Mitigate	Monitor	Monitor	Conditional	Mitigate	Mitigate	Monitor	Monitor
Supermarket	Shopping centre	Retail premises	Low	Monitor	Monitor	Monitor	No Action	No Action	Mitigate	Monitor	Mitigate	No Action	No Action
Hotel	Hotel / motel	Hotel / motel	Very Low	Monitor	No Action	No Action	No Action	No Action	Monitor	No Action	No Action	No Action	No Action
Tavern	Hotel / motel	Hotel / motel	Very Low	Monitor	No Action	No Action	No Action	No Action	Monitor	No Action	No Action	No Action	No Action
Office building	Office building	Office premises	Very Low	Monitor	No Action	No Action	No Action	No Action	Monitor	No Action	No Action	No Action	No Action
	Recreation												

Asset Type	Land Use	Standard Instrument Definition	Wildlife Attraction Risk	Western Sydney Aerotropolis: Actions for Existing Developments					Western Sydney Aerotropolis: Actions for Proposed Developments / Changes to Existing Developments				
				3 km radius (Area A) Sub-area A1	3 km radius (Area A) Sub-area A2	8 km radius (Area B) Sub-area B1	8 km radius (Area B) Sub-area B2	13 km radius (Area C)	3 km radius (Area A) Sub-area A1	3 km radius (Area A) Sub-area A2	8 km radius (Area B) Sub-area B1	8 km radius (Area B) Sub-area B2	13 km radius (Area C)
	Conservation and Natural Areas												
Water Play Area	Water sport facilities	Recreational facility (outdoor)	Moderate	Mitigate	Monitor	Mitigate	Monitor	Monitor	Mitigate	Monitor	Mitigate	Monitor	Monitor
Open Space	Urban open space (e.g. cycleways, green areas, pedestrian walkways)	Recreational area	Moderate	Mitigate	Monitor	Monitor	Monitor	Monitor	Mitigate	Mitigate	Mitigate	Monitor	Monitor
	Landscaping and Vegetation												
Surrounding landscaping	Landscaping: natural area revegetation	Environmental protection works	Moderate	Mitigate	Monitor	Mitigate	Monitor	Monitor	Mitigate	Monitor	Mitigate	Monitor	Monitor
	Landscaping: parks and gardens	Recreation area	Moderate	Mitigate	Monitor	Mitigate	Monitor	Monitor	Mitigate	Monitor	Mitigate	Monitor	Monitor
	Landscaping: streets and transport corridors	Road	Moderate	Mitigate	Monitor	Mitigate	Monitor	Monitor	Mitigate	Monitor	Mitigate	Monitor	Monitor

Outdoor Restaurant as low risk land uses within the vicinity of aerodromes. However, the NASF also requires that these areas should be monitored for their wildlife attraction. If hazards are identified through monitoring, a mitigation plan must be implemented to ensure the development does not increase the wildlife strike risk.

4. Wildlife Hazard Assessment

In principle, for the project to comply with the relevant guidelines and practices, there should be no net increase in wildlife strike risk to WSI. As such, the project should not increase populations of hazardous species at the project site. This Wildlife Hazard Assessment was completed to determine potential increases, and this section details the results.

The development is classified as a Mixed-Use Zone which includes very low to high risk classified wildlife attractions (refer to section 3.5). Of key concern for the development is if the site provides access to food and water which then contributes to sustaining or growing local populations of wildlife who use various locations in the region, including the airfield. Elevated populations of birds and flying-foxes interchangeably using different land uses close to airports can elevate strike risk. Avisure has identified flying-foxes as a potential significant strike risk and our landscaping recommendations take a conservative approach to minimise the number of flying-fox attractants. This is because:

- There are 10 known flying-fox colonies surrounding WSI (Figure 4).
- Although some of these colonies lie outside of the 13 km wildlife buffer, flying-foxes can travel 100 kilometres in a single night with a foraging radius of up to 50 kilometres from their camp (McConkey et al. 2012) and have been recorded travelling over 500 kilometres in two days between camps (Roberts et al. 2012).
- As the most struck wildlife group at Australian aerodromes, flying-foxes are likely to present a significant wildlife strike risk for WSI.
- In general, aerodromes that have significant flying-fox populations close to the aerodrome, or that have large areas of suitable foraging habitat, experience an additional strike peak during dusk and post-dusk periods as flying-foxes depart their roosts and begin their nightly foraging.

Where potential wildlife attractants cannot be designed out, the operator can apply retrospective mitigation, where site monitoring identifies a hazard. Section 6 lists come common options.

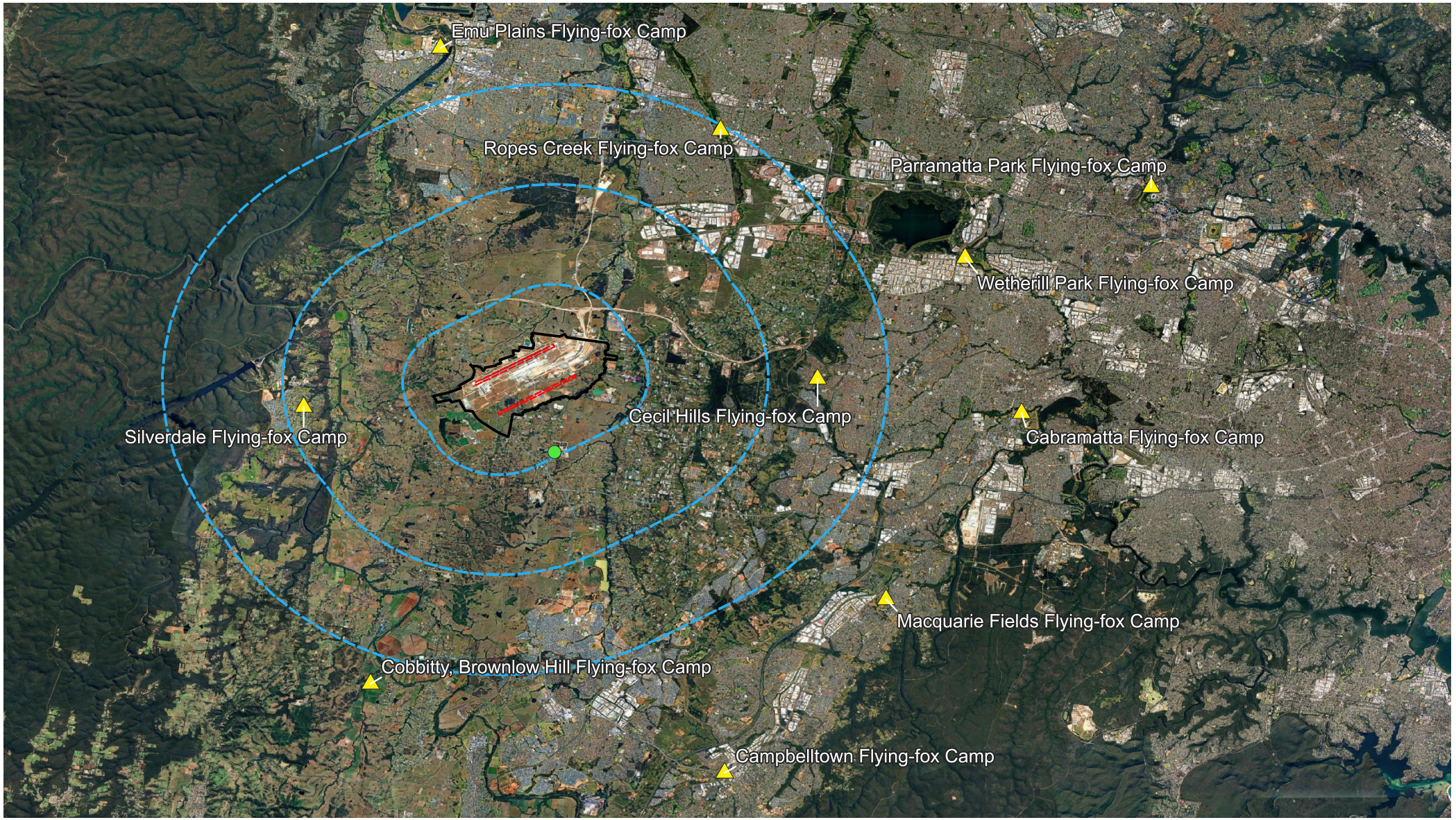

Figure 4: Flying-fox camps surrounding Western Sydney International Airport

Bradfield Corporation Pty Ltd

135 Badgerys Creek Road Wildlife Hazard Assessment

Flying-fox camps
Western Sydney International Airport
135 Badgerys Creek Road
3, 8 & 13km wildlife buffers from runway
Runway boundaries

AVISURE
aviation | wildlife | safety

Job number: 250904
Revision: 0
Author: AS
Date: 05/10/2025

0 1 2 km

GDA 2020 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 2020
Units: Meter

4.1 Landscaping

Some of Australia's highest strike risk wildlife show a preference for short airside grasses, including Masked Lapwing, Little Corella, Galah, Australian Magpie, Australian White and Straw-necked Ibis, and Feral Pigeon. Various terrestrial mammals including macropods, rabbits and hares are also attracted to areas of short grass, although these are of little relevance to this site as it is nearly 3km away from the runways.

Decorative trees, fruit trees, shrubs gardens and lawns can be particularly attractive to birds due feeding, shelter, roosting, and nesting opportunities. Shrubs and trees that produce nectar, berries, fruit or seeds will attract birds and flying-foxes. Many birds roost in trees and some species often form large communal roosts. Of particular concern are those plant species that attract flying-foxes, which are the most frequently struck species group in Australia and regularly cause damage to aircraft. For example, as the most important contributor to flying-fox diet, plants from Proteacae and Myrtaceae family (*Eucalyptus* spp., *Corymbia* spp., and *Melaleuca* spp.) (Department of Environment 2008) on and surrounding an aerodrome pose a high flying-fox attraction when flowering.

Aircraft often collide with flying-fox as they move through the airspace between off-airport camps and foraging sites. This means that there is very little the airport and its stakeholders can do to directly mitigate this risk apart from understanding the risk and implementing operational modifications to avoid flying-fox movements. Therefore, plant selection on and around an aerodrome is very important to assist in minimising the risk of wildlife strikes.

Whilst future monitoring of the site will help understand how wildlife are using these plants, our recommendations around vegetation mostly focus on the addition of new plantings.

4.1.1 Landscape Palette

As a guide, Appendix B of the Western Sydney DCP (2021) describes plant species for use beyond the 3km wildlife buffer and requires an ecologist report (submitted with the landscape plan) for areas within the 3km wildlife buffer, excluding the Western Parkland Vision Government Commitment Areas.

