

Mamre Road Data Centre Campus

Fauna Management Plan

AT&L & Associated Pty Ltd

24 June 2026

Final

cumberland
ecology

PART OF  SLR

Report No. 21281RP6

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or commendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology.

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Approved by:	Matthew Freeman
Position:	Principal Ecologist
Signed:	
Date:	24 June, 2026

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Glossary

Term	Definition
BC Act	NSW Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
CBD	Central Business District
Council	Penrith City Council
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FMP	Fauna Management Plan
GPS	Global Positioning System
Ha	Hectares
NSW	New South Wales
Project Area	706-752 Mamre Road, Kemps Creek, as well as areas across the shared boundaries to the east and south and portions of Bakers Lane and Mamre Road
SSDA	State Significant Development Application
the 'client'	AT&L & Associates Pty Ltd
the 'project'	Proposed development of the Project Area

1. Introduction

Cumberland Ecology has been commissioned by AT&L & Associates Pty Ltd (the 'client') to prepare a Fauna Management Plan (FMP) to support a State Significant Development Application (SSDA) for the proposed development of the Mamre Road Data Centre Campus (the 'project'). The Project Area for the project, 706-752 Mamre Road, Kemps Creek (Lot 10 DP 1280592), constitutes the main development site with areas across the shared boundaries to the east and south (described below) and sections of Bakers Lane and Mamre Road utilised to facilitate roadworks and bulk earthworks:

- Gibb Group site to the East known as 1-22 Bakers Lane, Kemps Creek (Lot 40 in DP 708347).
- GPT Group site to the South known as 754 Mamre Road, Kemps Creek (Lot 180 in DP 1290397).

This Fauna Management Plan (FMP) is applicable to the entire Project Area as shown in **Figure 1** and has been prepared in response to item 6(o) received from Penrith City Council which is reproduced below.

Penrith City Council – 6(o)

It is also recommended a Fauna Management Plan would be required to be prepared which will outline how impacts to terrestrial fauna will be managed during vegetation clearing. The plan should identify locations of where rescued/ salvaged fauna will be relocated to (all locations should not be located on certified – urban capable land) and should have written approval from the landowner to allow fauna to be released on site. There is a strong likelihood that the development is used as grazing habitat for the Eastern Grey Kangaroos. The management plan is to also include how resident mobs of Kangaroos that may be present on the site at the time of clearing will be managed. This will be integral as depending on timing of when clearing commences Kangaroos may become isolated on the site and as there is fencing along the northern side of Bakers Lane they will not be able to disperse onto land to the north and if surrounding land starts to develop then the Kangaroos may not have safe passage to disperse to other habitats.

The purpose of this FMP is to detail the pre-clearance and clearance protocols to be implemented in order to manage impacts to terrestrial fauna. This FMP provides a description of the terrestrial fauna and associated habitat values present within the Project Area, and measures to be implemented to avoid and minimise impacts on these values. This includes:

- Conducting pre-clearance surveys for fauna,
- Relocation of macropods (if found) into areas of retained native vegetation nearby the Project Area;
- Fauna handling protocols; and
- Procedures for the rescue and relocation of fauna encountered during the clearing process, including recording of details for the treatment and rehabilitation of any injured fauna; and
- Any associated reporting requirements.

All fauna surveys are to be undertaken by an ecologist with a minimum of a Tertiary qualification in Biology, Conservation, Ecology or similar. All personnel undertaking fauna works required under this FMP will hold/be covered by appropriate licences listed in **Section 3.1**.

It is noted that this FMP is limited to terrestrial fauna/habitat and a separate Dam Decommissioning Plan (ref. 21281RP5) has also been prepared which details management protocols for semi-aquatic and aquatic species associated with the large dams on site.

1.1. Description of the Project Area and Proposed Works

1.1.1. Site Description and Location

The Project Area comprises 706-752 Mamre Road, Kemps Creek, as well as areas across the shared boundary to the east and south and sections of Bakers Lane and Mamre Road, as shown in **Figure 1**. The Project Area is located within the Western Sydney Employment Area, approximately 50 km west of the Sydney Central Business District (CBD) and 12 km southeast of the Penrith CBD. It is located within the Penrith Local Government Area and covers an area of approximately 54 ha. The Project Area has been rezoned under the *State Environmental Planning Policy (Industry and Employment) 2021* and is predominantly zoned IN1 – General Industrial with sections along Mamre Road zoned SP2 – Infrastructure and Aldington Road zoned C2 – Environmental Conservation. The land zoning roughly corresponds to land mapped for biodiversity certification (bio-certification) under the Cumberland Plain Conservation Plan, with IN1 zoned land mapped as 'Certified – Urban Capable' and SP2 and C2 zoned land mapped as 'Excluded Land'. The exception to this is portions of the IN1 zoned land along the northern boundary of the Project Area which has been excluded from bio-certification.

The Project Area and wider locality predominantly comprise farming properties that have been primarily used for livestock grazing.

Native vegetation occurring across the Project Area varies from patches of open forest and woodland to derived native grassland and exotic dominated grassland. Some areas within the Project Area have been historically subject to pasture improvement, with areas of heavy grazing dominated by exotic pasture species.

1.1.2. Project Overview

The Project Area is proposed for development under an SSDA as a data centre campus comprising:

- Approximately 12 shells across four-storey data centre buildings (3x four shells), including six technical office buildings, plus a campus office;
- Incoming and internal electrical substations and associated infrastructure; and
- Site preparation, including earthworks, stormwater, sewer, roads, and associated infrastructure.

