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125 &145-175 Lawson Rd, Badgerys Creek

Wildlife Hazard Management Plan

Formus Property Pty Ltd

Document Tracking

Project Name: Badgerys Creek 125 &145-175 Lawson Rd

Project Number: 25SYD10730

Project Manager: Courtney Blick

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Abbreviations

Abbreviation	Description
AAWHG	Australian Aviation Wildlife Hazard Group
AAWSF	Aerotropolis Aviation Wildlife Safeguarding Framework
AEP	Annual Exceedance Probability
ALA	Atlas of Living Australia
ATM	Air Traffic Movements
ATSB	Australian Transport Safety Bureau
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
CASA	Australian Civil Aviation Safety Authority
DAWE	former Commonwealth Department of Agriculture, Water and the Environment
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DCP	Development Control Plan
DITRDC	former Commonwealth Department of Infrastructure, Transport, Regional Development, and Communication
DITRDCA	Cwth Department of Infrastructure, Transport, Regional Development, Communications and the Arts
ELA	Eco Logical Australia Pty Ltd
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
Formus Property	Formus Property Pty Ltd
GFA	Gross Floor Area
IBRA	Interim Biogeographic Regionalisation for Australia
ICAO	International Civil Aviation Organisation
MAP	Million Annual Passengers
NASF	National Airport Safety Framework
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
OSD	On-Site Detention
PCT	Plant Community Type
PMST	Protected Matters Search Tool
SEPP	State Environmental Planning Policy
SP2	Infrastructure zone under the Western Parkland City State Environmental Planning Policy
SPRAT	Commonwealth Species Profile and Threats Database
SSDA	State Significant Development Application
SSD	State Significant Development
VMP	Vegetation Management Plan
VRZ	Vegetated Riparian Zone
WHMP	Wildlife Hazard Management Plan
WSA	Western Sydney Airport
WSI	Western Sydney International (Nancy-Bird Walton) Airport

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Appendix A Explanation of the hazard ranking system

A1: Probability x consequence matrix for assigning and overall hazard rank to bird and bat species

Appendix B High-risk bird and bat species relevant to this development

1. Introduction

This Wildlife Hazard Management Plan (WHMP) has been prepared by Eco Logical Australia Pty Ltd (ELA) for Formus Property Pty Ltd (Formus Property) in support of the proposed State Significant Development Application (SSDA) for the 'Cross Link Industrial Estate' at 125 & 145-175 Lawson Road, Badgerys Creek NSW (SSD-81662708) (the Project). The study area is located within the Badgerys Creek Precinct of the Western Sydney Aerotropolis (WSA) and within the 3 km buffer zone from the Western Sydney International (Nancy Bird Walton) Airport (WSI) within the Liverpool City Council Local Government Area (LGA).

This report addresses requirements of the Western Sydney Aerotropolis DCP Phase 2 and Clause 4.19 of the *State Environmental Planning Policy (Precincts - Western Sydney Parkland City) 2021* (Western Sydney Parklands SEPP). This report also addresses requirements associated with airport safeguarding, contained within the Secretary's Environmental Assessment Requirements (SEARs) issued in April 2025 for the SSD-81662708.

The WHMP has been prepared based on the findings of the Wildlife Hazard Assessment (ELA 2026a). The WHMP will be revised and necessary approvals sought if the scope of works change.

1.1. Site description

The study area is located at 125 & 145-175 Lawson Road, Badgerys Creek NSW within the Liverpool City Council Local Government Area (LGA) and within the 3 km buffer zone from the Western Sydney International (Nancy Bird Walton) Airport (WSI). The approximate area of the study area is 83 hectares (ha) and comprises the following Lots:

- 1-/DP226912
- 3-/DP226912
- 4-/DP226912
- 5-/DP226912
- 6-/DP226912

The study area is situated approximately 16 km south-east of the Penrith Central Business District (CBD), within the Badgerys Creek Precinct of the WSI and within the Western Sydney Aerotropolis (Figure 1, Figure 2). The study area is part of the Sydney Region Growth Centres and subject to the *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* (Western Parkland City SEPP). The study area is zoned ENT (Enterprise) and ENZ (Environment and Recreation) under the Western Parkland City SEPP (Figure 2).

The study area is located within the Sydney Basin region under the Interim Biogeographic Regionalisation for Australia (IBRA) classification, within the Cumberland IBRA subregion. Under the NSW Mitchell landscapes classification, the study area is underlain by Cumberland Plain and Hawkesbury-Nepean Channels and Floodplains. High Biodiversity Value (HBV) areas coincide with the riparian corridor associated with Badgerys Creek along the western boundary. The study area contains an extent of the 4th order watercourse, Badgerys Creek, which runs along the western boundary of the study area.

The study area has a historical land use for agricultural purposes and comprises of exotic grassland, native vegetation, farm, wetlands/riparian areas and existing built form. Dams were previously located

within the study area but have since been remediated. Four Plant Community Types (PCTs) are present within the study area in a range of conditions (ELA 2026a):

- PCT 3320 Cumberland Shale Plains Woodland (Moderate and DNG)
- PCT 3975 Southern Lower Floodplain Freshwater Wetland (Moderate)
- PCT 4023 Coastal Valleys Riparian Forest (Moderate, Low and Regenerating)
- PCT 4025 Cumberland Red Gum Riverflat Forest (Moderate and Low)

A separate Riparian Assessment and Biodiversity Assessment has been previously completed by ELA (ELA 2026a, ELA 2026b) which describes the terrestrial habitat, aquatic habitat, and the biodiversity values of the study area in more detail.

1.2. Project description

The Cross Link Industrial Estate at 125 & 145-175 Lawson Road, Badgerys Creek NSW (SSD-81662708) includes the construction of warehouse buildings and distribution facilities, ancillary offices, carparks, and landscaping. Specifically, the SSDA seeks approval for the following:

- Construction of an Industrial Estate, comprising four (4) warehouse buildings with a total of 46,153.9m² of warehouse and ancillary office GFA. It will deliver a range of large and small format warehouse and distribution centres, as follows:
 - Warehouse 1 has a total GFA of 40,505.5 m²
 - Warehouse GFA: 38,572 m²
 - Office GFA: 1,877m² (plus 60 m² dock office)
 - Warehouse 2 has a total GFA of 1,328 m²
 - Warehouse GFA: 1,186 m²
 - Office GFA: 142 m²
 - Warehouse 3 has a total GFA of 1,323 m²
 - Warehouse GFA: 1,186 m²
 - Office GFA: 137 m²
 - Warehouse 4 has a total GFA of 2,997.4 m²
 - Warehouse GFA: 1,072.5 m²
 - Office GFA: 100.8 m²
 - Warehouse 5 has a total GFA of 3,538.9m²
 - Warehouse GFA: 2,826.5 m²
 - Office GFA: 140.9 m²
- Maximum building height of 19.6 m
- Provision of 233 on-site parking spaces split across the site.
- Construction of a private internal driveway along the northern boundary of 125 Lawson Road servicing Warehouses 2-4.

- Construction of Regional Basin.
- Associated landscaping work and deep soil areas (comprising communal open space areas).
- Provision of road corridors providing an option for future delivery of local roads by the relevant roads authority.