The design of the development's landscaping prioritises high-quality communal open spaces that support active and passive uses. Key provisions include, but are not limited to, 21% site canopy coverage (excluding communal rooftop areas) through new tree planting across the site, and 26% landscaped areas.

Figure 5. Open space concept (source: Land and Form Studios, 2025).

Figure 6. 135 Badgerys Creek Road Landscape Master Plan (source: Land and Form Studios, 2025).

Avisure identified a number of species that have a high wildlife attraction, particularly for flying-foxes (Table 5). Avisure also identified a number of species that were not included in Appendix B of the Western Sydney DCP. Table 5 details Avisure's review of the proposed landscaping palette and identifies species that should be excluded from finalised landscaping plan to reduce wildlife attraction and meet the Western Sydney DCP. Edible garden planting on site, particularly near Gung Gung Pond, increases foraging opportunities for species due to the availability of fruit that is produced by some of

the proposed species. Ideally, fruiting trees should be avoided where possible. Nets over edible garden planting can prevent access for wildlife and reduce associated risk to WSI.

It is pertinent to note that all vegetation has some level of wildlife attraction and that eliminating such attraction is impossible. This assessment has considered the location of the site relative to future aircraft movement areas and flight paths as well as nearby bird attractive habitats. The recommendations balance the requirement to create a landscape palette that is diverse without reducing canopy cover but excludes plant species that are highly attractive to wildlife. We understand that the use of certain tree species such as Eucalyptus spp. and Acacia spp., in landscaping, have been removed from the proposal.

Wildlife assemblages change over time, and it is critically important that landscapes near the airport are regularly monitored and if wildlife are found to be highly attracted to a particular feature or plant species, then the risk be mitigated. Mitigation may require the removal of seeds or in some cases the removal of whole plants of a certain species. Species acceptable for use as alternatives in the landscaping palette are included in Appendix C.

Table 3. Plant species that should be excluded from landscaping palette due to their attractiveness to birds and flying-fox. Other species listed are considered acceptable.

Scientific Name	Wildlife Attraction Details	Approved for Use within 3km (Y/N)
Acacia binervata	Flowers are known to attract flying-foxes and nectivorous birds. Mature trees can provide extensive structural support (particularly when planted in groups) for colonial roosting/breeding species such as lorikeets and corellas.	No
Acacia decurrens	Flowers are known to attract flying-foxes and nectivorous birds. Mature trees can provide extensive structural support (particularly when planted in groups) for colonial roosting/breeding species such as lorikeets and corellas.	No
Acacia falciformis	Flowers are known to attract flying-foxes and nectivorous birds. Mature trees can provide extensive structural support (particularly when planted in groups) for colonial roosting/breeding species such as lorikeets and corellas.	No
Acacia fimbriata	Flowers are known to attract flying-foxes and nectivorous birds. Mature trees can provide extensive structural support (particularly when planted in groups) for colonial roosting/breeding species such as lorikeets and corellas.	No
Acacia longifolia	Flowers may attract birds and flying-foxes. Seed pods attract granivorous birds, flowers attract insects which can attract insectivorous bird species.	No
Acacia melanoxylon	Flowers are known to attract flying-foxes and nectivorous birds. Mature trees can provide extensive structural support (particularly when planted in groups) for colonial roosting/breeding species such as lorikeets and corellas.	No
Allocasuarina littoralis	Fruits attract species like parrots and cockatoos. May also be nesting site.	No
Allocasuarina torulosa	Fruits attract species like parrots and cockatoos. May also be nesting site.	No
Banksia integrifolia	Species from the Proteaceae family are generally attractive to birds and flying-foxes.	No
Banksia serrata	Species from the Proteaceae family are generally attractive to birds and flying-foxes.	No

Banksia spinulosa	Banksias are generally attractive to birds and flying-foxes when flowering.	No
Bursaria spinosa	Part of Pittosporaceae family - a known food source for flying-foxes such as Grey-headed Flying-fox.	No
Camellia sasanqua	Nectar porduced by the flowers can attract parrots and rosellas.	No
Casuarina glauca	Mature trees can provide extensive structural support (particularly when planted in groups) for colonial roosting/breeding species such as lorikeets and corellas.	No
Corymbia citriodora	Species from the Myrtaceae family are generally attractive to birds and flying-foxes. Yellow-tailed Black Cockatoos and Pale-headed Rosella eat seeds.	No
Corymbia maculata	Species from the Myrtaceae family are generally attractive to birds and flying-foxes. Older trees create hollows creating shelter and nesting habitat for bird species.	No
Cupaniopsis anacardioides	Small to medium-sized tree. Flowers attracts bees and many butterfly species. Fruit eaten by flying-foxes and many species of birds.	No
Cynodon dactylon	Attractive to ground foragers and seed eating birds (e.g. lapwings, parrots, magpies, ducks).	No
Denhamia silvestris	Fruit may attract species such as parrots and rosellas. Flowers may attract nectivorous birds.	No
Elaeocarpus reticulatus	Flowers and fruits attract birds and flying-foxes.	No
Eucalyptus eugenioides	Species from the Myrtaceae family are generally attractive to birds and flying-foxes. Older trees create hollows creating shelter and nesting habitat for bird species.	No
Eucalyptus fibrosa	-	No
Eucalyptus melliodora	Species from the Myrtaceae family are generally attractive to birds and flying-foxes. Older trees create hollows creating shelter and nesting habitat for bird species.	No
Eucalyptus moluccana	Flowers are known to attract flying-foxes and nectivorous birds. Mature trees can provide extensive structural support (particularly when planted in groups) for colonial roosting/breeding species such as lorikeets and corellas.	No

Eucalyptus saligna	Species from the Myrtaceae family are generally attractive to birds and flying-foxes. Older trees create hollows creating shelter and nesting habitat for bird species.	No
Eucalyptus tereticornis	Species from the Myrtaceae family are generally attractive to birds and flying-foxes. Older trees create hollows creating shelter and nesting habitat for bird species.	No
Ficus coronata	Sweet purple-black fruit is attractive for birds.	No
Grevillea robusta	Species from the Proteaceae family are generally attractive to birds and flying-foxes.	No
Kunzea ambigua	Species from the Myrtaceae family are generally attractive to birds and flying-foxes.	No
Leucopogon juniperinus	Spreading, densely branched shrub with dark green prickly foliage & white tubular flowers in May-October, followed by yellow berries. Attracts fruit eating birds.	No
Melaleuca decora	Flowers are known to attract flying-foxes and nectivorous birds. Mature trees can provide extensive structural support (particularly when planted in groups) for colonial roosting/breeding species such as lorikeets and corellas.	No
Melaleuca nodosa	Flowers are known to attract flying-foxes and nectivorous birds. Mature trees can provide extensive structural support (particularly when planted in groups) for colonial roosting/breeding species such as lorikeets and corellas.	No
Melaleuca quinquenervia	Species from the Myrtaceae family are generally attractive to birds and flying-foxes.	No
Pennisetum alopecuroides	A compact, clumping perennial native fountain grass, the seeds attract seed-eating birds like finches, parrots and pigeons and spreads rapidly.	No
Persoonia linearis	Species from the Proteaceae family are generally attractive to birds and flying-foxes.	No
Rubus parvifolius	Red berries can attract species such as wattlebirds, honeyeaters, and parrots.	No
Syncarpia glomulifera	Species from the Myrtaceae family are generally attractive to birds and flying-foxes.	No
Syzygium australe	Species from the Myrtaceae family are generally attractive to birds and flying-foxes.	No

Themeda triandra	Seeds eaten by cockatoos, parrots, pigeons and finches.	No
Waterhousea floribunda	Berries attractive to birds.	No

4.1.2 Irrigation

The greater the area of landscaping and the more areas requiring supplementary irrigation, the greater the number and species of birds likely to be attracted. The proposed irrigation system for the site was not supplied for review. Species that require regular irrigation should be avoided and the use of sprinklers should be minimised to reduce attraction. Taps that drip and sprinkler systems can result in temporary ponded water on site which can attract species such as Galah to forage, increasing the strike risk (Figure 5).

Figure 7. Temporary water sources, such as left from irrigation systems, can attract wildlife such as Galahs on site.

CASE STUDY: Irrigation system in New Zealand

The following case study has been anonymized due to ongoing and outstanding actions.

A local council proposed to develop a wastewater irrigation facility on the boundary of an airport in New Zealand. The area will also be used to harvest silage. Both irrigation and silage production can be attractive to birds; accordingly, the council engaged specialists to assess the bird strike risk of the proposed development.

The assessment noted that for the wastewater irrigation facility to proceed and meet the requirements of good risk management practice, the council would need to ensure that hazardous birds are not attracted to the site and there are no increased bird movements across aircraft flight paths, causing a greater risk to air traffic. The irrigation site was already highly attractive to birds under grazing to very short grass along with shelter belts and water ponding around the bog area. If mitigation was not applied, this attraction could be exacerbated by the introduction of nutrient risk treated wastewater, which will flush invertebrates to the surface and provide food for the birds. The production of silage was also considered a potential bird attraction, particularly during cutting, which exposes insects and other prey items to birds and encourages fresh grass shoots that species such as Canada Geese can graze on. The removal of shelter belts and the installation of denser shelter belts could inflate populations of birds such as Starling which already use these habitats for roosting. In attracting more birds on site, and because of its proximity to the airport, conflict with aircraft was likely during take-off, landing and in circuits. Of particular concern were flocking birds and/or large birds. The consequences of a significant strike resulting in a forced landing or crash are also increased due to the absence of rescue and firefighting services at the airport.

The assessment recommended that the proposal to irrigate wastewater and produce silage only proceed in the proposed location if a comprehensive management plan is developed that details the mitigation required to manage the risk and is backed by regular monitoring and evaluation. Mitigation at the site should include adopting a long grass policy, eliminating standing water, infilling existing depressions and dispersing roosting birds. If applied well, mitigation could significantly reduce the risk currently created by the site. It is critical that risks are regularly monitored and reviewed and, if necessary, corrective actions taken to ensure the risk tis maintained to acceptable levels.

Outcome: Council adopted a comprehensive management plan incorporating the recommended mitigation measures and monitoring.

4.1.3 Maintenance

Maintenance Plan for landscape and grass on the development were not supplied for review. Weed species such as Gomphrena, Siratro and Dandelion can attract hazardous species such as Galahs, cockatoos, and corellas, increasing the strike risk. Any revegetation works on site can also influence wildlife attraction on site and associated strike risk as it could disturb species currently utilising the site and foraging conditions, while also increasing attraction as more food sources are planted.

CASE STUDY: Landscaping maintenance in Queensland, Australia

The following case study has been anonymized.