The layout of the project is shown in **Figure 2**.

1.2. Methodology

In order to identify the species likely to be encountered during clearing operations, the preparation of this FMP utilised the result of surveys undertaken by Cumberland Ecology in 2022 to support the Biodiversity Development Assessment Report (BDAR) (Cumberland Ecology 2024), as well as government databases and resources. These included:

- BioNet Atlas (DPE 2024) search of threatened fauna species previously recorded in the locality (5km radius) of the Project Area;
- Protected Matters Search Tool (DCCEEW 2024) of suitable threatened fauna species' habitat previously recorded in the locality of the Project Area.

As outlined in the BDAR prepared by Cumberland Ecology (2024), fauna surveys were undertaken within the Project Area between 13 January 2022 and 8 July 2024.

Surveys included an initial habitat assessment followed by targeted cockatoo and raptor nest searches, diurnal active searches for the threatened snails, microchiropteran bat (microbats) surveys, owl surveys, nocturnal mammal surveys and amphibian surveys. Furthermore, any incidental fauna species, particularly avifauna species, that were observed or heard calling, or otherwise detected based on tracks or signs, were recorded and listed in the total species list for the Project Area (see **Appendix A**).

Further details of each of the fauna survey methods are provided in the BDAR prepared by Cumberland Ecology (2024) for the project.

Any other resources utilised during the preparation of this FMP are referenced throughout this document.

2. Fauna Habitat and Expected Fauna

This chapter presents an overview of the fauna habitats present within the Project Area and a description of the fauna species considered to have potential to occur.

2.1. Fauna Habitat

As mentioned previously, the Project Area has been largely cleared for grazing, with small patches of remnant canopy trees providing most of the terrestrial habitat value within the site. Other habitat includes extensive grasslands, dominated by exotic pasture species and in some areas native grasses associated with the woodland community which existed prior to clearing. Although degraded, the site provides habitat for a range of native fauna species, including amphibians, reptiles, birds, bats, and mammals. The Project Area also serves as a wildlife corridor connecting vegetation on adjacent land.

Table 1 below includes the habitat features recorded within the Project Area, as well as the species groups with potential to utilise each feature. **Figure 3** shows the locations of all habitat features recorded within the Project Area, while **Figure 4** shows all confirmed native roosts/nests. All habitat features including nests and roosts will be assessed during pre-clearance surveys (refer to **Section 3.4**).

Table 1 Habitat features recorded within the Project Area and species groups considered to have the potential to utilise each habitat feature

Habitat Feature	Species Group Utilisation
Patches of Remnant Canopy Trees	Birds: nesting and foraging habitat. Reptiles: foraging and refugia habitat. Arboreal mammals: foraging and nesting habitat. Bats: roosting and foraging habitat. Terrestrial Mammals: refugia habitat
Isolated Canopy Trees (Remnant)	Birds: nesting and foraging habitat. Reptiles: foraging and refugia habitat. Arboreal mammals: foraging and nesting habitat. Bats: Roosting and foraging habitat.
Fallen logs, debris and leaf litter	Reptiles: foraging and refugia habitat. Amphibians: foraging and refugia habitat Small Mammals: refugia habitat
Human-made structures	Birds: nesting habitat Reptiles: foraging and refugia habitat. Arboreal mammals: nesting habitat. Bats: roosting habitat.

2.2. Recorded and Likely Fauna Species

Due to the historic degradation/modification of the site, a relatively low diversity of native fauna species are considered likely to utilise the habitat present. The vast majority of species considered to have the potential to utilise the Project Area are those commonly adapted to the rural urban fringe. As identified in the BDAR (Cumberland Ecology 2024), a number of threatened species have been recorded on site including; Grey-

headed Flying Fox (*Pteropus poliocephalus*), Eastern Free-tail Bat (*Microsomus norfolkensis*), Southern Myotis (*Myotis macropus*) and the Greater Broad-nosed Bat (*Scoteanax rueppellii*).

Appendix A includes a table of all species recorded by Cumberland Ecology within the Project Area and surrounding areas, as well as any species previously recorded in the locality based on the BioNet Atlas and Protected Matters Search Tool. A summary of the species groups recorded within the Project Area and surrounding areas by Cumberland Ecology are as follows:

- Twenty-seven (27) native birds species;
- Eight (8) native bat species;
- Four (4) native frog species;
- One (1) arboreal mammal species;
- One (1) native macropod species;
- One (1) native reptile species;
- Two (2) introduced mammal species; and
- One (1) introduced bird species.

The Project Area is expected to provide foraging habitat for Eastern Grey Kangaroos (*Macropus giganteus*) which were recorded during surveys. Communications from Penrith City Council (Council) have also suggested that the use of the site by the local population is highly likely. The development site provides suitable foraging habitat (native grasses) and sheltering locations (amongst retained canopy trees). Management measures specifically related to kangaroos and other macropods are provided in **Section 3.5**.

3. Fauna Management Measures

This FMP has been prepared to provide detailed specifications of the measures that will be implemented to avoid and minimise impacts to native fauna as a result of the project. Measures to avoid and mitigate any unnecessary impacts from the project on fauna species are detailed in this chapter and include:

- Licences
- Environmental Inductions;
- Pre-clearance surveys;
- Clearance supervision;
- Relocation of captured fauna; and
- Salvage of habitat materials.