Figure 1: Location of study area

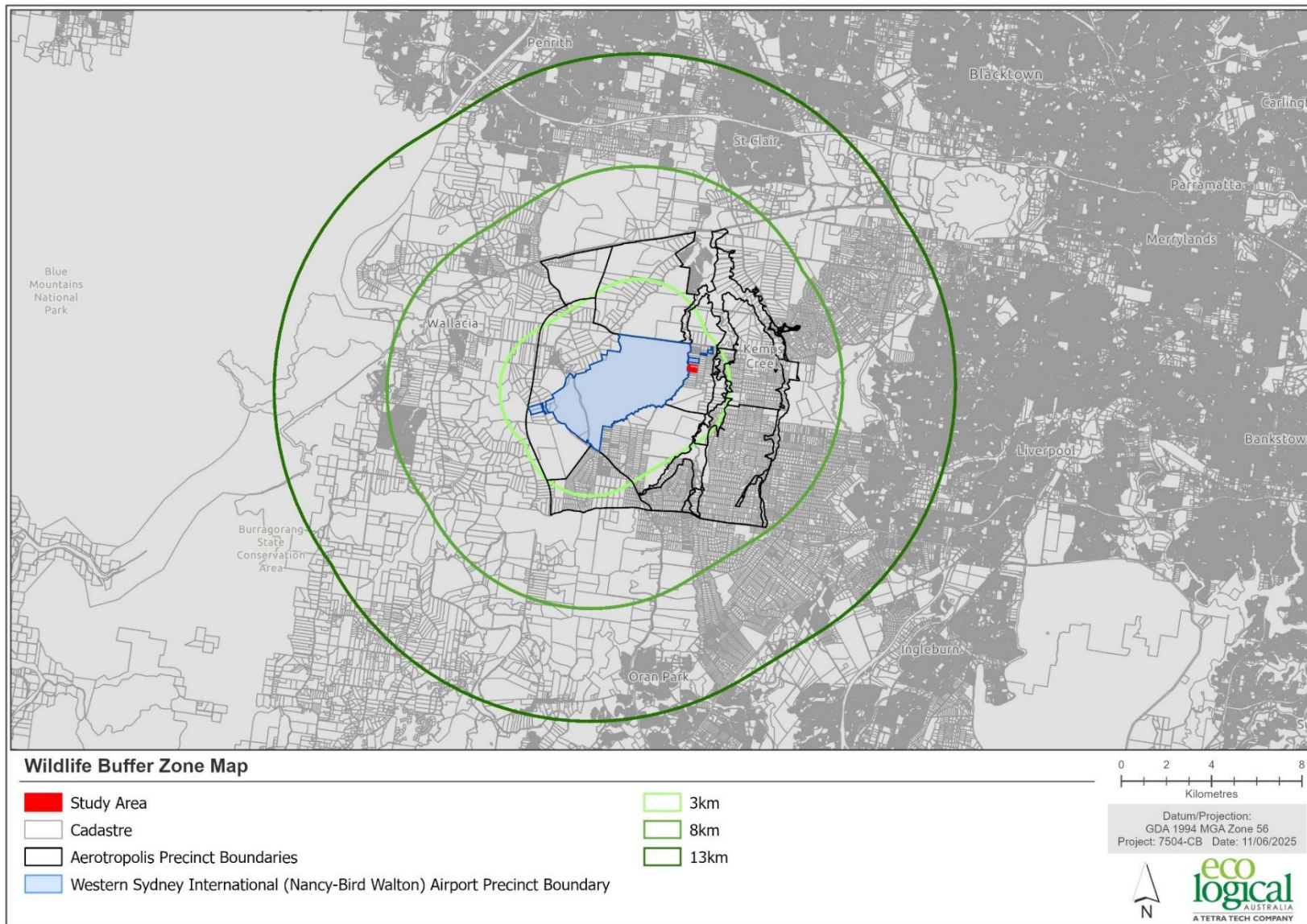


Figure 2: Western Parkland City SEPP Wildlife Buffer Zone in relation to the study area



Figure 3: Proposed Development Layout

1.3. Purpose and objectives

This WHMP has been prepared in conjunction with a separate Wildlife Hazard Assessment (ELA, 2026a) which assesses the potential risk of wildlife attraction to the subject land, identifies the highest risk species and provides an analysis of existing and proposed land use in relation to wildlife risk. These documents have been prepared to satisfy the requirements outlined in the Western Sydney Aerotropolis DCP Phase 2, the Western Sydney Parklands SEPP and the SEARs issued for this SDD. These requirements are further discussed in Section 2.

Bird strike is a risk firstly for the safety of Airport operations, as well as a threat to biodiversity. There is a double incentive, and a statutory requirement, for all parties involved in development surrounding the Western Sydney Airport to minimise and manage the potential for birds and bat hazards to occur. This report summarises the highest risk species, the types of wildlife habitat available or proposed in the subject land, and a plan for:

- implementation and induction
- management actions (passive management, trigger responses and regular monitoring)
- reporting requirements
- review and adaptive management.

A key challenge in managing wildlife risk is the inherent conflicts between Airport operations and other requirements of the DCP and SEPP. This includes objectives to increase canopy cover and provide for stormwater infrastructure. Each of these goals can, to some degree, increase the attractiveness of wildlife habitat across a given site. It is not feasible to avoid wildlife habitat features entirely in the context of the study area and its surrounding landscape. Landscaping and stormwater infrastructure are essential in the context of this development for reasons such as urban heat reduction, public amenity, stormwater management and supporting regional ecosystem health.

As such, while design measures across the Project have been implemented to reduce wildlife attractiveness, this WHMP provides additional support and assurance through a monitoring and reporting regime. This includes ongoing passive management actions, that will require collaboration between qualified ecologists, the Department of Planning, Housing, and Infrastructure (DPHI), NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW), and the WSI to effectively and humanely manage any real or anticipated wildlife risk for the duration of the Project.

1.4. Planning frameworks addressed by this Management plan

1.4.1. Western Sydney Aerotropolis DCP Phase 2

This Wildlife Hazard Management Plan (WHMP) has been prepared to satisfy the requirements of Appendix D.7 of the Western Sydney Aerotropolis DCP Phase 2 per Table 1 below. A Wildlife Hazard Assessment (WHA) has also been prepared as a separate document (ELA 2026a) to address the DCP requirements. Key findings of this assessment are summarised in Section 2.

Table 1: Appendix D.7 DCP requirements

Appendix D.16 DCP Requirement	
Applications for the following uses within the 3 km and 8 km wildlife buffers must be accompanied with a Wildlife Hazard Assessment and Wildlife Hazard Management Plan that incorporates relevant mitigation and monitoring measures:	
<ul style="list-style-type: none"> ● Agricultural produce industry ● Agriculture ● Aquaculture ● Camping ground ● Garden Centre ● Intensive livestock agriculture ● Intensive plant agriculture ● Livestock processing industry 	<ul style="list-style-type: none"> ● Plant nursery ● Recreation facility (outdoor) ● Recreation facility (major) ● Recreational area ● Sewage treatment plant ● Waste or resource management facility ● Waste or resource transfer station ● Water storage facility.
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.*	
The Wildlife Hazard Management Plan must respond to the findings and recommendations of the Wildlife Hazard Assessment.	
Where monitoring is required to be undertaken in accordance with the Management Plan, copies of the report are to be submitted to the airport lessee company within 28 days of completion.	
A waste management plan for the operation of the land use must be submitted for the following uses within the 3 km, 8 km, and 13 km buffer:	
<ul style="list-style-type: none"> ● Agriculture ● Agricultural produce industry ● Aquaculture ● Camping Grounds ● Eco-tourist facility ● Food and Drink Premises ● Garden Centre ● Hotel 	<ul style="list-style-type: none"> ● Intensive plant agriculture ● Intensive livestock agriculture ● Kiosk ● Livestock processing industry ● Plant Nursery ● Recreation facility (outdoor) ● Recreation facility (major)
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.*	
* ADDRESSED WITHIN THE WILDLIFE HAZARD ASSESSMENT (ELA, 2026A).	