An airport located in Queensland, Australia was expanding airport infrastructure, including planting additional vegetation landside. As part of their wildlife hazard management program, the airport engaged aviation ecologists to review all landscaping designs and palettes against the airport's Landscaping Policy and best practice standards to identify wildlife attracting species. The reviews identified a number of high risk landscape species that posed a high risk of attracting flying-foxes, a known strike risk for the airport. If planted in the location and in numbers proposed, their presence could increase flying-foxes transiting the aerodrome during flowering and fruiting seasons, increasing the flying-fox strike risk.

Outcome: The airport updated the landscape palettes and designs to exclude high wildlife attracting species, and a monthly monitoring program was implemented for other species, such as palm trees, that were highlighted as potentially hazardous when fruiting. Where monitoring identified fruiting in the palm trees and associated risk of flying-fox attraction, the fruit are removed by the airport thus maintaining aviation safety requirements and aesthetic requirements.

4.2 Water

Although the development is zoned as Mixed-Use for residential and commercial infrastructure, as part of the development, in the centre of the development will be riparian zone leading to Gung Gung Pond, located next to edible garden planting, and a water feature with seating near Centre Loop West (Figure 8).

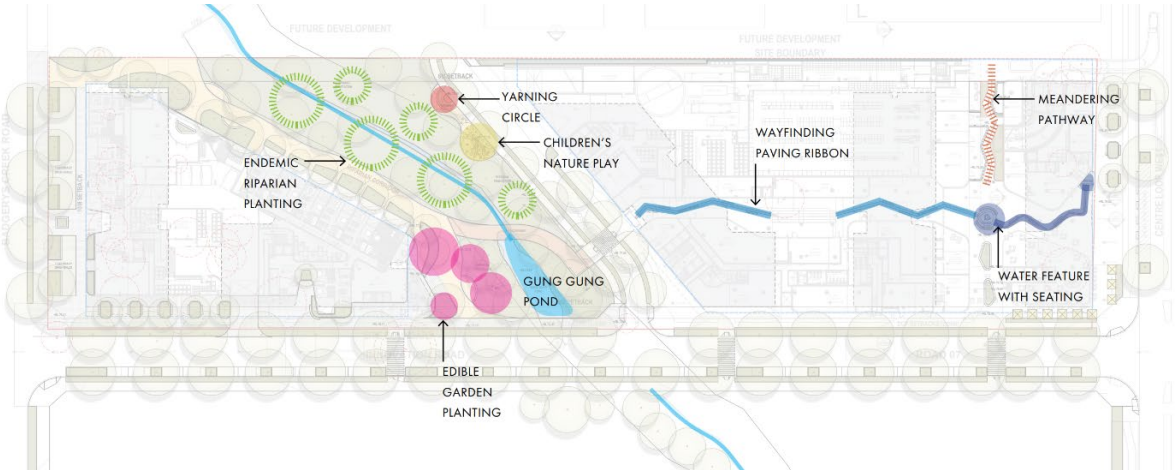

Figure 8. Waterbodies, water features and edible garden planting located on 135 Badgerys Creek Road (source: Land and Form Studios, 2025).

Water infrastructure and wetlands, in general, are considered a high risk in terms of the numbers and types of wildlife they attract (Table 4). These areas can be particularly attractive to wildlife where the water is easily accessible (i.e., from the banks or on the surface area of the water) and where adjacent vegetation offers safety and refuge. During dry periods, when other regional water supplies may be dry, artificial water supplies can attract significant numbers of wildlife. Edible planting near Gung Gung Pond can further increase the risk of wildlife to the area as it increases available food sources.

Many of the species in Table 5 could present a risk to aircraft operating at WSI because of their large body mass and/or tendency to move in flocks.

Table 4. Hazardous birds which are likely to occur at Gung Gung Pond.

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
Australasian Darter *Anhinga novaehollandiae*	Distributed throughout terrestrial wetlands and sheltered coastal waters.	Their large body size creates a strike risk when left unmanaged.	Possible in relatively low numbers due to the presence of waterbodies.	Deep
Australasian Grebe *Tachybaptus novaehollandiae*	Freshwater ponds or small waterways.	Feeds on small fish and water inspects, caught during deep underwater dives. They keep close to shore and seldom forms large flocks.	Possible in very low numbers due to the presence of waterbodies. Unlikely to create a hazard for WSI.	Deep
Australian Pelican *Pelecanus conspicillatus*	Primarily wetland habitats (marine and freshwater).	They often use thermals over airports, in approach and departure paths. Thermalling and transiting pelicans present a significant strike risk primarily due to their very large body mass.	Possible in very low numbers on occasions due to the presence of waterbodies.	Deep
Australian Raven *Corvus coronoides*	Forests and woodlands. Common in urban parks and gardens.	Generally observed singularly or in pairs and small groups, however large flocks can form during the non-breeding season. Although generally wary of aircraft moving on airfields, crows can pose a strike risk and their relatively large body can result in aircraft damage.	Attracted to trees to roost, perch and nest. Attracted to open parklands, particularly where people's food wastes are available.	Not applicable

3 Source: Handbook of Australian, New Zealand & Antarctic Birds.
4 Source: Handbook of Australian, New Zealand & Antarctic Birds and Halse (1993). Deep = mean equal to or greater than 1.18 m; Shallow = mean less than 1.18 m.

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
Australian White Ibis *Threskiornis mollucca*	Terrestrial wetlands, sheltered marine and estuarine habitat. Also landfills and urban parks and gardens.	Airports offer large areas of short grass where ibis can safely forage whilst being vigilant to predators. Airport fencing, and general airport activity, provide a relatively predator-free environment. Ibis transiting through airport airspace to access adjacent habitats, such as wetlands and landfills, present a serious strike risk because of their large body mass.	Highly likely to be attracted to breed and roost particularly in trees, fringing the wetlands and waterbodies. Highly likely to be attracted to food resources that people provide from food wastes. Will forage naturally at waterbodies if banks are gently sloping.	Shallow
Black Swan *Cygnus atratus*	Wetlands including river estuaries, bays, lakes, ponds and dams as well as inundated pasture.	Present a serious strike risk because of their large body mass and tendency to form large flocks, posing a significant risk to aircraft while moving between wetlands.	Possible in very low numbers on occasions due to the presence of waterbodies.	Deep
Cattle Egret *Ardea ibis*	Grasslands, wooded lands and terrestrial wetlands.	Short grass, access to food and water, and lack of predators attract make airports particularly attractive to Cattle Egret. Their medium body size, coupled with their tendency to form small groups, create a strike risk when left unmanaged.	Possibly attracted to breed and roost particularly in trees, fringing the waterbodies. May be attracted grasslands and wetlands to forage naturally on invertebrates.	Not applicable

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
Chestnut Teal *Anas castanea*	Wetlands and estuaries in coastal regions. Also inhabits open freshwater lakes, reservoirs and sewage ponds during dry seasons.	Drains, water retention areas, access to food, and lack of predators make airports particularly attractive to Chestnut Teal. Their relatively large body size, coupled with their tendency to form small groups, create a strike risk when left unmanaged. Densely vegetated waterbodies provide an additional refuge.	Possible in relatively low numbers due to the presence of waterbodies.	No preference
Eastern Great Egret *Ardea modesta*	Terrestrial, estuarine and littoral wetland systems. Also, flooded grasslands, swamps, mudflats, and mangrove forests.	Short grass, access to food/water, and lack of predators make airports particularly attractive to egrets. Their relatively large body size, coupled with their tendency to form small groups, create astrike risk when left unmanaged. They can be difficult to disperse, often relocating only short distances on the airfield when harassed.	Possible in relatively low numbers due to the presence of wetlands and waterbodies.	Shallow
Great Cormorant *Phalacrocorax carbo*	Permanent freshwater wetlands, coastal inlets and estuaries.	Because of their large body mass, they pose a risk to aircraft as they move between habitats.	Possible in relatively low numbers due to the presence of waterbodies	Deep
Great Crested Grebe *Podiceps cristatus*	Wetlands including rivers, lakes, estuaries, sheltered bays particularly those with large, deep, open bodies of fresh water.	Feeds exclusively in the water on fish, usually in pairs. They travel between wetlands at night and are most likely to pose a risk to aircraft at this time.	Possible in very low numbers due to the presence of waterbodies. Unlikely to create a hazard for WSI.	Deep

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
Grey Teal *Anas gracilis*	Sheltered fresh, brackish and saline waters, particularly timbered pools and river systems of the inland areas.	Can occur in large numbers in wetlands and travel between wetlands at night. They generally forage on or very close to water so are unlikely to forage near runways.	Possible in relatively low numbers due to the presence of waterbodies	Deep
Hardhead *Aythya australis*	Freshwater swamps and wetlands, occasionally in sheltered estuaries. They prefer deep, fresh open water with fringing vegetation.	Rarely forages on land and roosts on low branches near the water. They have a large body mass and fly between wetlands at night which makes them a high risk to aircraft.	Possible in relatively low numbers due to the presence of waterbodies	Deep
Hoary-headed Grebe *Poliocephalus poliocephalus*	Large open waterbodies, estuarine, brackish or freshwater.	Feeds on aquatic insects that are caught by deep diving during the day and in low-light conditions. Movements occur wherever surface water persists after rain. Day flights occur more frequently than other grebe species.	Possible in relatively low numbers due to the presence of waterbodies. Unlikely to create a hazard for WSI.	Deep
Intermediate Egret *Ardea intermedia*	Terrestrial, estuarine and littoral wetland systems. Also, flooded grasslands, swamps, mudflats, and mangrove forests.	Short grass, access to food and water, and lack of predators, make airports attractive to egrets. Their relatively large body size, coupled with their tendency to form small groups, create a strike risk when left unmanaged. They can be difficult to disperse, often relocating only short distances on the airfield when harassed.	Possible in relatively low numbers due to the presence of wetlands and waterbodies.	Shallow

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
Little Black Cormorant *Phalacrocorax sulcriostris*	Wetlands, sheltered coast waters, mangroves, rives, dams, fish farms and sewage treatment banks.	Known to form large flocks to fly to large water sources where food resources are abundant (e.g. high fish populations). This flocking behaviour presents a high hazard to aircraft operations, especially at dawn and dusk. For airports that support water bodies on and adjacent to the airfield, cormorant activity can be high.	Possible in relatively low numbers due to the presence of waterbodies	Deep
Little Pied Cormorant *Microcarbo melanoleucos*	Found throughout coasts, islands, estuaries, and inland wetlands.	Known to form large flocks to fly to large water sources where food resources are abundant (e.g. high fish populations). This flocking behaviour presents a high hazard to aircraft operations, especially at dawn and dusk. For airports that support water bodies on, and adjacent to, the airfield, cormorant activity can be high.	Possible in relatively low numbers due to the presence of waterbodies.	Deep
Masked Lapwing *Vanellus miles*	Short grass and open flat areas (e.g. airport runways).	Attracted to large open areas of short grass. They are highly territorial during the breeding season, and will aggressively defend their nests and young against all potential predators, including aircraft. It is this behaviour that makes them a particularly hazardous strike risk.	Could be attracted to more open park-like areas, but in relatively low numbers.	Not applicable