The methods to minimise impacts are described in detail below. All fauna handling is only to be undertaken by appropriately trained and qualified ecologists. All pre-clearance surveys must be conducted by trained and qualified ecologists under the direction of the Project Ecologist. Trained and qualified ecologists, as directed by the Project Ecologist, must also be present onsite during:

- the removal of any woody vegetation (exotic or native);
- any disturbances to the riparian corridor; and
- removal of any habitat features identified during pre-clearance surveys.

3.1. Licences

A qualified ecologist will be required to implement the management measures/activities outlined in this FMP. The activities being implemented under this FMP are for the purpose of protecting fauna and minimising impacts on fauna as a result of clearing works – termed ‘Spotter/Catcher’ works. It should be noted that NSW does not issue licences for Spotter/Catcher works and approvals for Spotter/Catcher works are dictated by issued conditions of consent and management plans, as approved by relevant consent authorities.

Therefore the Spotter/Catcher works required under the FMP are not considered to constitute ‘animal research’ or a ‘recognised research purpose’ under the *Animal Research Act 1985*, as NSW does not issue licences for Spotter/Catcher works. A nationally accredited Fauna Spotter Catcher course that provides AHCFAU301A - Respond to Wildlife Emergencies’ competency.

Nevertheless, it is recommended that activities undertaken as part of this FMP are undertaken by personnel that have undertaken the nationally accredited fauna Spotter Catcher Training (AHCFAU301A - Respond to Wildlife Emergencies’) and/or hold the following licenses:

- NSW Animal Ethics Licence; and
- NSW Scientific Licence.

3.2. Environmental Inductions

Environmental inductions will be undertaken for all personnel who will work within the Project Area prior to the commencement of any works to communicate environmental features to be protected and measures to be implemented. Fauna management and procedures will form part of the site induction and all persons working on the vegetation clearing or other feature removal will be briefed about the possible fauna present at the time of construction, and what procedures must be undertaken in the event of an animal being injured or disturbed. It is anticipated that this FMP can be utilised for any induction slides and the supervising ecologist on the day will provide a prestart briefing prior to works. The inductions or daily pre-starts will specify in detail which fauna species to look out for, triggers for stop works, what to do when fauna are encountered, who to contact and what do if someone is bitten or scratched, and the contact phone number/radio frequency for the supervising ecologist.

3.3. Boundary Demarcation

Prior to commencing any works within the Project Area, the boundary of the Project Area (i.e. clearing footprint) will be clearly delineated with fencing/boundary markers to avoid inadvertent damage to adjoining vegetation and associated fauna habitat. No stockpiling of equipment, soils, or machinery will occur beyond the Project Area.

3.4. Pre-clearance Surveys

Fauna pre-clearance surveys will be conducted throughout the Project Area within a one-week period prior to the commencement of clearing activities. The purpose of the pre-clearance survey is to identify and mark habitat features that will need to be removed under ecologist supervision and will also identify habitat features suitable for later salvage and re-instatement in areas proposed to be revegetated. Pre-clearance surveys will also include stag-watching to aid in the detection of active roosting/nesting sites.

The methodology and results of the pre-clearance survey will be documented in a letter that is to be issued to Council. Any recommendations made within the pre-clearance survey letter will supplement the procedures identified in this FMP. For example, not all habitat features may be identified in this FMP as the time-frame between writing this FMP and when clearing will occur is unknown and additional fauna features (e.g. creation of new nests) may be present. Therefore, the pre-clearance survey letter will confirm the results of this FMP and provide any additional recommendations required to minimise impacts on fauna.

No works are to commence until the pre-clearance survey is completed, the accompanying letter report has been issued to Council and Project Ecologist direction has been given to the contractor.

3.4.1. Habitat Features

Fauna pre-clearance surveys will consist of identifying, marking and documenting suitable fauna habitat features. These features include: stags, significant rock outcrops and crevices, large boulders, nests, decorticated bark, hollow-bearing trees, and inundated areas (i.e. riparian areas). These fauna habitat features have the potential to support species such as bats, gliders, possums, reptiles, amphibians and birds. Any remaining human-made structures that may be utilised as habitat by fauna will also be checked for indications

of fauna use and any additional mitigation measures to what is included in this FMP will be detailed in the associated pre-clearance survey letter (refer to **Section 5.1**).

Features identified as likely to support resident fauna will be marked with a large "H" using fluorescent spray paint as well as with flagging tape. Habitat feature details will be recorded including:

- Type of habitat feature (i.e. tree, hollow, nest, log, log pile or rock pile);
- Location using a handheld GPS; and
- Record of a unique identifying code.
- Suitability to microchiropteran bats

If a hollow-bearing tree is recorded, the following data will be collected:

- Species;
- Number of hollows; and
- Average hollow size class (small, medium or large).

During the pre-clearance surveys, habitat items suitable for salvage will be identified, recorded, flagged with fluorescent marking tape, and marked with a large (>1 m) "S" using spray paint on two sides of the tree and given a unique identifying code.

3.4.2. Stag-watching

In addition to the procedures above, the pre-clearance survey will include stag-watching to aid in the detection of active roosting/nesting sites. Seven species of microchiropteran (micro) bat were recorded within the Project Area (refer Section 2.2), three of which are threatened, as such the identification of any active bat roosts will be a priority during pre-clearance. Stag watching will be undertaken at dusk on the day prior to clearing for approximately 30 min at locations with habitat features previously identified as most suitable for use by bats (stags, hollows, culverts etc.)