1.4.2. Western Parkland City SEPP

The Western Parkland City SEPP is the primary planning instrument for regulating development around Western Sydney Airport. The study area is zoned ENT (Enterprise) and ENZ (Environment and Recreation) under the Western Parkland City SEPP.

Clause 4.19 of the Western Parkland City SEPP provides controls to regulate development on land surrounding the Airport where wildlife may present a risk to the operation of the Airport. The clause states that development consent must not be granted to relevant development on land within the 13 km Wildlife Buffer Zone, unless the consent authority has consulted with the relevant Commonwealth body and considered a written assessment of the wildlife present and the risk it poses to airport operation. Relevant development includes the following:

- agricultural produce industries
- aquaculture
- camping grounds
- eco-tourist facilities

- garden centers
- intensive livestock agriculture
- intensive plant agriculture
- livestock processing industries
- plant nurseries
- recreation facilities (major)
- **recreation facilities (outdoor)**
- sewage treatment plants
- waste or resource management facilities that consist of outdoor processing, storage or handling of organic or putrescible waste
- **water storage facilities.**

The Project includes stormwater infrastructure as shown in Figure 6 which would be classified as 'water storage facilities', therefore clause 4.19 applies to the Project. Clause 4.19(2), states:

(2) Development consent must not be granted to relevant development on land in the 13 km wildlife buffer zone unless the consent authority—

(a) has consulted the relevant Commonwealth body, and

(b) has considered a written assessment of the wildlife that is likely to be present on the land and the risk of the wildlife to the operation of the Airport provided by the applicant, which includes—

(i) species, size, quantity, flock behaviour and the particular times of day or year when the wildlife is likely to be present, and

(ii) whether any of the wildlife is a threatened species, and

(iii) a description of how the assessment was carried out, and

(c) is satisfied that the development will mitigate the risk of wildlife to the operation of the Airport, including, for example, measures relating to—

(i) waste management, landscaping, grass, fencing, stormwater or water areas, or

(ii) the dispersal of wildlife from the land by the removal of food or the use of spikes, wire or nets.

1.4.3. Secretary's Environmental Assessment Requirements (SEARs)

This report addresses the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) issued in April 2025 for the SSD-81662708. Specifically, this report has been prepared to respond to the SEARs requirement described in Table 2 below.

Table 2: SSD-81662708 SEARs

Item	Description of Requirement
Airport Safeguarding	<p>An aviation impact assessment, including:</p> <ul style="list-style-type: none"> ● an assessment of the potential impact of the proposed development on the Western Sydney International (Nancy-Bird Walton) Airport operations ● a wildlife hazard assessment and wildlife management plan ● consideration of related matters in the <i>Aviation Safeguarding Guidelines – Western Sydney Aerotropolis</i> and surrounding areas, <i>State Environmental Planning Policy (Precincts - Western City Parkland) 2021</i> and the <i>National Airports Safeguarding Framework (NASF)</i>, including (but not limit to) public safety, wildlife hazards, lighting, wind shear and the prescribed airspace. ● consideration of section 4.23 of the <i>State Environmental Planning Policy (Precincts - Western City Parkland) 2021</i>

2. Wildlife Hazard Assessment Summary

2.1. Highest risk species and groups of species

Within the Wildlife Hazard Assessment (ELA, 2026a), bird and bat species with the potential to occur within the study area were assessed using the *'Bird Risk Assessment Model for Airports and Aerodromes'* (Paton, 2010) to determine their overall wildlife strike risk. Australian Transport Safety Bureau (ATSB) strike data was used for this assessment. A brief explanation on the hazard ranking system used for this assessment is provided in Appendix A. Species with higher rankings e.g. extreme, very high, or high are considered high-risk species in the context of the Project and may pose the greatest risk if struck by aircrafts.

A total of 125 bird and bat species were determined as having the potential to occur within the study area, including eleven (11) species listed under either both the EPBC Act and BC Act (3 species) or the BC Act only (8 species). One species is listed under international treaties.

The majority of the 125 identified bird and bat species were assigned a negligible or low hazard ranking (61.6% of species) (Table 3). However, twenty-two (22) species were assigned a high (14), very high (4) or extreme (4) risk rating and are likely to occur within the study area) (Table 3).

The main species or groups of species of most concern when planning mitigation measures for this development due to high hazard rankings include:

- Flying-fox (Grey-headed Flying-fox or other species like Black Flying-fox)
- Pigeons
- Waterbirds (e.g. Australian White Ibis, Straw-necked Ibis, Masked Lapwing, cormorants, egrets)
- Large parrots (e.g. Long-billed Corella, Galah, Sulphur Crested Cockatoo)
- Waterfowl (e.g. Black Swan and duck species)
- Gulls (Silver Gull)
- Raptors (e.g. Wedge-tailed Eagle and Little Eagle)
- Owls (e.g. Eastern Barn Owl)
- Australian Magpie
- Common Starling

In addition to the above, commonly struck species such as Nankeen Kestrel, Australian Pipit and from the swift and swallow guild, are also of concern, despite having lower consequence scores than the above.

Species risk rankings by guild or main functional group are presented in Table 2. A list of high-risk species is provided in Appendix A.

Grey-headed Flying-fox has been identified as the highest risk species in this assessment (Extreme) due to their relatively large size, flocking behaviour, and because flying-fox have the highest number of recorded strikes at the nearest airports, Sydney Airport and Bankstown Airport (ATSB 2018). While no flying-fox camps have been identified within the study area, camps are present in the local vicinity (DAWE 2024). While not recorded or modelled to occur within proximity to the subject land (and therefore not assessed in the WHA), other megabat species such as Black Flying-fox would also be

considered high risk. As a precaution all megabats should be considered when monitoring or when implementing mitigation measures.

The other highest-ranking species include Australian White Ibis, Straw-necked Ibis and Rock Dove. These species have a high strike consequence rank due to their relatively large sizes and proclivity to form large flocks. They also have adapted well to urban environments and can be found in urbanised areas in high numbers. Other high priority species, listed as having a very high hazard ranking include Long-billed Corella, Black Swan, Galah and Silver Gull. These species are relatively common and have been recently recorded in the local vicinity. While Black Swan are unlikely to take residence within the wetland/creek line habitat located within the subject area, this species may occasionally utilise the habitat for foraging or fly over the subject area in passing.

2.2. Lower risk species to consider

Species with lower hazard rankings, but with high probabilities of being struck should be considered in addition to the above-mentioned high-risk species. Australian Pipit, Nankeen Kestrel and swift and swallow species (e.g. Welcome Swallow) are some of the most commonly reported strike species Australia-wide or within the Sydney region (ATSB 2019), so should also be considered for management.