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
Nankeen Night-Heron *Nycticorax caledonicus*	Vegetated wetlands along river margins, mangroves, floodplains, swamps, parks and gardens.	Drains, water retention areas, access to food, and lack of predators, make airports particularly attractive. Their relatively large body size can create a strike risk when left unmanaged. They are nocturnal foragers, often feeding around runways to prey on insects and frogs attracted to the lights, and can be difficult to detect. Groups can form in response to eruptions of insects and frogs.	Possible in very low numbers due to the presence of waterbodies. Unlikely to create a hazard for WSI.	Shallow
Pacific Black Duck *Anas superciliosa*	Any temporary or permanent water. Prefers large, permanent, well-vegetated waterbodies and waterways.	Drains, water retention areas, access to food, and lack of predators make airports particularly attractive. Their relatively large body size, coupled with their tendency to form small groups, create a serious strike risk when left unmanaged. Short-grassed areas adjacent to water bodies provide safe loafing areas with easy access to water when disturbed. Densely vegetated waterbodies provide an additional refuge.	The waterbird species most likely to be attracted to the development due to the presence of waterbodies. Prefer waterbodies with a depth less than 50cm where they “upend” to feed on macroinvertebrates in the substrate.	Shallow

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
Pied Cormorant *Phalacrocorax varius*	Wetlands, sheltered coast waters, mangroves, rivers, dams, fish farms and sewage treatment ponds. Prefers water depth greater than 1 m.	Known to form large flocks to fly to large water sources where food resources are abundant (e.g. high fish populations). This flocking behaviour presents a high hazard to aircraft operations, especially at dawn and dusk. For airports that support water bodies on, and adjacent to, the airfield, cormorant activity can be high.	Possible in relatively low numbers due to the presence of waterbodies.	Deep
Plumed Whistling-Duck *Dendrocygna eytoni*	Grasslands in the vicinity of waterbodies.	Short grass, access to food and water, and lack of predators, make airports particularly attractive. Their relatively large body size, coupled with their tendency to form small groups, create a strike risk when left unmanaged. They will often use airports at night to forage, venturing into open grassed areas adjacent to aircraft movement areas to forage on grasses and seeds.	Possible in relatively low numbers due to the presence of waterbodies.	Shallow

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
Royal Spoonbill *Platalea regia*	Large shallow waters, inland and coastal. Well vegetated shallow fresh water, wetlands, tidal mudflats, estuaries, saltmarshes, and mangroves.	Access to water, short grass and food, and lack of predators, make airports particularly attractive to spoonbills. Their relatively large body size, coupled with their tendency to form small groups, create a strike risk when left unmanaged. They can be particularly problematic at coastal airports, like YBMK, which are located in close proximity to tidal wetlands.	Possible in very low numbers due to the presence of wetlands and waterbodies.	Shallow
Silver Gull *Chroicocephalus novaehollandiae*	Any watered habitat; natural or manmade, permanent or temporary.	Hazardous to aircraft primarily due to their flocking tendency which can result in large numbers transiting the airport or flight paths. They will often use airfields as a temporary refuge during inclement weather, occasionally congregating in hundreds. Grasslands inundated with water following rainfall is also a significant attractant on airports.	Highly likely to be attracted to the site because of food resources that people provide from food wastes. Will use waterbodies to drink and wash.	No preference

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
Straw-necked Ibis *Threskiornis spinicollis*	Grasslands, terrestrial wetlands, farmland.	Airports offer large areas of short grass where ibis can safely forage whilst being vigilant to predators. Airport fencing, and general airport activity, provide a relatively predator-free environment. Ibis transiting through airport airspace to access adjacent habitats, such as wetlands and agricultural fields, present a strike risk because of their large body mass.	Could be attracted to grassland areas, but in relatively low numbers.	Not applicable
Wandering Whistling-Duck *Endrocygna arcuata*	Lagoons, flooded grasslands, dams.	Short grass, access to food and water, and lack of predators, make airports particularly attractive to Wandering Whistling-Ducks. Their relatively large body size, coupled with their tendency to form small groups, create a strike risk when left unmanaged. They will often use airports at night to forage, venturing into open grassed areas adjacent aircraft movement areas to forage on grasses and seeds.	Possible in relatively low numbers due to the presence of waterbodies.	Deep (dry season) and shallow (wet season)
Whistling Kite *Haliastur sphenurus*	A variety of urban and natural habitats.	The strike risk is associated with their large body mass, aerial hunting, thermalling activity, and their tendency to occupy urban areas.	Could be an occasional visitor to the site, either solo or in very small numbers.	Not applicable

Species	Habitat[3]	Behaviour	Likely Attraction of the Site to the Species	Wetland Water Depth Preference[4]
White-faced Heron *Egretta novaehollandiae*	Anywhere there is water from tidal mudflats to wet grasslands and gardens.	Short grass, access to food and water, and lack of predators, make airports particularly attractive to herons. Their relatively large body size, coupled with their tendency to form small groups, create a strike risk when left unmanaged. They can be difficult to disperse, often relocating short distances when harassed.	Possible in very low numbers due to the presence of wetlands and waterbodies.	Shallow
Wood Duck *Chenonetta jubata*	Grasslands, wooded lands and terrestrial wetlands.	Forage in short grass mainly on land but also in shallow water at edges of wetlands. They are attracted to wetlands that provide open banks or wide beaches for loafing near feeding grounds. Their relatively large body size, coupled with their tendency to form small groups, create a strike risk when left unmanaged. Wood Ducks will often use airports at night to forage, venturing into open grassed areas to adjacent aircraft movement areas to forage on grasses and seeds.	Possible in relatively low numbers due to the presence of wetlands and waterbodies.	Deep

Permanent waterbodies, such as Gung Gung Pond, can increase wildlife attraction as it provides reliable foraging opportunities for hazardous species (Table 4). Gently sloped basin edges provide easy access for birds and other animals to walk into facilities such as ponds, particularly if it holds semi-permanent to permanent water with no aquatic vegetation, further increasing wildlife attraction. Other water infrastructure such as riparian zones with slow moving water, or where water accumulates for extended periods of time, can be very attractive to wildlife. The attraction is enhanced where the banks are gently sloped because it provides easy access to the water. Heavily vegetated drains or other water infrastructure can act as a refuge for many water birds. For sites with complex water systems, birds are more likely to use areas interchangeably, creating a strike risk as they transit through the airspace to other surrounding foraging sites.

The development overall is not listed as a *relevant development* under the SEPP (Western Parkland City) 2021, however Guideline C of the NASF identifies water infrastructure and wetlands within 3km to an aerodrome as a high wildlife attractant risk, recommending that new water infrastructure within 3km of an aerodrome be mitigated and new wetlands within 3km are incompatible. Gung Gung Pond is listed as a high risk wildlife attractant site under the Aerotropolis Aviation Safeguarding Framework and recommends it be mitigated within 3km of WSI (Table 4).

In principle, however, wetlands within 3km of an aerodrome are not ideal. To meet the requirements of the SEPP and NASF Guideline C, mitigation strategies identified in Section 6 should be implemented for Gung Gung Pond (Table 5). However, it is a second order watercourse and the Gung Gung section of the watercourse has been assessed as a “river” and is to be retained and rehabilitated for the portion of the reach which constitutes a ‘river’ under the WM Act 2023 (Ecological 2025).

Table 5. NASF Guideline C wildlife attraction and land use.

Land use types	Likely attractants ▲ natural elements ■ structural elements ● waste and food	Wildlife attraction risk	Actions for existing development and land uses in wildlife management areas			Actions for new and changed development and land uses in wildlife management areas		
			0-3 km (Area A)	3-8 km (Area B)	8-13 km (Area C)	0-3 km (Area A)	3-8 km (Area B)	8-13 km (Area C)
Agriculture								
Turf farm, piggery, abattoir, aquaculture	▲ ■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Fruit tree farm/orchard	▲ ■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Fish processing/packing plant	▲ ■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Farm (cattle, dairy, poultry, crops)	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Horticulture, viticulture, market farms/gardens	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Forestry	▲ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Plant nursery	▲ ■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Conservation								
Wildlife/conservation area - wetland, waterways	▲	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Wildlife/conservation area - dryland	▲	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Recreation								
Significant open water (ancillary to development)	▲	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Showground	▲ ■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Significant landscaped space (ancillary to development)	▲	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Golf course	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Park, playground	▲ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Picnic areas, camping ground	▲ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Racetrack, horse riding school	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Sports facility (tennis, bowls, football fields)	▲ ■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Commercial								
Food processing or storage facility	■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Fast food, drive-in, outdoor restaurant	■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Shopping centre	■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Warehouse (food storage)	■ ●	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Car park	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Cinemas	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Hotel/motel	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Office building	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Petrol station	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Warehouse (non-food storage)	■ ●	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Utilities								
Food / organic waste facility	■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Putrescible waste facility - landfill	●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Putrescible waste facility - transfer station	■ ●	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Water infrastructure (drains, channels, basins)	▲	High	Mitigate	Mitigate	Monitor	Mitigate	Mitigate	Monitor
Non-putrescible waste facility - landfill	●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Non-putrescible waste facility - transfer station	■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Sewage / wastewater treatment facility	■ ●	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Potable water treatment facility	▲ ■	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action

The Gung Gung Pond is to retained in its natural state. Mitigation, if it were allowed could incorporate a number of options:

If a waterbody is enclosed or netted, the wildlife attraction will be minimal. Above ground waterbodies that are not enclosed can provide a water source for birds such as ducks. One advantage of above ground basins is the absence of a bank whereby birds and other animals can walk to access water.

Drains or creeks with slow moving water, or where water accumulates for extended periods of time, can be very attractive to wildlife. The attraction is enhanced where areas are gently sloped because it provides easy access to the water. Heavily vegetated creeks, basins and drains can act as a refuge for many water birds such as ducks however if it reduces water surface areas then it could reduce wildlife attraction. Banks that have a 1H:4V slope that are concrete are effective for reducing attraction for wildlife compared to gently sloped grass swales.

The slope leading into Gung Gung Pond will be 3H:1V slope (Figure 9) which can be attractive for hazardous species such as ducks. Based on the pond's designs identified in the landscape designs, the pond will have a shallow depth which could also attract hazardous wildlife to forage (Table 6).