3.5. Macropod Management

It is considered likely that the Project Area provides foraging habitat for macropods, particularly the Eastern Grey Kangaroo (*Macropus giganteus*), which have been previously recorded within the Project Area on a number of occasions including during surveys conducted by Cumberland Ecology (2024). To ensure macropods are not put at risk by the project, a series of management actions are to be implemented prior to commencement of clearing activities.

The entirety of Project Area is to be cleared and developed, forcing any macropods which might be present at the time into the surrounding landscape. Review of the recent aerial imagery and the project layout (**Figure 2**) reveals that land to the south, east and west is subject to current and/or future development. In addition, Mamre Road runs along the northern boundary as does a large fence associated with the schools on the located on the northern side of the road largely isolating the Project Area and blocking safe exit routes for

macropods (refer to **Figure 5**). This isolation of the macropods would be considered more significant if development on adjacent properties was to begin before the project. However, it is considered that development proposed for the land to the East of the Project Area is highly unlikely to occur before that of the project and as such the eastern boundary provides the safest route for macropods to exit the Project Area.

Herding of macropods offsite onto adjacent land and erection of exclusion fencing is the simplest and best management outcome for the resident macropods as it would herd animals relatively gently into another part of their existing habitat, beyond the boundary. In order to ensure macropods can disperse into larger connected tracts of land the macropods exit point has been located in the south east corner of the Project Area within an area that does not lead macropods onto nearby roads, close to moving cars, or areas used frequently by people as this may deter the macropods from exiting the site and cause excess stress (Refer to **Figure 5**).

3.5.1. Macropod Herding

Written agreement with the adjacent land holder should be gained prior to all relocation activities and all relocation of the macropods must be supervised by licensed wildlife professionals.

Prior to relocation, exclusion or barrier temporary fencing should be erected around the site with a gap left temporarily through which the macropods will be herded (3 – 4m wide). Relocation is achieved by the physical herding of the macropods (and any other macropods present) using a line of personnel to gently encourage the macropods to move of their own accord. Herding should commence shortly after sunrise when macropods are most active and will more readily move (Henderson et al. 2018). Herding should not occur on days of extreme weather (i.e. heavy rain, high winds or temperatures above 30°C). Suitability of conditions should be assessed by a consulting ecologist with previous macropod herding experience or a veterinarian with macropod experience.

A line of personnel will move across the site in a south easterly direction using two-way radio communication (refer to **Figure 5**). Herding will be undertaken in a two-step process, first commencing from the furthest end of the site opposite to the exit position, with the aim to herd all macropods across to the half of the site/portion closest to the exit. Once all macropods have been herded into the eastern portion of the site, the second step of the herding will commence with the aim to herd the animals towards the exit position leading offsite. Once in position, personnel should begin walking in a straight line, leaving gaps no greater than approximately 20 m. If macropods are found to cut back between herders, herding shall cease until further personnel are enlisted to reduce the spaces between personnel.

Herding should be conducted at a slow walking pace, with herders making continuous noises to alert the macropods to their presence and to encourage them to move. Continuous noise (clapping, whistling etc.) is preferred to sharp sudden noises which may startle the animals and increase their stress levels.

As macropods near the southwest corner of the site, herders will begin to move closer together, pushing animals towards the open fence and through the exit point. The fence should then temporarily be closed to prevent animals re-entering, using temporary construction fencing. It should be noted that multiple herds through the site may be needed to move all macropods. If animals are unwilling to move through the open fence panel, temporary fencing can be used to funnel the animals out.

No other personnel not involved in the herd should be on site during herding (i.e. construction staff) and no works should occur on site during herding. Increased disturbance can make macropods more erratic in their movement, and less likely to move at a moderate pace to the relocation area. If any activities are occurring near the exit location, macropods are unlikely to move through this open fence panel and exit the site.

Once herding is complete all gaps in the fencing should be adequately closed and secured to prevent macropods from moving back onto site. All temporary fencing should remain in place until permanent fencing is arranged.

3.6. Clearing Supervision

3.6.1. Clearing of Vegetation

Following completion of pre-clearance surveys, the clearing of vegetation or other features (such as artificial structures) will be conducted using a two-stage clearing process as outlined below under strict qualified ecologist supervision to rescue and re-locate any displaced fauna that may be disturbed during this activity. A minimum of one ecologist per clearing machine (e.g. excavator) will be on-site during clearing of fauna habitat features identified in this FMP (refer to **Figure 1**), or as identified in the pre-clearance survey letter to be issued.

Stage 1: Firstly, vegetation or other features not identified during pre-clearance surveys or this FMP as potential fauna habitat is cleared without ecological supervision. All vegetation around each habitat item is cleared so that the potential fauna habitat is isolated.

Stage 2: Secondly, all habitat features are left to stand overnight to allow resident fauna to voluntarily move from the area before being cleared under ecological supervision.

An appropriately qualified ecologist, or fauna handler under Project Ecologist supervision, will then manually recover any fauna still present where it is safe and possible to do so. For fauna habitat such as nests or dreys that are identified high in trees and are unable to be recovered from the ground, an accredited tree-climber will climb the tree and check the habitat feature for fauna under ecological supervision. Where it is safe to do so, the climber will remove the complete nest or drey in sections if safe to do so for relocation on site.