Microbats can be considered in a similar way to swifts and swallows, which are of a similar size and also feed on the wing over bodies of water and in the air. Fifteen (15) microbat species were identified in the Wildlife Hazard Assessment (ELA, 2026a) as having the potential to occur within the subject land. These species have been assigned lower hazard rankings due to the lower consequence of strike (having smaller body size and because they generally don't form tight flocks). Microbats should still be considered in implementing this WHMP, considering their moderate to high probability of strike.

Table 3: Summary of hazard rankings for common guilds/functional groups likely to occur within the study area

Hazard Rank	No. of Species	Proportion of Total (%)	Functional Groups																	
			Megabats	Microbats	Corvids and allies	Cuckoos	Game fowl	Honeyeaters	Kingfishers	Nocturnal birds	Parrots	Pigeons	Rails, Crakes	Raptors	Seabirds and gulls	Smaller Songbirds	Swallows, Martins, Swifts	Waders	Waterbirds	Waterfowl
Extreme	4	3.20	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-
Very High	4	3.20	-	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	1
High	14	11.20	-	-	1	-	-	-	-	1	1	-	-	2	-	1	-	-	4	4
Medium	26	20.80	-	-	4	-	-	-	-	1	4	2	2	3	-	1	1	-	8	-
Low	25	20.00	-	4	2	-	-	4	1	-	3	-	1	4	-	2	1	1	-	2
Negligible	52	41.60	-	11	1	4	-	4	2	1	-	-	-	-	-	27	2	-	-	-
Total	125	100.00	1	15	8	4	0	8	3	3	10	3	3	9	1	31	4	1	14	7

Table 4: Species examples per guild/function group

Functional Group	Example species
Corvids and allies	Australian Magpie, White-winged Cough, Ravens, Currawongs, Butcherbirds, Cuckoo-shrikes.
Cuckoos	Fan-tailed Cuckoo, Horsfield's Bronze-Cuckoo, Black-eared Cuckoo, Eastern Koel, Pallid Cuckoo, Channel-billed Cuckoo.
Game fowl	Australian Brush-turkey, Junglefowl, Quails, Button-quails
Honeyeaters	Noisy Miner, Noisy Friarbird, Wattlebirds, Spinebills, other honeyeaters.
Kingfishers	Kookaburra, Sacred Kingfisher, Azure Kingfisher.
Nocturnal birds	Eastern Barn Owl, Southern Boobook, Tawny Frogmouth, other nightjars
Parrots	Galah, Cockatiel, Budgerigar, Cockatoos, Corellas, Lorikeets, Rosellas, other Parrots such as Swift Parrot.
Pigeons	Rock Dove, Peaceful Dove, Bar-shouldered Dove, Wonga Pigeon, Crested Pigeon, Spotted Turtle-Dove, Common Bronzewing.
Rails, crakes	Coots, Moorhens, Swamphens, Crakes.
Raptors	Wedge-tailed Eagle, other Eagles, Goshawks, Kites, Falcons, Kestrels, Hobbies.
Seabirds and gulls	Silver gull, Osprey, Terns, Petrels
Smaller songbirds	Fairy-wrens, Thornbills, Gerygones, Scrubwrens, Weebills, Treecreepers, Pipits, Whistlers, Robins, Starlings, Silvereyes, Pardalotes, Finches, Sparrows.
Swallows and swifts	Welcome Swallow, Fairy Martin, Tree Martin, Fork-tailed Swift, White-throated Needle-tail, Wood swallows.
Waders	Snipe, Dotterel, Stilts, Plovers, Sandpipers, Curlews.
Waterbirds	Ibis, Herons, Egrets, Bitterns, Snipes, Darters, Pelicans, Cormorants, Spoonbills.
Waterfowl	Ducks, Grebes, Swans.
Megabats	Grey-headed Flying-fox, Little Red Flying-fox, Black Flying-fox.
Microbats	Little Forest Bat, Free-tailed Bats, Long-eared Bats, Wattled Bats.

2.3. Risk profile of existing and proposed land use types

The subject land contains existing habitat for birds and bats in the form of exotic grassland/cleared land, patches of native vegetation along Badgerys Creek, existing dwellings, planted vegetation (both native and exotic) and a small wetland. These land uses and their AWWSF Wildlife Attraction risk are displayed in Figure 4 and Figure 5.

Habitat proposed under the Concept Plan that offers potential wildlife habitat includes:

- Four (4) warehouse buildings and ancillary offices with a total of 46,153.9 m² GFA.
- Roads and car parks (233 on-site parking spaces split across the site).
- Sydney Water stormwater management infrastructure, in the form of:
 - two sedimentation ponds
 - two wetlands (which falls under the wetland land use type)
 - a bioretention basin (Biobasin)
 - a storage pond
- Vegetated Riparian Zone (VRZ) along Badgerys Creek, for the enhancement and restoration of the riparian corridor.
- On Lot Landscaping around areas such as:
 - Streets and transport corridors (includes street trees and verges or median strips with shrub and grass plantings).
 - Parks and gardens (includes sensory garden, sculpture and wetland educational garden).
- Urban open space/recreational spaces including an expansive flexible lawn area / amphitheatre, lawn/seating spaces, recreation and BBQ spaces, Yarning circle, pedestrian walkways/cycle loop.

The locations of the proposed wildlife habitat elements and their associated AAWSF Wildlife attraction risk are shown in Figure 6 and Figure 7.

The project will reduce wildlife habitat attractiveness of the study area as far as practicable, however there is an increase in high wildlife risk land uses due to the requirement of stormwater facilities as part of the development.

The total areas of moderate wildlife risk land uses are expected to reduce by 68.3% (reduction of 9.26 ha), and the total areas of very low wildlife risk land uses are expected to increase by 7158.3% (increase of 8.59 ha).

An increase in high wildlife risk land uses are expected under the project due to the proposed development of Sydney Water basin and wetland systems. An increase of 365% (increase of 0.73 ha) is expected. This increase is unavoidable due to the requirement of the creation of Sydney Water stormwater facilities. High wildlife risk land uses such as stormwater facilities and wetlands are subject to design mitigations to reduce wildlife risks as much as practicable.