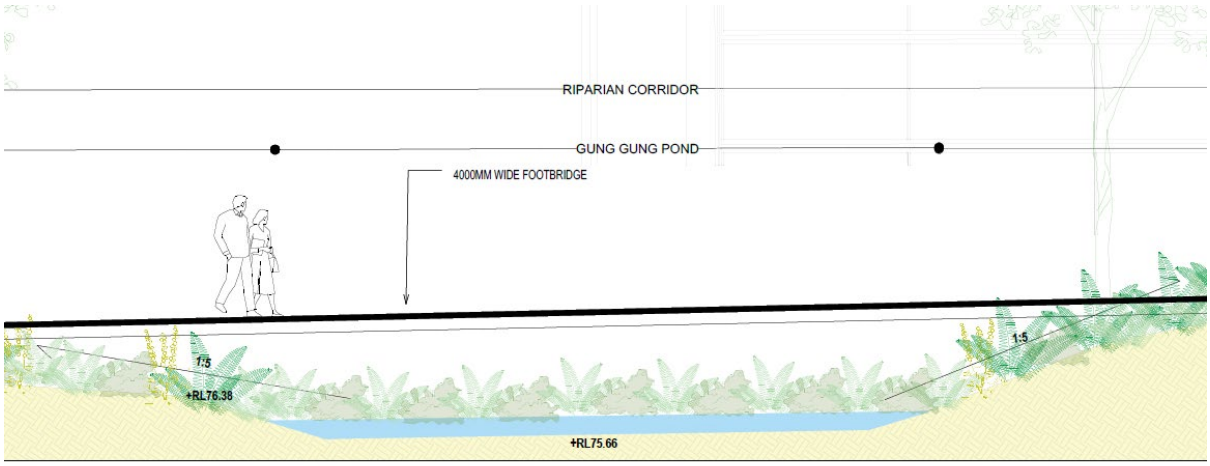

Figure 9. Landscape design around Gung Gung Pond (source: Land and Form).

Waterbodies with steeper sides and made of materials such as concrete will deter birds from loafing and foraging on the sides.

The use of gabions or other form of rockwork along the edges of waterbodies could also be used to reduce access for wildlife in the waterbodies.

It is important that the ultimate result does not measurably increase the numbers of hazardous bird species using the site because of the watercourse.

CASE STUDY: Sydney Park, Sydney Australia

Sydney Park located in Sydney, Australia contains a large waterbody surrounded by natural vegetation with a depth of approximately 2m. Due to the site's proximity to Sydney International Airport, there were concerns regarding wildlife attraction on site and associated strike risk to aircraft operations. Wildlife such as waterbirds utilise waterbodies for foraging and can act as a refuge when displaced from other surrounding sites, increasing the strike risk as flocks intersect flight paths.

Outcome: To reduce wildlife access to the waterbody, a rock wall (gabion) was built around the waterbody preventing access for wildlife from entering the waterbody. The gabion and large depths make the site unattractive for hazardous wildlife such as ducks that prefer a slow incline into waterbodies with a small depth.

4.3 Waste

Waste disposal mechanism in public areas were not supplied for review. Provided that access to all waste receptables (i.e., including small and industrial bins) remain enclosed if utilised onsite, this is unlikely to attract wildlife. If lidded waste receptable are kept outside, regular waste removal should be at a frequency that empties the bins before they overflow so that the exposed rubbish does not attract scavenger birds such as ravens and ibis.

Human waste left by members of the public in open spaces or in overflowing bins in both the public areas and at food and beverage areas and the supermarket could increase attraction for birds such as pigeons, ravens, starlings and ibis. Waste left by construction crews during construction could also attract these species, increasing the risk to WSI as birds move between foraging and roost sites.

Figure 10. Australian White Ibis foraging in waste receptacles at an airport.

4.4 Public feeding

Feeding of wildlife, particularly birds, by members of the public has been recorded at off-airport sites surrounding airports in Australia and overseas. Any feeding of birds at 135 Badgerys Creek Road during or post construction could increase attraction for opportunistic feeders such as pigeons, starlings, ibis and ravens, further increasing the site's risk to WSI.

Signs instructing that feeding of wildlife is prohibited on site and subsequent penalties will apply, must be incorporated into the development's design to reduce risk of public feeding of wildlife.

CASE STUDY: Coburg Lake, Melbourne Australia

Coburg Lake located in Melbourne, Australia contains a large waterbody surrounded by natural vegetation with pedestrian footpaths throughout the site. On occasion, seed has been scattered in the grass on site by members of the public attracting large amounts of hazardous wildlife such as Feral Pigeons. Due to the site's proximity to Melbourne (Tullamarine) Airport, the site poses a strike risk to the aerodrome as birds move between Coburg Lake and other surrounding foraging and roosting sites. Pigeons are a known strike risk to the aerodrome.

Outcome: To reduce wildlife attraction, the airport is liaising with local council to install signs to reduce feeding of wildlife by the public on site.

4.5 Infrastructure

Site infrastructure, including roads, lighting, fencing, buildings, signs, and sealed pavement areas can provide a range of perching, roosting and nesting opportunities for wildlife. For example, building eaves provide nesting platforms for Fairy Martins; and, design dependent, shelter for roosting Common Starlings; light structures provide platforms for raptor nests; and sealed pavement areas provide safe loafing opportunities for Silver Gulls, particularly during inclement weather (Figure 11-14).

Figure 11. Building eaves provide suitable nesting habitat for species such as Fairy Martin.

Figure 12. Poorly designed lighting is often used by raptors to establish nests.

Figure 13. Roofs can offer a loafing area for flocks of pigeons and other birds. Silver Gulls are known to nest on gently sloping roofs.

Figure 14. Buildings with wide open doors can support large populations of communal birds such as pigeons and starlings who use them as a roost or refuge.

Infrastructures at off-airport sites can attract wildlife as they provide roosting, perching and nesting opportunities. The presence of infrastructure on site such as the hotel, supermarket, residential housing, and food and beverage facilities will provide perching attraction for species, particularly in areas where food is available. Designs supplied for review include ledges and overhangs that provide ideal perching opportunities for species such as pigeons and ravens (Figure 15). Designs do not include anti-perch spikes or exclusion devices to reduce wildlife attraction.

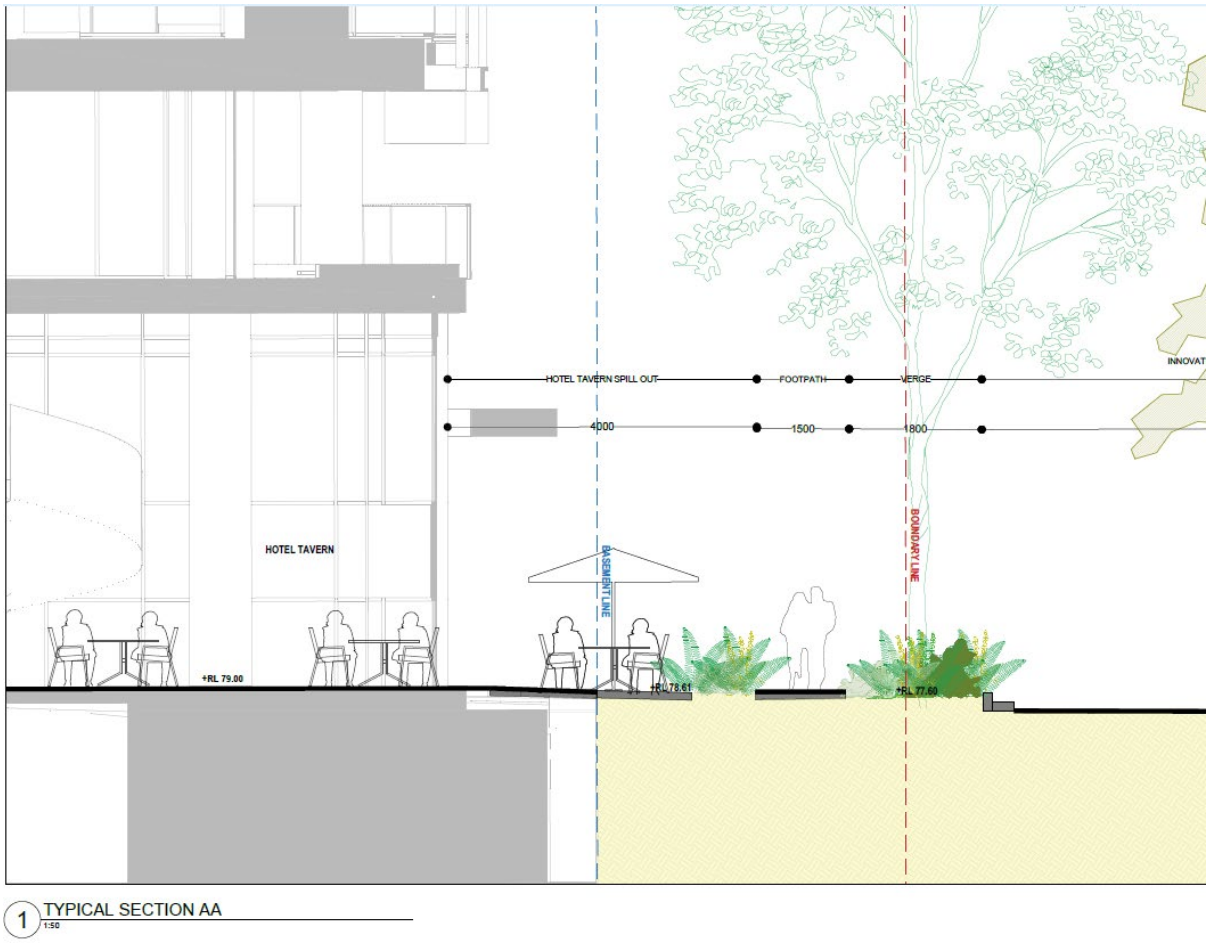

Figure 15. Example of infrastructure with ledges and overhangs that provide wildlife attraction (source: Land and Form).

4.6 Construction

Construction activities in proximity to aerodromes can elevate wildlife activity above normal levels. Areas of temporary water retention can attract ducks and other water birds. Earthworks expose soils that attract birds to forage on the exposed invertebrates and temporary stockpiles of soil or other material can provide additional loafing and perching opportunities for birds. Pipes and other construction materials can provide temporary shelter and, in some cases, birds such as Fairy Martins have established nests in these materials. In some circumstances the lack of effective contractor induction programs can result in workers inadvertently attracting wildlife by not managing their food waste, by feeding the wildlife, and by simply not recognising potential or actual wildlife hazards.

Any Construction Environmental Management Plans should address these issues, if construction coincides with the WSI opening, with the following objectives:

1. Minimising food wastes by providing waste receptacles for workers to use and ensuring compliance.
2. Minimising the period of time that excavated soil is left open for wildlife to be attracted to.
3. Limiting the area that ponded water may form.