The following protocols are to be implemented under strict Project Ecologist supervision for any identified habitat trees:

- Trees will be gently shaken by machinery prior to clearing to awaken sleeping fauna and encourage any resident fauna to self-relocate;
- All potential habitat trees are to be lowered to the ground slowly by an excavator (using a grab mechanism or similar), thus minimising the risk of injury or mortality to fauna;
- The supervising ecologist will inspect all visible hollows for the presence of fauna following felling of the tree; and
- If salvageable, branches with hollows and sections of trunk will be marked and set aside for transfer to a storage area so that they can be reused for conservation purposes by organisations such as Landcare NSW

or Local Land Services. These organisations are to be contacted prior to the commencement of clearing to confirm that salvage of habitat material is warranted.

The two-stage clearing process is designed to enable fauna to feel secure whilst clearing occurs around their tree, and to allow them a chance to self-relocate at night to coincide with typical foraging behaviours of arboreal animals. The supervising ecologist has discretion to request the Stage 2 tree removal protocol should additional fauna or habitat be identified during the clearing process. In the event that additional habitat is identified during the clearing process, details of the newly identified habitat is to be recorded by the supervision ecologist.

Ecologists are to be present while clearing to rescue animals identified during the clearance operation. Any fauna found will be captured and relocated to similar nearby habitat and released at suitable fauna release sites as identified in the release location map (**Figure 6**). All fauna handling and fauna care is to be conducted as per the processes for specific fauna groups detailed in **Chapter 4** of this FMP.

Due to the known presence of an Eastern Barn Owl nesting tree, this tree must be checked by a tree climber prior to clearing (see **Figure 5**). The tree climber is to confirm the presence of the species and whether or not the hollow is being used for breeding. In the event that the hollow is being used for breeding and eggs, or juvenile birds are encountered, then it is recommended that the tree is not cleared until eggs have hatched, and juvenile birds are fully fledged. If tree removal is required, then eggs/juvenile birds are to be collected and taken to a wildlife carer. Where only adult birds are present, agitating the tree using machinery should encourage the birds to vacate the roost. The tree is not to be felled until the birds have vacated and/or been removed from the roost.

If any bat species are found, the extraction from the hollow and any handling will only be done by an experienced ecologist who is vaccinated to handle bat species. Where bat species are found following felling of the tree but not able to be accessed, the section of the tree will be removed using a chainsaw (or a suitable alternative low-impact method) to enable relocation of the bats. The ends of the extracted tree section and cavity openings will be temporarily blocked with a piece of cloth during transportation to the fauna release location. It is a requirement to release bats after nightfall to minimise the risk of predation by diurnal predators and harassment by birds.

3.6.2. Clearing of Human-made Structures

The old derelict building is to be demolished under ecological supervision to ensure native fauna, particularly microchiropteran bats and arboreal mammals are safely dispersed and/or relocated. An initial inspection is to be carried out immediately prior to demolition and then the ecologist will liaise with demolition crews to safely demolish the house and ensure native fauna self-relocate or are captured and relocated.

3.6.3. Clearing of Dams

A separate Dam Decommissioning Plan has been prepared for the Project Area to provide guidelines for the dewatering of dams and the translocation of aquatic fauna species. The Dam Decommissioning Plan identified the suitable release locations for aquatic fauna species and outlines procedures and protocols for dewatering

dams, handling aquatic fauna, transportation, and relocation. The Dam Decommissioning Plan also outlines reporting requirements post dewatering.

3.7. Fauna Release Sites

Three fauna release sites have been identified and shown on **Figure 6**. These locations have been identified due to their proximity to the Project Area as well as access suitability. It is recommended that fauna captured are relocated to the nearest release site adjacent to the Project Area, however as this is private property (part of the Emmaus Catholic College/Trinity Primary School), permission will need to be gained from the landowners prior to the commencement of clearing.

3.8. Veterinary Hospitals and Wildlife Rescue Organisations

All measures will be taken to ensure the safe and secure relocation of located fauna residing within the Project Area. However, in the event that any animals are inadvertently injured, they will be taken to the nearest veterinary clinic for treatment. All fauna deaths or injuries will be detailed in a clearance supervision letter report that will be issued to Council to document the results of clearing activities.

The contact details for veterinary hospitals in close proximity to the Project Area are provided.

- St Clair Animal Hospital, 1 Oliver Cres, St Clair NSW 2759 (~7.6 km – 10 min drive). Telephone: (02) 9670 4955. Hours: Mon – Friday 9am – 7pm, Saturday 9am – 3pm, Sunday 10am – 12pm.
- Orchard Hills Veterinary Hospital, 49-63 Wentworth Rd, Orchard Hills NSW 2748 (~12 km – 14 min drive). Telephone: (02) 4736 2027. Hours: Mon – Friday 9am – 7pm, Saturday 9am – 3pm, Sunday 10am – 12pm.

Abbotsbury Veterinary Clinic, Shop 5/60-68 Stockdale Cres, Abbotsbury NSW 2176 (~14km – 16 min drive). Telephone: (02) 8786 0400. Hours: Mon – Friday 9am – 7pm, Saturday 9am – 4pm, Sunday closed.

4. Fauna Handling Protocols

The following protocols for fauna handling and care have been based on the fauna handling procedures of the nationally accredited Fauna Spotter Catcher course that provides AHCFAU301A - Respond to Wildlife Emergencies' competency.