Figure 4: Existing habitat within study area mapped by AAWSF Land Use

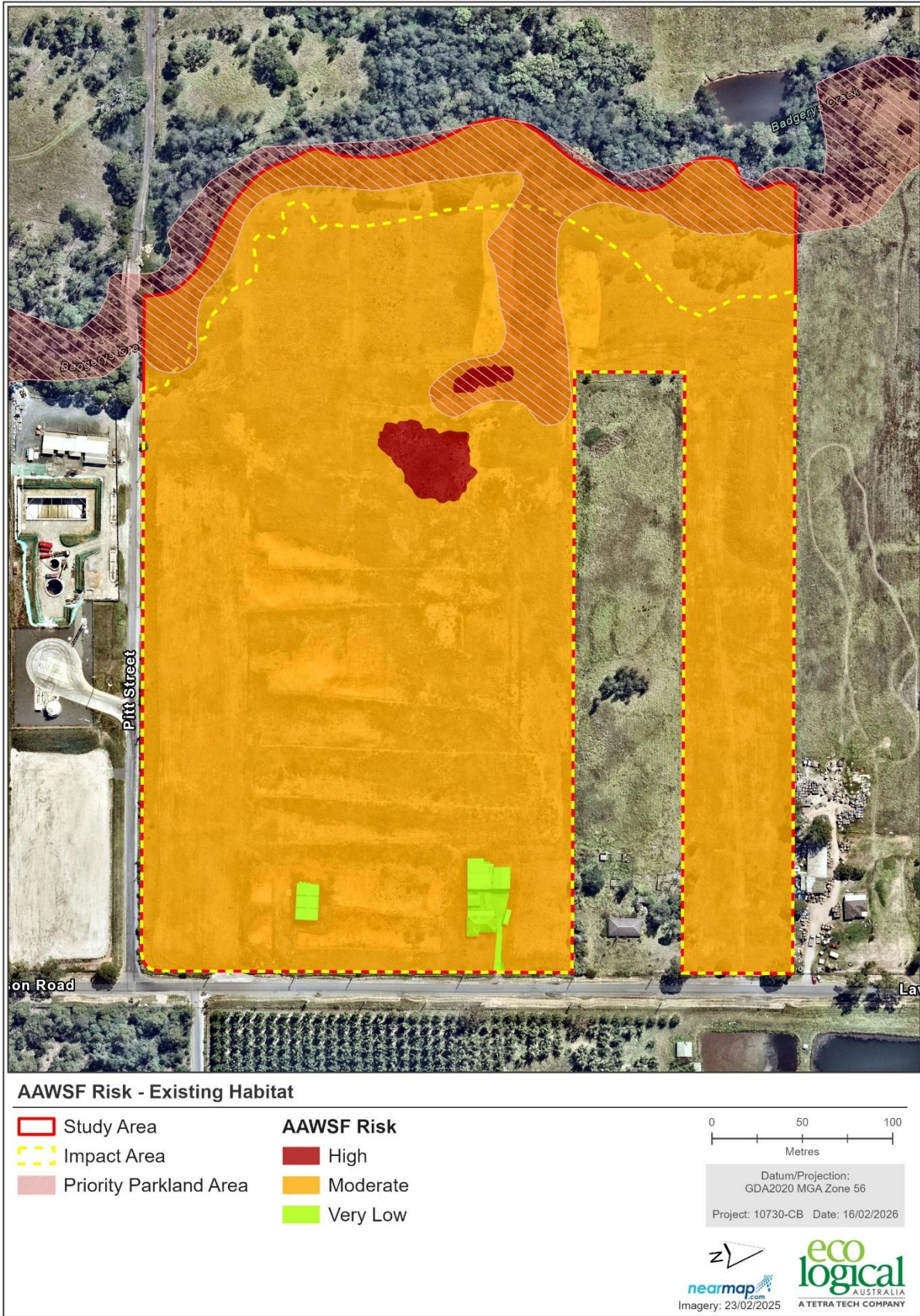


Figure 5: Existing habitat by AAWSF Wildlife Attraction Risk



Figure 6: Proposed habitat by AAWSF Land Use

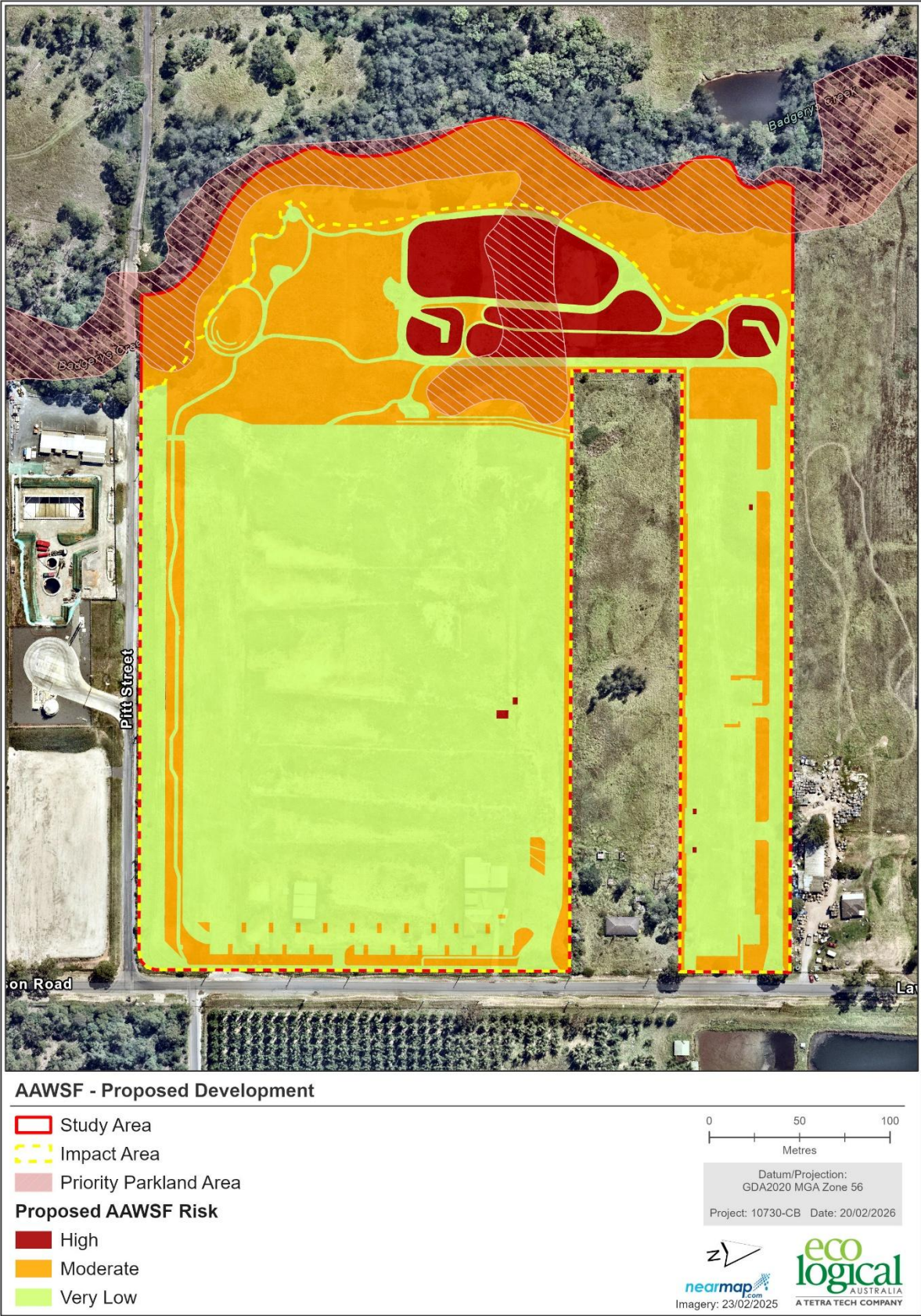


Figure 7: Proposed AAWSF Wildlife Attraction Risk

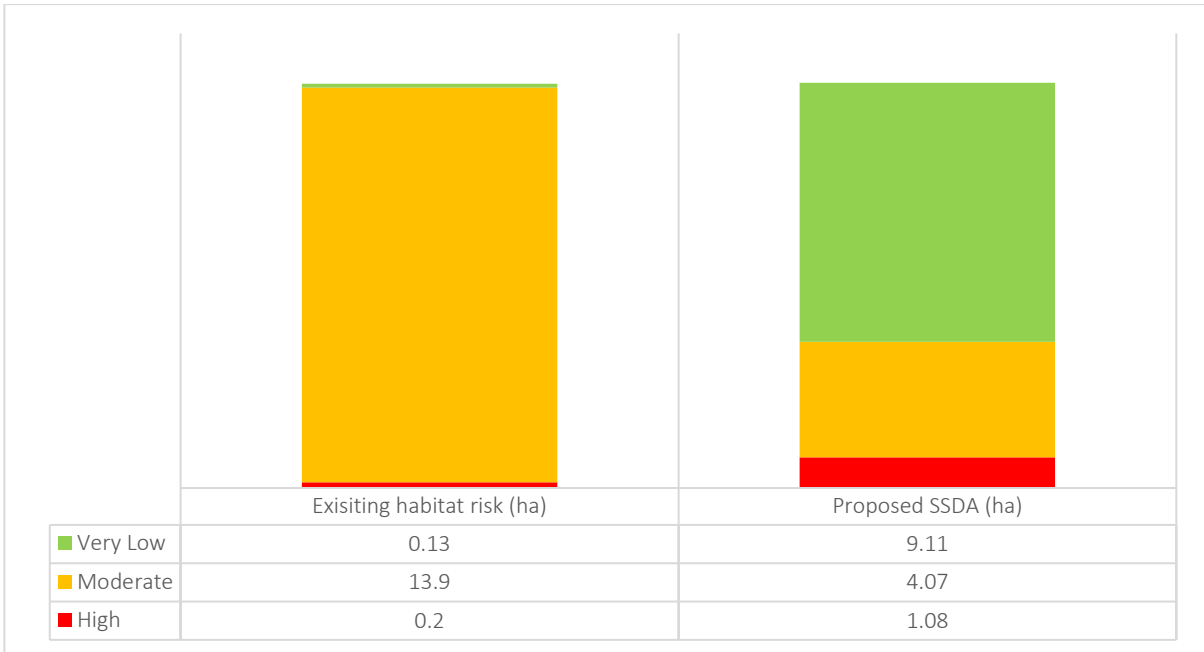


Figure 8: Change in risk profile according to AAWSF risk ratings

3. Management Plan Implementation

3.1. Roles and responsibilities

The Proponent is responsible for:

- Developing induction and training modules and records
- Engaging a suitably qualified Ecologist(s) to complete monitoring works and reporting
- Maintaining a record of monitoring and reporting
- Notifying NSW DCCEE, Western Sydney Airport and/or the Ecologist of hazards and risks as they arise.

Site or building managers are responsible for:

- Implementing training and inducting all staff
- Ensuring passive management actions are undertaken within their lot/building
- Notifying the proponent, NSW DCCEE, Western Sydney Airport and/or the Ecologist of hazards and risks as they arise.

All staff, contractors and visitors are responsible for:

- Notifying the site/building manager of a management need or risk
- Maintaining familiarity with the requirements of this Plan and the induction process.

3.2. Induction and training

All staff are to be aware of the potential wildlife hazards on site, and the contents of this WHMP. All contractors and building managers are to be aware of the level of wildlife risk on site, and must have completed an induction that includes:

- Roles and responsibilities
- Passive, trigger and monitoring actions
- An understanding of the risk ratings (Extreme, Very High, High, Medium, Low and Negligible), including what groups of species occur in each ranking (Appendix A, Table 3)
- Highest risk bird/bat species to consider on site (Appendix A)
- Lower risk but high strike species to consider (Appendix A)
- Reporting responsibilities
- Injured or struck fauna procedures.

4. Management and Monitoring

4.1. Management actions

The WHMP consists of the following management actions:

- **Passive management actions** (Table 5) – to modify habitats or other aspects of the environment to reduce the attractiveness of habitat for risk bird and bat species