4. Monitoring of the above with responsive actions such as the deployment of trained wildlife management staff in the event elevated numbers of wildlife are observed.

Figure 16. Soil stockpiles can attract wildlife.

Figure 17. Construction earthworks can create temporary, but significant, wildlife attractants.

Stripping the topsoil will disturb and expose insects that may temporarily increase the wildlife attraction. Soil stockpiling on-site can provide loafing and perching opportunity for a variety of wildlife.

Low lying areas, or areas that temporarily accumulate water after rain, can be problematic on and near aerodromes. Not only do they provide access to additional freshwater, but the resulting waterlogged soils bring worms and other soil invertebrates close to surface where they are easily accessible to ground foragers such as ibis, lapwings and magpies. Temporary depressions during construction, particularly during earthworks, are common, and regular monitoring will need to identify any emerging issues following rainfall events when water accumulates in these surface depressions and attracts wildlife (refer Section 6 for recommendation and management options).

Figure 18. Depressions that accumulate with water after rain help bring soil invertebrates close to surface, making foraging easier for many birds.

Figure 19. Waterlogged soils and ponded water adjacent to aircraft movement areas can attract significant numbers of birds. Short grass in these areas enhances the attraction.

5. Conclusion

The development can proceed subject to mitigation. For the project to meet the requirements of relevant guidelines and practices, there is a need to ensure that birds and other wildlife that present a hazard to aircraft are not attracted to the site in large numbers.

Species such as Eucalyptus spp., and Acacia spp., are high flying-fox attractants, could influence flying-fox activity within the 3km wildlife buffer of the aerodrome: these have been excluded from the landscape. Edible garden planting may also further increase wildlife attraction. Ideally, fruiting trees should be avoided however, if not feasible, placing nets over the edible garden can prevent access for wildlife and reduce associated risk to WSI. The waterbody on site (Gung Gung Pond) may also attract hazardous wildlife such as ducks, pelicans, swans, and ibis on site, further increasing the site's wildlife attraction, including potential plant species planted around the wetland. Gung Gung Pond may have gently sloped vegetation banks which, coupled with a shallow depth, may attract hazardous wildlife such as ducks, herons and ibis. However, if the Gung Gung Pond is retained in its natural; state, then it should be demonstrated that it is not measurably increasing the attraction to hazardous bird species.

Construction of the development, primarily earthworks, is likely to attract more wildlife activity than the operation of it. This will include ground foragers such as Australian White Ibis, Straw-necked Ibis, Australian Magpie, Feral Pigeon and Australian Ravens, who are likely to use the airside and landside areas interchangeably.

Waste on site during and post construction and public feeding of wildlife could also increase the site's attraction. The designs currently do not incorporate signs to educate the public against feeding of wildlife on site. Waste by overflowing bins, rubbish left on site, and rubbish at food and beverage facilities and the supermarket could further increase attraction for birds such as pigeons, ibis, ravens, and starlings. The designs supplied did not include the design for waste receptacles on site including around the public spaces, at the supermarket, and the food and beverage facilities. Waste bins that are enclosed and regularly inspected to reduce risk of overflowing should also be incorporated into the design.

Elements of infrastructure design could provide perching and potential roosting attraction for hazardous wildlife including pigeons and ravens. Designs supplied do not include installation of wildlife exclusion devices such as anti-perch spikes or exclusion netting to reduce attraction, particularly in areas where human waste or food will occur, such as around food and beverage facilities.

It is also recommended that the site be monitored once it is operational to determine, with greater accuracy, the level of wildlife activity and its contribution to the airport's strike risk profile.

6. Recommendations and mitigations

Table 6 describes recommendations and mitigation options to best manage the actual or potential wildlife risk associated with the Regional Stormwater Infrastructure.

Table 6. Recommendations and mitigation options.

Area	Recommendation / mitigation option	Frequency
Design	If possible, design the watercourse to: • Have a 4H:1V slope that is rock-lined not grass lined. Where this is not feasible, include a rock gabion surrounding the waterbody to reduce loafing attraction on the banks.   • Include a clay liner to reduce built up of vegetation on the bottom of the waterbody to reduce foraging attraction. • Increase depth of the pond to at least 1m to reduce attraction for ducks and other hazardous wildlife.	As required
	If ongoing monitoring identifies increased wildlife attraction and other mitigation strategies fail, fit wires or nets over to reduce the attractiveness to larger birds. Netting should have a minimum mesh size of 19mm x 19mm or less at full	

	stretch and with a strand diameter thicker than 500 microns, or with a cross-weave design to mitigate against entanglement.  	
	Any above ground water storage structures should avoid gantries or other overhanging structures where birds may perch to access water.	As required
	Stormwater pipes, Drains and culverts can provide an ideal nesting habitat for species such as Fairy Martins and Welcome Swallows. Drains should be completely circular, free of 90° angles, including at the central join. This will prevent stable foundations for nest building. To limit access by birds drains, including circular drains, can be fitted with exclusion devices to prevent bird access.  	As required

<table>
<tr><td></td><td>Use underground drains and water storage where possible to reduce the availability of water to wildlife.</td><td>As required</td></tr>
<tr><td></td><td>Review the complete landscaping strategy species list to remove species that are attractive for flying foxes, and place restrictions on species that are attractive to nectivorous birds. Appendix B provides some additional guidance around landscaping on and close to aerodromes. Appendix C includes native trees acceptable for use on the project site to reduce potential wildlife attraction and associated strike risk to WSI. Ensure the final landscape palette excludes the following high wildlife attracting species:
<table>
<tr><th>Trees and shrubs</th><th>Grass</th></tr>
<tr><td>Eucalyptus spp.</td><td>Couch (Cynodon dactylon)</td></tr>
<tr><td>Melaleuca spp.</td><td>Millet (Panicum milliaceum, Echinochloa esculenta, Pennisetum glaucum)</td></tr>
<tr><td>Callistemon spp.</td><td>Ryegrass (Lolium perenne)</td></tr>
<tr><td>Xanthorrhea spp.</td><td>Kikuyu (Pennisetum clandestinum)</td></tr>
<tr><td>Arecaceae spp.</td><td></td></tr>
<tr><td>Banksia spp.</td><td></td></tr>
<tr><td>Corymbia spp.</td><td></td></tr>
<tr><td>Ficus spp.</td><td></td></tr>
<tr><td>Grevillea spp.</td><td></td></tr>
<tr><td>Lophostemon suaveolens</td><td></td></tr>
<tr><td>Lophostemon confertus</td><td></td></tr>
<tr><td>Acacia spp.</td><td></td></tr>
</table></td><td>As required</td></tr>
<tr><td></td><td>Remove edible garden planting from the proposed designs. Where not feasible, place nets over the edible garden planting to prevent access for wildlife.</td><td>As required</td></tr>
</table>

	Once complete, send the full list of species included in the landscaping strategy to ornithologists or biologists to review and provide feedback.	As required
	Update the infrastructure designs to incorporate wildlife exclusion devices such as anti-perch spikes and exclusion netting to reduce perching and roosting attraction.	As required
	Update the designs to incorporate signage educating the public against public feeding of wildlife.	As required
	Update the designs to include designs for waste receptacles.	As required
	Enclose waste receptacle areas or use blade walls. This can provide an extra barrier to prevent or deter bird access. Ensure any external waste bins are lidded and kept closed. This restricts access to opportunistic urban forages such as Feral Pigeon and Australian White Ibis. 	Ongoing
Vegetation	Comply with the Aerotropolis DCP landscaping requirements.	As required
	Maintain grass height between 200-400 mm.	Ongoing
	Irrigate landscaped areas at night to reduce wildlife attraction during peak aircraft movements.	Ongoing
	Monitor irrigation system regularly for potential leaks. Where leaks are identified, immediately fix taps to reduce ponding water on site and associated attraction.	Ongoing

Construction	Include wildlife management actions in any construction environmental plans. During construction, operators should be vigilant to increased wildlife activity, particularly during and immediately after any earthworks.	Ongoing during construction
	Cover all temporary basins on site to prevent access for wildlife until decommissioned.	Daily
Monitoring	Regularly monitor the site for wildlife activity to help identify high and moderate risk species utilising the site. Monitoring should: • Determine the level of wildlife attraction, the features that are attractive (e.g. water, food) and wildlife behaviour. • Identify variation of wildlife activity (i.e., how wildlife uses the site at different times of the day, year or climatic phase). • Identify emerging risks. • Locate evidence of wildlife shelter/nesting provided by infrastructure (e.g., buildings, equipment and/or vegetation). • Note nesting activity, unusual bird activity, and effectiveness of mitigation devices. • Validate plant species choice and landscaping structure, or other mitigation applied. • Validate irrigation practices.	Monthly for first 12 months of operation then amend frequency congruent with the level of risk
	Develop a monitoring procedure that: • Establishes a standard survey route around the designed site. • Designate stopping points whose areas are scanned for wildlife. • Record wildlife data on a standardised form (electronic or paper) that records date, time, species, number of wildlife, behaviour, habitat utilised, and weather. • Assists in determining thresholds for acceptable bird numbers on site.	Within first month of operation
	Regularly monitor waterbodies on site during and post construction and apply dispersal as required when WSI is operational.	Daily

Management and Maintenance	If ongoing monitoring of the site identifies increased wildlife attraction, complete regular dispersal to discourage birds from the area particularly when WSI is operational. Coordinate with dispersal at WSI to ensure birds do not relocate closer to the airfield.	As required
	If ongoing monitoring of landscaping, particularly in trees, identifies increased wildlife attraction, implement mitigation strategies including, but not limited to: • Prune trees to reduce density and associated perching and roosting attraction. • Remove trees and replace with alternative species. • Install lights at the bottom of trees, shining lights on foliage, to reduce roosting attraction for species such as starlings and mynas.	
	Site practices must include regular inspections and cleanup of spillage and waste at the site to reduce wildlife attraction during construction and operational phases.	Ongoing
	Where ongoing monitoring identifies increased wildlife attraction, update the weed and rubbish management, and revegetation management schedules.	As required

References and further reading

Allan, J. (2002) *The Costs of Birdstrikes and Birdstrike Prevention. In Clarke L (ed.)* Human Conflicts with Wildlife: Economic Considerations pp 147-153. US Department of Agriculture, Fort Collins.

Avisure (2020), *Western Sydney Aerotropolis Wildlife Management Assessment Report* (report), Burleigh Heads, Queensland.

Avisure (2024), *Western Sydney Aerotropolis Landscape Species List Review* (report), Burleigh Heads, Queensland.

Civil Aviation Safety Authority (2019*) Part 139 (Aerodromes) Manual of Standards.*

Department of Environment (2008), *Feeding Habits of Grey-headed Flying Fox*, [ONLINE] https://www.environment.nsw.gov.au/resources/threatenedspecies/GHFFmainreport.pdf. [Accessed 21 January 2025].