This FMP has also considered fauna handling, fauna care and release protocols outlined in the *Code of Practice for Injured, Sick and Orphaned Protected Fauna* (OEH 2011) and has incorporated relevant protocols, where feasible for Spotter/Catcher works, in the development of the fauna handling protocols for this FMP.

4.1. Fauna Care

Any fauna handling is only to be conducted by the supervising fauna ecologist. Animals caught are to be placed in appropriate calico bags, cardboard boxes or capture cages whether alive or dead. A judgement is required on animals with superficial injuries (e.g. non-bleeding scratches) as to whether they are suitable for release or if transport to a vet is required. A precautionary approach should be taken for superficial injuries and the individual should be transported to a vet in the event of any doubt on extent of injuries. All fauna handling, care and transport should also have due consideration to the *Prevention of Cruelty to Animals Act 1979*.

Any fauna assessed as requiring treatment by a qualified vet are to be taken to one of the veterinary clinics/hospitals listed in **Section 3.6**. The supervising fauna ecologist is to ensure the veterinary hospital nominated is available, sufficiently equipped and experienced to handle the fauna prior to transportation. All injured native fauna are to be taken to a veterinary clinic within the shortest possible time frame. Any injured fauna are to be monitored by the supervising fauna ecologist prior to transport and no obviously injured animal shall be left longer than 15 minutes before being taken to a vet.

The general protocol for release or veterinary treatment of injured fauna comprise:

1. If a captured animal is critically injured and transport is feasible, it is to be transported to the nearest available vet emergency service in the shortest feasible timeframe;
2. If the animal is seriously injured, it is to be taken to one of the nominated veterinary clinics capable of dealing with the fauna under care within required timeframes;
3. If the animal is not seriously injured, it is to be taken to one of the nominated veterinary clinics capable of dealing with the fauna under care within the shortest possible time frame; or
4. If a captured animal shows no obvious signs of injury but is not locomotive, it is to be held in an area designated for animal care (which is to be quiet and maintained at a mild temperature) and contained within an appropriate capture enclosure and checked at an interval of 1 and 2 hours:

After 2 hours if the animal is locomotive and still shows no obvious signs of injury, it is to be released.

If the animal is not locomotive after 2 hours, it is to be taken immediately to one of the nominated veterinary clinics capable of dealing with the fauna under care.

In the event of injured fauna being located during any night surveys conducted, the injured fauna is to be taken to one of the nominated veterinary clinics with a 24/7 emergency service.

4.2. Stop Works Procedures

The following stop work protocols must be followed when animals are encountered by clearing contractors, or spotted by the fauna ecologist:

- Where an animal is encountered by a contractor:
 - If not in the vicinity of machinery the ecologist/handler is to be notified but work not stopped.
 - if in the vicinity of a piece of machinery the ecologist/handler is to be notified, work stopped, machinery reduced to idle with implements lowered, and the animal captured and removed or until it has self-relocated.
- If the animal is spotted by fauna ecologist:
 - the fauna ecologist has the authority to advise machinery operating in close proximity to the animal to stop work and lower implement until the animal is captured and removed or has self-relocated.
 - The fauna ecologist is the only person authorised to advise that work can recommence by that piece of machinery. All personnel must be well clear of the machinery prior to work recommencing and Safe Work practices strictly adhered to.

4.3. Fauna Handling Protocols

4.3.1. Birds

Birds commonly occur throughout the Project Area. Birds utilise tree hollows, trees and shrubs and groundcover as suitable nesting locations. Small bird nests are to be detected during the pre-clearing phase, with all hollows and other habitat features being checked for faunal activity prior to clearing.

If a small bird is injured, or struck but with no clear injuries during clearing, it must be handled carefully and inspected. If the animal has obvious significant injuries, it must be taken to a vet immediately for assessment. If the individual has no obvious injuries, it is to be captured using a towel and contained within a cardboard box or fauna cage with a lid and towels placed on the bottom for grip. The bird is to be taken to the designated fauna care area (maintained at a mild temperature) and left to destress and reassessed after 1 hour and again at 2 hours. If normal locomotion is observed, the animal will be released. If normal locomotion is not observed, the animal must be taken to the vet.

If young birds are detected during clearing and parents are detected nearby, an attempt should be made by the supervising fauna ecologist to relocate the nest or hollow to a nearby tree and monitored to ensure parents recommence care. Adequate personnel protective equipment (PPE) (eye protection, head protection and gloves) should be worn by all personnel during relocation in the event of swooping attacks by parents. If parents are not detected, the chicks are to be removed from the nest or hollow and contained in the designated fauna care area with a suitable substrate such as a calico bag or kitchen towel and handed over to a wildlife carer as soon as is practical and a report made immediately to either WIRES or Sydney Wildlife Rescue. If a wildlife carer is unavailable for handover, the chicks must be taken to the vet.

Handling of birds of prey such as the raptors requires full PPE as there are risks of significant injury to humans from being gripped by strong talons, or from the beak. To this end, all raptors and other large birds must be handled wearing thick gloves and must be captured by two supervising fauna ecologists using a calico bag or towel to cover the animal, and one hand to grasp the bird around the base of wings when folded down and talons and place in a suitably sized container that allows sufficient airflow. All raptors captured and/or injured are to be reported to WIRES or Sydney Wildlife Rescue immediately. If identified as injured the raptor will be immediately taken to an approved vet. Raptors are to be released following assessment by experienced wildlife carer (WIRES or Sydney Wildlife) or other experienced handlers and must be released by an experienced handler as soon as possible but only at the optimum time of day for the species in consultation with wildlife carers.