- **Trigger, response and action plan** (Table 6) – recommended actions triggered by wildlife presence or habitat use at any time during the Project life
- **Regular monitoring regime** (Table 7) – to monitor and record potential wildlife hazards on a regular recommended schedule.

Passive management is ongoing for the life of the Project and should be completed on a regular basis. The majority of management actions will depend on the severity of the wildlife risk, and would require input from an Ecologist, NSW DCCEE and Western Sydney Airport for appropriate future actions. Severe measures such as culling should only be considered as a last resort, and it is expected that with a regular monitoring and trigger response cycle hazards can be identified early and culling can be avoided. Table 6 applies to triggers that may be observed during or outside of the scheduled monitoring activities.

Table 5: Passive management actions

Passive Management Type	Description	Recommended Schedule
Grass management	Regular mowing/maintenance of open space lawn, such as the temporary passively irrigated lots.	Twice monthly
Natural food supply management	Removal of fallen fruit from any fruiting native or exotic plants from public domain street trees and native vegetation areas.	Twice monthly during peak fruiting/flowering season
Food waste management	Ensure the waste management plan is adhered to (SLR Consulting Australia 2025) Ensure all food waste generated by on-lot activities is managed appropriately, with closed bins emptied regularly to discourage scavengers (e.g. Ibis). All waste is to be taken off site.	Ongoing
Other waste management	Ensure the waste management plan is adhered to (SLR Consulting Australia 2025) Ensure waste is disposed of appropriately and bins and other waste storage facilities are maintained with closed lids or other suitable covering wherever practicable.	Ongoing
Roof and eave inspections and gutter cleaning	Regular inspections and cleaning of gutters and roof cavities to avoid nest building and water buildup. Installation of exclusion devices such as mesh, or netting over any roof cavities wherever practicable.	Ongoing
Stockpiles and areas of exposed soil	Undertake appropriate weed management (in accordance with the Weed Eradication Management Plan, ELA 2026b) prior to earthworks to minimise seed and vegetative matter. Keep stockpiles to appropriate height (< 2 m) and covered at all times.	During construction