Department of Infrastructure, Transport, Regional Development, Communications and the Arts (2023) *National Airports Safeguarding Framework – Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports*.

Dolbeer, R. (2011) *Increasing Trend of Damaging Bird Strikes with Aircraft Outside the Airport Boundary: Implications for Mitigation Measures*. Human-Wildlife Interactions 5(2):235-248, Fall 2011

Ecological Australia (2025), 135 Badgeries Creek Road, Bradfield, Riparian Assessment.

Ethos Urban (2024), *Scoping Report Mixed Use Development 135 Badgerys Creek Road, Bradfield* (report), Sydney, New South Wales.

Higgins, PJ (1999), Handbook *of Australian & New Zealand Birds: Volume 4 Parrots to Dollarbird*. Oxford University Press, Melbourne.

Higgins, PJ and Peter, JM (2002), *Handbook of Australian & New Zealand Birds: Volume 6 Pardalotes to Shrike-thrushes*. Oxford University Press, Melbourne.

Higgins, PJ, Peter, JM, Cowling, SJ (2006), *Handbook of Australian & New Zealand Birds: Volume 7 Boatbill to Starlings.* Oxford University Press, Melbourne.

Higgins, PJ, Peter, JM, Steele, WK (2001), *Handbook of Australian & New Zealand Birds: Volume 5 Tyrant-flycatchers to Chats*. Oxford University Press, Melbourne.

International Birdstrike Committee (2006) *Recommended Practices No. 1 – Standards for Aerodrome Bird/Wildlife Control*.

International Civil Aviation Organization (2013) *Annex 14 to the Convention on International Civil Aviation: Aerodromes, Volume 1 Aerodrome Design and Operation*.

International Civil Aviation Organization (2018) *Doc 9184 Airport Planning Manual. Part 2: Land Use and Environmental Control*. Fourth Edition.

International Civil Aviation Organization (2020) *Doc 9137 Airport Services Manual. Part 3: Wildlife Control and Reduction*. Fifth Edition.

Land and Form Studios (2025), *135 Badgerys Creek Road, Bradfield Landscape SSDA Design Report*, Newtown, New South Wales.

Marchant, S and Higgins, PJ (1990), *Handbook of Australian & New Zealand Birds: Volume 1a Ratites to Ducks*. Oxford University Press, Melbourne.

Marchant, S and Higgins, PJ (1990), *Handbook of Australian & New Zealand Birds: Volume 1b Ratites to Ducks.* Oxford University Press, Melbourne.

Marchant, S and Higgins, PJ (1993), *Handbook of Australian & New Zealand Birds: Volume 2 Raptors to Lapwings.* Oxford University Press, Melbourne.

Marchant, S and Higgins, PJ (1996), *Handbook of Australian & New Zealand Birds: Volume 3 Snipes to Pigeons*. Oxford University Press, Melbourne.

McConkey, KR, Prasad, S, Corlett, RT, Campos-Arceiz, A, Brodie, JF, Rogers, H and Santamaria, L. (2012) *Seed dispersal in changing landscapes*, Biological Conservation, vol. 146, pp. 1–13, doi:10.1016/j.biocon.2011.09.018.

NSW Damage by Aircraft Act (1952).

NSW Department of Planning and Environment (2022) *Technical guidance for achieving Wianamatta-South Creek stormwater management targets*.

NSW Department of Planning and Environment (2024) *Western Sydney Aerotropolis Precinct Plan*.

NSW Department of Planning, Industry and Environment (2021) *Aviation Safeguarding Guidelines – Western Sydney Aerotropolis and surrounding areas*.

NSW Environmental Planning and Assessment Act (1979).

NSW State Environmental Planning Policy (Western Sydney Aerotropolis) (2020).

NSW State Environmental Planning Policy (Western Sydney Aerotropolis) 2020 - Amendments 2022

NSW Workplace Health and Safety Act 2011.

Parsons, D. (2022) *Using Machine Learning to Estimate Wildlife Strike Costs in Australia*. Proceedings of the Australian Aviation Wildlife Hazard Group 2022 Forum, Adelaide, Australia.

Roberts, BJ, Catterall, CP, Eby, P and Kanowski, J. (2012) *Long-Distance and Frequent Movements of the Flying-Fox Pteropus poliocephalus: Implications for Management*, PLoS ONE, vol. 7, no. 8, e42532.

Shaw, P. and Dolbeer, R. (2025) *Serious Accident Database*. [ONLINE]. Available at: https://avisure.com/wp/serious-accident-database/ [Accessed: 22 September 2025].

Western Sydney Planning Partnership (2020) *Western Sydney Aerotropolis Draft Wildlife Management Assessment Report*, prepared by Avisure for the Western Sydney Planning Partnership https://shared-

drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/L7N+-+Wildlife+Management+Assessment+Report.PDF

Western Sydney Planning Partnership (2021) *Western Sydney Aerotropolis Development Control Plan – Phase 2*.

Western Sydney Planning Partnership (2021) *Western Sydney Aerotropolis Development Control Plan – Phase 2 – Appendices*.

Work Safe Queensland (2024), *Work with bird and bat droppings* [ONLINE]. Available at: https://www.worksafe.qld.gov.au/safety-and-prevention/hazards/hazardous-exposures/biological-hazards/diseases-from-animals/work-with-bird-and-bat-droppings [Accessed: 22 September 2025].

Appendices

A. Summary of regulations, standards and guidance for managing wildlife hazards around airports.

B. Landscaping guidelines to reduce the wildlife attraction.

C. Alternative Landscaping Species to reduce the wildlife attraction.

Appendix A: Regulations, Standards and Guidance

There are a number of national (Table A1) and international (Table A2) requirements and guidance documents that indicate land use in the vicinity of an airport can contribute significantly to the wildlife hazard levels and safety of aircraft operations.

Table A1. Summary of requirements and recommendations for managing wildlife hazards in the vicinity of airports.

Instrument	Summary
SEPP (Western Parkland City) 2021	An environmental planning instrument that establishes planning controls for land use in the Western Sydney Aerotropolis. Includes controls for a range of overlays including a Wildlife Buffer Zone that places restrictions on land use types within 3 and 8k of Western Sydney Airport in order to adhere to airport safeguarding principles against wildlife hazards.
Western Sydney Aerotropolis Development Control Plan 2022	Establishes the planning, design and environmental objectives and controls to inform Development Applications and Masterplans for the Western Sydney Aerotropolis. Section 2.10.3 sets the Performance Outcomes and Benchmark Solutions for wildlife hazards in order to help safeguard the airport against wildlife strikes.
Western Sydney Aerotropolis Precinct Plan 2024	Provides the place-based objectives and requirements to guide development in the Aerotropolis in a consistent and sustainable manner. It has been prepared and in force under the provisions of State Environmental Planning Policy (Precincts – Western Parkland City) 2020, Chapter 4 Western Sydney Aerotropolis (the Aerotropolis SEPP).
National Airport Safeguarding Framework	Guideline C of the NASF, *Managing the Risk of Wildlife Strikes in the Vicinity of Airports*, provides guidelines to land users and planners regarding the management of wildlife hazards. Adhering to the ICAO guidelines relating to radial distances from airports (3km, 8km and 13km), the NASF allocates risk categories to land uses from very low to high and recommends actions for both existing and proposed developments (i.e. incompatible, mitigate, monitor, no action). The NASF encourages a coordinated approach between airport operators and land use planning authorities to mitigate risks, and where risks are identified for new developments, the NASF recommends: • developing a management program • establishing management performance standards • allowing for design changes and/or operating procedures where the land use is likely to increase the strike risk • establishing appropriate habitat management • creating performance bonds should obligations not be met

Instrument	Summary
	• monitoring by airport authorities • reporting wildlife events as per Australian Transport Safety Bureau requirements.
NSW Environmental Planning and Assessment Act 1979	The *Environment Planning and Assessment Act* institutes the state's planning system and describes the Ministerial Directions under Section 9.1. that relate to safeguarding aviation and the Western Sydney Aerotropolis.
NSW Damage by Aircraft Act 1952	The *Damage by Aircraft Act* describes 'unlimited liability' to aircraft operators in the event of property damage/destruction or personal injury/loss of life by an aircraft or part thereof. In worst case situations following a significant strike, aircraft operators will likely seek to clarify if aerodrome operators, and even land users in the vicinity of airports, showed adequate due diligence in their responsibility to safeguard operations against wildlife strikes.
NSW Workplace Health and Safety Act 2011	The *Work Health and Safety Act* requires appropriate duty of care to employees and contractors to maintain a safe working environment. Although not directly linked to aviation and wildlife strike management, the presence of wildlife in workplaces can create health issues for workers. Therefore, managing land use activities that are attracting wildlife, particularly where birds are nesting or roosting, not only contributes to airport safeguarding but maintains a safe work environment.
CASR Part 139 (Aerodromes) Manual of Standards 2019	The Part 139 MOS prescribes the aerodrome requirements. Sections relevant to wildlife hazard management focus on: bird hazard information for the Aeronautical Information Package, drainage and drains in the runway strip, requirements for serviceability inspections, Notice to Airman requirements for bird hazards, Reporting Officer responsibilities, animal hazard management requirements, and standing water on paved surfaces. It also considers off-airport land use and their contribution to the wildlife strike risk

Table A2. Summary of international requirements and recommendations for managing wildlife hazards in the vicinity of airports.

Instrument	Summary
ICAO Annex 14, Volume 1 (Aerodrome Design and Operation)	As a member state to the ICAO, Australia is required to adhere to the rules and regulations stipulated by ICAO, including those relating to wildlife hazard management on and around airports. There are also series of guidance documents and best practice standards airports can refer to assist with wildlife hazard management. ICAO Annex 14, Volume 1 (Aerodrome Design and Operation) establishes requirements for the management of wildlife strikes, including the requirement for authorities to take actions to reduce the number and types of wildlife-attracting sites in the vicinity of airports.
ICAO Airport Services Manual Doc. 9184: Part 2 Land Use and Environmental Control	Provides airport personnel with guidance on land use planning within the vicinity of aerodromes, and the need for good planning and control measures. It focusses on how the airport impacts on its surroundings, and vice versa, with regard to people, flora, fauna, the atmosphere, water courses, air quality, soil pollution, rural areas, and the environment in general. It frequently discusses the significance of how some land use in the vicinity of airports, such as landfills, can influence an airport's strike risk profile. Appendix 2, Land-use Guidelines for the Avoidance of Bird Hazards, is particularly useful however it does remind readers that "*Any land use that had the potential to attract birds in the airport vicinity should be subject of a study to determine the likelihood of bird strikes to aircraft using the airport*".
World Bird Strike Association	The World Birdstrike Association (International Bird Strike Committee provides a series of standards relevant to all aspects of integrated wildlife hazard management programs.
Federal Aviation Administration	The United States Federal Aviation Administration has no jurisdiction over Australian aerodromes; however, they provide critical and useful guidance on water body management in AC 150/5200-33B, with particular reference to new storm water management facilities.