If nests with eggs are detected, the relevant species should be identified (if nest is not abandoned) and a wildlife rescue service should be contacted to confirm that eggs can be collected for incubation. If collection of eggs is deemed not viable by the wildlife rescue service or identity of species remains unknown, guidance for appropriate disposal of eggs should be sought from the wildlife rescue service.

In the unlikely event that a nest containing juvenile threatened bird species is encountered, the vegetation the nest is in (as well as any adjoining vegetation that is providing refuge) will be retained until the individual(s) is fully fledged and capable of self-relocating.

4.3.2. Reptiles

For clearing works that occur during winter months, consideration should be given to the fact that reptiles may be in torpor. Any reptiles captured during winter months should be released during the warmest part of the day.

4.3.2.1. Small Lizards

Small lizards are the most commonly captured fauna within clearing operations. Types of lizard detected typically include skinks, geckoes and legless lizards. These fauna are fast moving and small and can be easily injured with incorrect handling techniques. For the purposes of clearing operations, small lizards are classified as arboreal or terrestrial. Protocols for the capture of both are provided below:

Terrestrial small lizards are typically detected during machinery movements and when clearing log piles. When one is detected, radio your machinery operator, instruct them to lower their blade or bucket, and after positive communications have been established, enter the machinery exclusion zone. Following this, track the animal and cup it with an open hand on the surface. Move your other hand under the first hand, and feel for the animal's head, and place light pressure on the neck, pinning the animal to the ground, then use the thumb and forefinger to gain control of the base of the animal's head, ensuring support is provided along the body. Alternately, if the animal is in litter, it is appropriate to grasp a handful of litter then place the litter inside a container with air flow.

Identification of legless lizards must take place before handling, as some species of lizards mimic the juvenile colouration of juvenile venomous snakes. Identifying features of lizards include visible ear holes, small vestigial limbs and the lack of a forked tongue. A legless lizard must not be captured until these features have been identified.

Arboreal small lizards are to be captured in much the same way, noting that large sheets of decorticating bark are to be pulled back and checked under for presence of lizards.

Following capture, the supervising fauna ecologist will inspect the animal for obvious external injuries or lack of locomotion. If injuries are detected or normal locomotion is not witnessed, the injured fauna must be taken to the vet for further assessment. If uninjured, place the animal inside a vertically held plastic container, with the lid opened at one corner and release as soon as practicable. The container is to have adequate airflow, some shelter such as bark within it and placed in the designated fauna care area prior to release.

4.3.2.2. Large Lizards

Large lizards on site include monitors (varanids), Eastern Water Dragons and large skinks such as Blue-tongue Lizards. Varanids often flee up trees when disturbed, which is highly likely during clearing operations. They are fast-moving over short distances, but tire over longer distances, thus can be effectively chased down if not captured immediately on detection. Varanids have large claws and have high densities of mouth bacteria, which can cause infection if bitten. Therefore, there is a high risk of personal injury when capturing this group. Only suitably qualified and trained ecologists are to attempt to capture.

When large lizards are detected, the situation must be assessed for personal safety and self-relocation by the species should be the priority, provided there is a suitable nearby area that will not be cleared and is not near hazards such as roads. If the individual is spotted during felling, positive communications must be established with the machinery operator by the supervising fauna ecologist and works stopped before attempting capture. Once the area is safe to enter, the animal is to be approached from the side, and not cornered if possible. Due to the sharp claws typically encountered, welding gloves are to be utilised to capture the animal. For varanids, the animal should be first captured approximately half way up the tail, while allowing the body to remain along the ground. If there is a suitable area for release nearby, the animal can be 'walked off' site while holding the tail to reduce the stress of using a full restraint. This method is not suitable for skink species that drop their tails. If further restraint is required, the animal is to be pinned by the catcher, with a "V" grip using the hand around the back of the animal's skull, and the second hand should either around the base of the tail for varanids or supporting the body of skinks. Once captured, the animal is to be faced with claws away from the catcher at all times.

The animal is to be assessed for health following capture by supervising fauna ecologists. If healthy, the animal is to be placed into a secure catch cage, and the animal is to be held in the designated fauna care area and kept calm until released. The transfer into the capture cage will occur by the ecologist/handler placing the cage on the ground and opening the door, while the other releases the front part of the animal first, ensuring it is well inside the cage before releasing the rear. If the animal is too large for the catch cage, it will be placed in a modified nally (plastic) bin with sufficient air flow. Care must be taken that the animal does not overheat in the container.

Uninjured large lizards will be relocated by ecologists immediately, following positive identification to species level. If injuries are detected, the injured fauna **must be** taken to the vet for assessment.

4.3.2.3. Snakes

A variety of snakes are known to occur within the project area, ranging from relatively harmless snakes to those with potential to cause life-threatening envenomation. Within the project, all snakes are to be treated as venomous.