Table 6: Trigger, response and action plan

Trigger	Response	Explanation	Potential Future Action
<p>High-risk species More than 5 individuals of high risk strike species (Appendix A Table 3) are observed using habitat on site. Excludes birds/bats flying over site.</p>	Consult with an Ecologist. Complete monitoring per Table 7, if deemed necessary by the Ecologist. Monitoring to be tailored to species identified and its potential habitat usage.	High risk strike birds and bats may occur on site and indicate a potential risk to Airport operations. This must be addressed early to avoid a potentially greater risk if left until the regular monitoring schedule.	Provide outcomes of monitoring in a report to Western Sydney Airport and NSW DCCEEW as soon as practical.
<p>Megabat camp A Flying-fox camp is established in the subject land. This trigger also applies where fauna behaviours indicate a flying-fox camp may become established.</p>	Record approximate numbers, behaviour and species (if possible). Seek ecological advice and liaise with NSW DCCEEW.	Permanent or semi-permanent Flying-fox camps can be established on suitable habitat near water with appropriate food sources. Grey-headed Flying-fox and Black flying fox are high risk species for wildlife hazard and are threatened species under the BC Act and EPBC Act.	Following consultation with Ecologist and NSW DCCEEW, the following actions may be required: <ul style="list-style-type: none"> • Removal of food sources to deter camp establishment • Exclusion of individuals and translocation of camp
<p>Megabat foraging Large numbers (> 50) of Flying-fox individuals favour use of habitat in subject land for foraging at night.</p>	Record approximate numbers, behaviour and species (if possible). Seek ecological advice and liaise with NSW DCCEEW.	Flying-fox can forage over large distances (up to 50 km in a night). If large numbers (> 50) of flying-fox are observed using the site, they may pose a risk to aircraft depending on the behaviour, and number of individuals.	Following consultation with Ecologist and NSW DCCEEW, actions such as removal of food sources may be required to deter Flying-fox foraging behaviours.
<p>Breeding birds (colony-forming) Colony-forming birds establish a breeding cycle that relies on habitat in the subject land.</p>	Record approximate numbers, behaviour, habitat type, habitat usage and species. Seek ecological advice and liaise with NSW DCCEEW.	Colony forming birds that are high-risk (e.g. Ibis) may require action to deter from site. Other lower-risk bird species may not require immediate action and ongoing monitoring may suffice. An Ecologist must assess the potential risk based on hazard rankings for individual species.	Following consultation with Ecologist, the following actions may be required: <ul style="list-style-type: none"> • Discouragement of colony using deterrents targeted to individual species. • Liaise with stakeholders to reduce availability of food supply such as and not limited to, in waste bins or landfill or by being hand fed.
<p>Breeding birds (waterfowl) Ducks and swans are observed breeding around ponds in the subject land.</p>	Record species, habitat, breeding behaviour and numbers. Seek ecological advice.	The level of risk will be dependent on the size of the breeding flock. Ducks may not require deterrence or relocation if few are observed, and their behaviour is not likely to interfere with aircraft operations.	If risk is deemed high, the following actions may be required on advice from the Ecologist and/or NSW DCCEEW: <ul style="list-style-type: none"> • Exclusion of ducks and protect ponds using barriers such as bird balls or netting. • Ongoing deterrence using a combination of methods such as light, noise and scare tactics such as predator kites.

4.2. Monitoring

The recommended monitoring regime includes surveys designed to establish baseline habitat usage and identify potential wildlife hazards and trends. All surveys should be conducted in survey seasons Autumn/Winter and Spring/Summer in the same month each survey event over consecutive years. The wildlife hazard monitoring plan is provided in Table 7.

The following survey methods are recommended:

- **Diurnal (daytime) 2 ha, 20-minute point search bird survey** – morning and afternoon monitoring and data collection for a minimum of three consecutive days, in accordance with the timing in Table 7 for different habitat types.
- **Nocturnal (nighttime) bird surveys** – call playback surveying and data collection for target bird species for a minimum of two hours over a minimum of two nights.
- **Diurnal Flying-fox ground counts** if deemed present (CSIRO 2011)
- **Deploy electronic recording devices** – Anabats, Songmeters and infrared motion detection cameras to record at target locations over a minimum of three nights.

Monitoring should include collection of other data such as and not limited to, date, humidity, temperature, rainfall, wind description and speed, wind direction and other possible influencing factors such as adverse weather events.

Permanent survey points are to be established at the onset of monitoring by an Ecologist on site. In addition to the recommended monitoring schedule, targeted monitoring (and associated reporting) should be undertaken if and when high risk strike species are identified on the site.

During monitoring, the Ecologist should make note of any general habitat type changes that may have occurred and have the potential to increase or have been deemed to have increased wildlife attraction. For example, a large storm event may cause the falling of branches and logs in wetland areas which provides new perching habitat for birds. Findings are to be included in the monitoring reports. Consultation with NSW DCCEEW and/or Western Sydney Airport would provide guidance on any additional approvals or actions required (e.g. removal or dispersal of changed habitat).

No regular monitoring is required for land uses designated as Warehouses (non-food) and offices, and regular inspection of roof cavities and eaves for nesting or roosting species should be undertaken as passive management. This is especially important to minimise attraction of extreme risk species such as Rock Doves from becoming abundant within built habitats. Other species such as Common Starlings (high risk), Welcome Swallows (low risk), Fairy Martins (low risk), and House Sparrows (low risk) are also known to roost and nest in buildings and warehouses. These species may have high probabilities of being struck so attraction of these species should also be minimised as much as possible.

Table 7: Wildlife monitoring plan

Habitat Type	Monitoring Schedule	Data Collection	Objective
Landscaping (gardens and plantings in recreational areas and along paths/roads)	Twice annual diurnal: <ul style="list-style-type: none"> Bird survey Flying-fox ground counts (if deemed present) 	<ul style="list-style-type: none"> Species Number of individuals Age for example chicks/pups, juvenile or adult. Male or female. Habitat description (e.g. species, native, mature, flowering tree, establishment of any hollows, fissures, cracks or other habitat such as nests) Behaviour (e.g. foraging, drinking, nesting, resting, flying, breeding behaviour, flock behaviour if flocking) 	<p>To establish and monitor usage of habitat.</p> <p>To establish and monitor increases, decreases or new populations of higher risk species</p> <p>To use this data as part of an adaptive management approach to guide the modification of habitats and/or other mitigation measures.</p>
Stormwater facilities and Wetland	<p>Diurnal and nocturnal bird surveys:</p> <p>Once prior to the commencement of wetland construction.</p> <p>Twice annually after construction of wetlands.</p> <p>Electronic surveys:</p> <ul style="list-style-type: none"> All electronic equipment deployed – one of each type at each waterbody. <p>Survey locations to be at least one in each corridor.</p>	<ul style="list-style-type: none"> Species Number of individuals Age for example chicks, juvenile or adult. Male or female Habitat description (e.g. species, native, mature, flowering tree, establishment of any hollows, fissures, cracks or other habitat such as nests) Behaviour (e.g. foraging, drinking, nesting, resting, flying, breeding behaviour, flock behaviour if flocking) Anabat recording call types (e.g. feeding or social calls) 	<p>To establish and monitor usage of permanent waterbodies (storage ponds) by birds and bats</p> <p>To establish and monitor increases, decreases or new populations of higher risk species</p> <p>To use this data as part of an adaptive management approach to guide the modification of habitats and/or other mitigation measures</p>
VMP area (revegetated zones along Badgerys Creek)	<p>Diurnal and nocturnal bird surveys:</p> <p>Once prior to the commencement of wetland construction.</p> <p>Twice annually after revegetation commences</p> <p>Electronic surveys:</p> <ul style="list-style-type: none"> All electronic equipment deployed – one of each type at each waterbody. <p>Survey locations to be at least one in each corridor.</p>	<ul style="list-style-type: none"> Species Number of individuals Age for example chicks, juvenile or adult. Male or female Habitat description (e.g. species, native, mature, flowering tree, establishment of any hollows, fissures, cracks or other habitat such as nests) Behaviour (e.g. foraging, drinking, nesting, resting, flying, breeding behaviour, flock behaviour if flocking) Anabat recording call types (e.g. feeding or social calls) 	<p>To establish and monitor usage of the riparian zone around Badgerys Creek by birds and bats.</p> <p>To establish and monitor increases, decreases or new populations of higher risk species</p> <p>To use this data as part of an adaptive management approach to guide the modification of habitats and/or other mitigation measures.</p>

5. Reporting Requirements

5.1. Routine Reporting

Routine reporting ensures site managers are equipped with the information needed to adapt hazard management activities and the WHMP when required. The following reports are to be prepared:

- **Monitoring cycle reports** are to be provided to Western Sydney Airport within 28 days of each survey described in Table 7 in accordance with the DCP.
- **Annual reports** describing all monitoring activities relating to wildlife hazard. This report must provide the details of monitoring activities completed in the current period and summarise all previously collected data from previous years so that trends can be identified.
- **Ad-hoc reporting** will be required where hazards are identified in accordance with the trigger, response and action plan. Reports must include the trigger for the action, who was notified (e.g., Western Sydney Airport, Ecologist and/or NSW DCCEE) and details of any follow-up actions within two weeks of the event.
- **Uploading data to BioNet.** Data collected should be imputed in publicly available online databases such as BioNet.