Appendix B: Landscaping Guidelines to Reduce the Wildlife Attraction

Table B1 describes Avisure's planting and landscaping guidelines developed to reduce the wildlife attraction on and in the vicinity of airports to help minimise the wildlife strike risk. Where landscape structure (i.e., the number of trees) cannot be compromised, species selection should be prioritised (i.e., select species that are consider low wildlife attractants).

Table B1. Planting guidelines and recommendations to reduce the wildlife attraction.

Area	Recommendation	Comments
Landscape and Vegetation Management Plan	Develop a plan that provides planting and species guidelines, identifies acceptable and unacceptable species, and provides guidance for landscaping to reduce the overall wildlife attraction.	Nil
Assessment and evaluation	For proposed landscaping works that do not meet approved guidelines, request an evaluation and assessment from a suitably qualified aviation ecologist.	Nil
Species selection	Select landscape plants that minimise the attraction of birds and flying-foxes in accordance with the Western Sydney Aerotropolis Development Control Plan 2022 – Appendix B: Western Sydney Aerotropolis Landscape Species List.	Specific guidelines should be developed for species selection.
	Avoid trees and shrubs which bear edible berries, fruits, seeds or nuts, or flower profusely.	Whilst all plants bear berries, fruits, seeds, nuts or flowers, this principle suggests excluding or minimising those species identified as significantly attractive to wildlife.
	Avoid species from the Proteaceae family. Commonly used landscaping species include, *Banksia* spp, *Grevillea* spp, *Hakea* spp. The nectar produced by these species can attract flying-foxes and various nectar feeding (nectivorous) birds such as lorikeets.	This principle recommends replacing this group of plants with species that are less attractive.

Area	Recommendation	Comments
Species selection	Avoid species from the Myrtaceae family. Commonly used landscaping species include *Callistemon* spp., *Corymbia*, *Eucalyptus* spp., *Lophostemon* spp., *Melaleuca* spp., *Syzygium* spp., *Xanthostemon* spp. Many species in this family produce large volumes of nectar that can be highly attractive to flying-foxes and various nectivorous birds. Studies at other airports have shown significant response to flowering Melaleuca by flying-foxes that have created severe strike risks.	This principle recommends replacing this group of plants with species that are less attractive.
	Avoid species from the Moraceae family. Commonly used landscaping species include *Ficus* spp. (Figs) due to their decorative and aesthetic appeal. Fig fruits are highly attractive to flying-fox and other fruit eating (frugivorous) birds.	This principle recommends replacing this group of plants with species that are less attractive.
	Avoid palm species. These extend across a range of families and should only be used when a strict documented regime of regular fruit/flower cluster removal occurs.	This principle recommends replacing this group of plants with species that are less attractive.
	Where the aforementioned species already exist in landscaped areas, replace them with more suitable species. In some circumstances it may be possible to regularly remove clusters of fruits and flowers (depends on species).	Recommended if monitoring determines an unacceptable level of wildlife attraction relative to the airport.
Design recommendations • Trees (mature height >5m) • Shrubs (mature height 300mm-5m)	Avoid clumps of trees and shrubs because they provide more shelter and more concentrated feeding areas than individual or small groups of plants.	Nil
	Apply the following conditions when planting trees along access and other roads to the airport: • Maximum mature height of any tree: 10m. • No more than 5 trees planted in any one group. • Average interval between tree groups not less than 200m.	It is recognised that this principle can contradict proposed planting objectives. We recommend applying wherever possible. For those areas where applying this principle is not possible, plant species should be carefully selected to reduce the wildlife attraction.

Area	Recommendation	Comments
Design recommendations • Trees (mature height >5m) • Shrubs (mature height 300mm-5m)	• Minimum interval between tree groups is 100m. • Single trees are planted >50m to any other single tree or tree groups. • Trees constitute no more than 5% of total tree/shrub plantings.	
	Apply the following conditions to shrub plantings: • Shrubs do not exceed 5m mature height. • Shrubs which produce nectar, fruits or seed (e.g. Banksia, Grevillea, Hakea) are not planted in groups of more than 5 per group and such groups are not planted <50m to specimens of the same species or groups of any species which may similarly attract birds or flying-fox at the same time of the year.	It is recognised that this principle can contradict proposed planting objectives. We recommend applying wherever possible. For those areas where applying this principle is not possible, plant species should be carefully selected to reduce the wildlife attraction.
Ground Cover (mature height <300mm)	Use low prostrate ground cover plants, avoiding profusely fruiting or seeding species. Use ground cover species rather than grasses to reduce the wildlife attraction and minimise ongoing maintenance costs.	Nil
	Avoid grasses that produce a lot of seed for rough grass or soil stabilisation.	This principle recommends replacing this group of plants with species that are less attractive.
	Avoid grassed areas in gardens that require regular irrigation. Minimise the use of sprinklers and ensure taps do not drip.	Nil

Area	Recommendation	Comments
Maintenance	If practical, remove trees and other plants and replace with species that are more appropriate. Lopping and pruning to alter the structure of trees and shrubs can reduce food and perches and make the plants unsuitable for roosting or nesting. It can, however, be difficult if not impossible, to lop or prune some species of trees such as palms to the extent necessary to prevent birds from roosting or nesting. In such cases, the only effective way of removing the bird problem may be to remove the trees. Therefore, use palms sparingly, or not at all, in landscaping.	Applicable if monitoring identifies significant wildlife hazards.
	Regularly prune and lop trees and shrubs to improve their health and vigour and prevent the establishment of communal roosts and nesting colonies which, if allowed to establish, can be difficult to remove.	Applicable if monitoring identifies significant wildlife hazards.
Landscaping works when airport is operational	Tube stock planting, hydro mulching, or the establishment of other vegetation close to airports should be carefully monitored to determine any increase in wildlife activity. Management (e.g., wildlife dispersal) may be required if wildlife activity is elevating the strike risk at the airport.	Applicable if monitoring identifies significant wildlife hazards.

Appendix C: Alternative Landscaping Species to Reduce the Wildlife Attraction

Table C1 lists the native trees, shrubs, and ground covers acceptable for use on the project site to reduce potential wildlife attraction and associated strike risk to WSI. It is pertinent to note that all vegetation has some level of wildlife attraction and that eliminating such attraction is impossible. Wildlife assemblages change over time, and it is critically important that landscapes near the airport are regularly monitored and if wildlife are found to be highly attracted to a particular feature or plant species, then the risk be mitigated.

Table C1. Planting guidelines and recommendations to reduce the wildlife attraction.

Species	Common Name	Native	Flowering Season	Approved for planting <3km	Listed in DCP Appendix
Trees					
Atalaya hemiglauca	Whitewood	Yes	Spring to summer	Yes	Yes
Ceratopetalum gummiferum	New South Wales Christmas Bush	Yes	Spring to summer	Yes	Yes
Flindersia australis	Crow's Ash	Yes	Spring to summer	Yes	Yes
Flindersia bennettii	Bennett's Ash	Yes	Autumn to winter	Yes	No
Geijera parviflora	Wilga	Yes	Winter to spring	Yes	Yes
Brachychiton acerifolius	Flame Tree	Yes	Spring to summer	Yes	Yes (under *Brachychiton acerifolium*)
Shrubs and Ground Cover					
Lomandra fluviatilis 'Shara'	Mat Rush	Yes	Spring	Yes	No

Lomandra 'Lime Tuff'	Mat Rush	Yes	Summer to winter	Yes	No
Poa labillardieri	Common Tussok-grass	Yes	Spring	Yes	Yes
Pimelea linifolia	Slender Rice Flower	Yes	Winter to summer	Yes	Yes
Plectranthus parviflorus	Cockspur Flower	Yes	Spring to autumn	Yes	Yes
Pratia purpurascens	White Root	Yes	Summer to autumn	Yes	Yes
Stackhousia viminea	Slender Stackhousia	Yes	Spring to autumn	Yes	Yes
Viola hederacea	Australian Violet	Yes	Spring to autumn	Yes	Yes
Zornia dyctiocarpa	Twinleaf	Yes	Summer to autumn	Yes	Yes
Westringia fruiticosa	Coastal Rosmary	Yes	Spring to summer	Yes	Yes
Veronica plebeian	Creeping Speedwell	Yes	Spring to summer	Yes	Yes
Tricoryne elatior	Autumn Lily	Yes	Spring to autumn	Yes	Yes
Rhodanthe anthemoides	Chamomile Sunray	Yes	Winter to autumn	Yes	Yes
Trailing guinea flower	Trailing Guinea Flower	Yes	Winter to spring	Yes	Yes
Doodia aspera	Prickly Rasp Fern	Yes	-	Yes	Yes
Cheilanthes sieberi	Mulga Fern	Yes	-	Yes	Yes

Revision History

Rev. No.	Rev. Date	Details	Prepared by	Reviewed and approved by
0	07/10/2025	135 Badgerys Creek Road Wildlife Hazard Assessment	Alexandra Stone Senior Wildlife Biologist	Phil Shaw Principal Wildlife Biologist
01	14/10/2025	135 Badgerys Creek Road Wildlife Hazard Assessment	Phil Shaw Principal Wildlife Biologist	Phil Shaw Principal Wildlife Biologist
02	16/10/2025	135 Badgerys Creek Road Wildlife Hazard Assessment	Phil Shaw Principal Wildlife Biologist	Phil Shaw Principal Wildlife Biologist

Distribution List

Copy No.	Date	Format	Issued to	Name
1	16/10/2025	E-COPY	Bradfield Development Authority	Boomika Madaiah
2	16/10/2025	E-COPY	Avisure	Administration

contact@avisure.com | www.avisure.com

ABN 26 131 545 054

250904.00 Bradfield Corporation-RE.135 Badgerys Creek Rd WHA.R02.docx

GOLD COAST – AUS (HQ)
1/9 Greg Chappell Drive
Burleigh Heads QLD 4220
PO Box 2816
Burleigh BC QLD 4220
Australia
P+61 1300 409 927

ADELAIDE – AUS
36A/11-13 Parkway
Mawson Lakes SA 5095
PO Box 145
Pooraka SA 5095
Australia
P+61 1300 409 927

MELBOURNE – AUS
Point Cook Rd
Point Cook Vic 3030
P+61 1300 409 927

SYDNEY – AUS
PO Box 880
Surry Hills NSW 2010
P+61 1300 409 927