An Ecologist may be required to provide input to the above reports. The proponent is responsible for engaging suitable staff to prepare the reports and must maintain a record of all reporting and activities.

Reporting of immediate wildlife hazard or strike is generally not expected to be required for wildlife observations within the subject land itself, being off-airport. The trigger response action plan should be implemented in this instance (Table 6).

5.2. Incident Reporting

If injured or struck fauna are observed in the subject land (regardless of cause), immediately notify the Project Ecologist and WIRES Wildlife Rescue. Even if deceased fauna is found on site, for example in the case of a Grey-headed Flying-fox, WIRES may still attend site to conduct a pup search (young may be alive nearby but unable to fly and/or be lactating).

5.3. Performance Indicators

The successful implementation of this plan may not only be measured through the reported statistics or trends. In order to measure the effectiveness of this WHMP, key (primary) performance indicators to be adopted are:

- % of correctly filled wildlife management reports
- % scheduled diurnal surveys completed
- % staff training attendance or induction completion
- % passive management actions completed on schedule

If gaps in the performance indicators are identified, management measures and reporting requirements or templates should be reviewed as often as needed, or as part of the 3-yearly review cycle (below) to ensure ongoing effectiveness.

6. Review and Adaptation

To ensure this WHMP remains effective and is updated to fulfil future requirements, a review of the WHMP will be undertaken at a minimum of every three years, or before commencement of subsequent developmental phases. If the results of monitoring justify a review prior to this due to the ineffectiveness of mitigation measures, the WHMP will be updated as required. Adaptive management measures will be implemented in consultation with a qualified Ecologist and necessary authorities (e.g. DPHI, WSI).

A major review is recommended to be completed after 9 - 10 years, or before commencement of subsequent developmental phases, and would involve complete revision and reissue of this document and the associated Wildlife Hazard Assessment (ELA 2026a). This includes reviewing the likelihood of occurrence for bird and bat species, updating risk assessments, strike statistics and adaptive management actions to address shortcomings or unsuccessful aspects of this WHMP. The review must also ensure compliance with all current legislation and strategic plans and adopt best-practice management actions and knowledge at the time of major review.

7. References

- Australian Transport Safety Bureau (ATSB). 2019. *Australian aviation wildlife strike statistics 2008 – 2017*. Australian Government. Available: <https://www.atsb.gov.au/publications/2018/ar-2018-035>
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- CSIRO. 2011. *A monitoring method for the grey-headed flying-fox, Pteropus poliocephalus*. D.A. Westcott, A. McKeown, H.T. Murphy and C.S. Fletcher. CSIRO Ecosystem Sciences, August 2011.
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- Paton, David C. 2010. *Bird Risk Assessment Model for Airports and Aerodromes*. University of Adelaide & Adelaide Airport Pty. Ltd. & Australian Aviation Wildlife Hazard Group.
- SLR Consulting Australia. 2025. *Waste Management Plan 125-175 Lawson Rd, Badgerys Creek*. Prepared for Formus Property Pty Ltd.

Appendix A Explanation of the hazard ranking system

Within the Wildlife Hazard Assessment (ELA, 2026a), bird and bat species with the potential to occur within the subject land were assigned an overall hazard rank, which relates to the relative risk of wildlife strikes to aircrafts. Hazard ranks were assigned utilising the 'Bird Risk Assessment Model for Airports and Aerodromes' (Paton, 2010) recommended by the Australian Aviation Wildlife Hazard Group (AAWHG). Hazard rankings are derived from a consequence score (estimate of the level of damage to occur if a species is involved in a wildlife strike), and a probability score (an estimate of the probability of a species being involved in a strike). A full breakdown of the methodology used to derive these scores can be found in the Wildlife Hazard Assessment (ELA, 2026a).

A1: Probability x consequence matrix for assigning and overall hazard rank to bird and bat species

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

Appendix B High-risk bird and bat species relevant to this development

This table is an excerpt of Appendix E from the Wildlife Hazard Assessment (ELA 2026a) which includes species that are considered high-risk to the Project (e.g. species with extreme, very high or high hazard rankings). It is intended to provide details of species that should be the focus of management actions. In addition to the species outlined below, commonly struck species such as Welcome Swallow, Nankeen Kestrel and Australian Pipit should also be considered. Megabats not included in the assessment (due to absence of records or modelled distribution) such as Black Flying-fox should also be considered alongside Grey-headed Flying-fox. Other megabat species may share camps and foraging areas with Grey-headed Flying-fox and are considered to have a similar Hazard rank (extreme).

Functional Group	Species	Common name	Likelihood of occurrence	Consequence rank	Probability rank	Hazard rank
Megabats	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	High	Extreme	Very High	Extreme
Pigeons	<i>Columba livia</i>	Rock Dove	High	Extreme	High	Extreme
Waterbirds	<i>Threskiornis moluccus</i>	Australian White Ibis	High	Extreme	High	Extreme
Waterbirds	<i>Threskiornis spinicollis</i>	Straw-necked Ibis	High	Extreme	High	Extreme
Parrots	<i>Cacatua tenuirostris</i>	Long-billed Corella	High	Extreme	Medium	Very High
Waterfowl	<i>Cygnus atratus</i>	Black Swan	Moderate	Extreme	Medium	Very High
Parrots	<i>Eolophus roseicapilla</i>	Galah	High	Extreme	Medium	Very High
Seabirds and gulls	<i>Chroicocephalus novaehollandiae</i>	Silver Gull	Moderate	Very high	Very High	Very High
Waterfowl	<i>Anas castanea</i>	Chestnut Teal	High	Very high	High	High
Waterfowl	<i>Anas gracilis</i>	Grey Teal	High	Very high	High	High
Waterfowl	<i>Anas superciliosa</i>	Pacific Black Duck	High	Very high	High	High
Waterfowl	<i>Chenonetta jubata</i>	Australian Wood Duck	High	Very high	High	High
Waterbirds	<i>Vanellus miles</i>	Masked Lapwing	High	Very high	High	High
Raptors	<i>Aquila audax</i>	Wedge-tailed Eagle	Moderate	Very high	Medium	High
Waterbirds	<i>Bubulcus ibis</i>	Cattle Egret	High	Very high	Medium	High
Parrots	<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	High	Very high	Medium	High
Raptors	<i>Hieraetus morphnoides</i>	Little Eagle	Moderate	Very high	Medium	High
Corvids and allies	<i>Gymnorhina tibicen</i>	Australian Magpie	High	High	High	High
Waterbirds	<i>Microcarbo melanoleucos</i>	Little Pied Cormorant	High	High	High	High
Waterbirds	<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant	Moderate	High	High	High
Smaller Songbirds	<i>Sturnus vulgaris</i>	Common Starling	High	High	High	High
Nocturnal birds	<i>Tyto javanica</i>	Eastern Barn Owl	Moderate	High	High	High