Snakes are not to be handled by ecologists unless experienced, trained and competent to do so. The Project Ecologist is to be notified whenever a snake is detected and will determine the most appropriate and safest course of action. **If a snake is detected, stop work and notify your supervisor.**

Self-relocation should be the priority for snake species. Snake handling is to be minimised and only a suitably qualified, licenced and experienced snake handler is permitted to handle snakes. If required, a snake bag and hook is to be used by the snake handler. The open bag is to be placed in front of the snake, allowing it a dark spot to self-relocate to. It can be encouraged into the bag with the use of the hook or hooked into the bag with the bag being held upright and the hook placed approximately one third of the way along the body of the snake. Suitably sprung grab sticks may be used if a snake is located in an inaccessible location, such as in a tree hollow. Snakes are to be deposited in a bag, and the bag given a strong downward shake to ensure that the snake is at the bottom of the bag. Once in the bag, the bag is to be twisted and tied off, and the tabs on the exterior of the bag used to place the snake into the flat area created by the hoop.

Uninjured snakes are to be immediately released at a suitable location by the trained snake handler. If a snake is injured during clearing, the supervising fauna ecologist must be notified and a trained snake handler will take the injured fauna to the vet clinic that is able to accept snakes for assessment. When taking a venomous snake to a vet, it must be securely bagged and boxed, and the box clearly labelled as containing a dangerous animal.

Snake Bite Kits are kept on site in easily accessible locations and all contractors are to be informed of First Aid procedures for snake bites during site induction.

4.3.2.4. Aquatic Species

Suitable habitat for aquatic species such as turtles, frogs and fish exists within the waterbodies present on the Project Area. As stated previously, management protocols for any aquatic and/or semi-aquatic fauna species likely to be encountered are detailed in the projects Dam Decommissioning Plan (our ref. 21281RP5).

4.3.3. Amphibians

Although management protocols associated with frogs encountered within Dams are detailed in the Dam Decommissioning Plan (our ref. 21281RP5), frogs often occupy areas containing sufficient moisture such as tree hollows, palm tree fronds and areas of low growing dense vegetation. As such, management actions for frogs encountered outside of dams are included in this FMP. Any frogs captured during dam dewatering works will follow the protocols detailed in the projects Dam Decommissioning Plan.

Frogs that may be encountered within the Project Area include those which utilise trees (arboreal), those that utilise ground habitat (terrestrial) and those that burrow (fossorial).

Tree dwelling frogs are typically detected in tree hollows or with palm tree fronds following tree felling. These are to be caught by hand by cupping them on a surface and closing the hand around them. Food preparation gloves are to be worn to avoid oils from hands touching their skin. The frogs are to be checked for health, and then placed in a plastic container with sufficient air flow and containing a substrate similar to that in which it was caught. Note that water is not to be added to containers, only moist soil. The individuals are to be placed in the designated fauna care areas until release.

Terrestrial frogs will likely be detected during the clearing of ground debris such as rocks and logs. These are to also be caught by hand wearing food handling gloves, checked for health and placed in a plastic container, with airflow, moist soil and litter provided for shelter.

Fossorial frogs will likely be detected during clearing where soil is disturbed, particularly in the vicinity of drainage lines/depressions.

When frogs are detected, they are to be checked for obvious external injuries, and an assessment made of their health. Frogs must be capable of normal locomotion, and responsive when handled. Frogs that are unresponsive or do not locomote normally must be assessed by an Ecologist and taken to the vet for assessment.

Frogs should be handled in accordance with Frog Hygiene Protocols to prevent the spread of pathogens.

4.3.4. Mammals

4.3.4.1. Macropods

For the purposes of this protocol, macropods include all wallabies and kangaroos. As detailed in **Section 3.5.1** all macropods are to be herded offsite and excluded via temporary fencing prior to any clearing activities within the Project Area. However if present within the Project Area, at the time of clearing it is anticipated that all healthy individuals will flee prior to clearing; however, there is a low potential for vehicle strikes to occur coming into the site or while travelling on site.

If macropods are detected within the Project Area, they will be allowed to self-relocate to an area of adjacent vegetation by temporarily removing of one or more fencing panels (if required) and encouraging the macropods to go through the gap, before immediate replacement of fencing panels to secure the works site. If a macropod is struck during clearing, it is to be inspected for injury by the supervising fauna ecologist. Dependant on the size of the individual, the ecologist may relocate the animal to a vet, in which case a large bag will be placed over the animal's head, and it will be driven to the veterinary hospital identified previously. If the individual is too large to be safely transported in available vehicles, WIRES, Sydney Wildlife Rescue or a wildlife veterinarian will be called onsite to attend to the injured fauna.

All injured macropods must be checked for pouch young. If pouch young are present, wildlife carers (Sydney Wildlife Rescue or WIRES) must be contacted immediately to obtain advice on whether pouch young are to be left in-situ or removed from the pouch. Dependant on the level of injury and wildlife carer advice, the young may be left in-situ if the animal is being taken to a vet. If the mother is too large for transport, the joey may to be removed in accordance with wildlife carer advice and wrapped in a towel and contained in a box in a warm area. There is potential that these young could be raised and released successfully by a wildlife carer.

4.3.4.2. Terrestrial Mammals

i. Echidna

Species such as the Short-beaked Echidna have the potential to occur within the Project Area and may attempt to burrow when a capture attempt is made. This can be counteracted by a quick capture, thus not allowing the animal to deeply engage with the ground. If the individual is found to have burrowed, moving of soil around the animal followed by lifting from underneath back two feet will be sufficient to extract the individual. Welding gauntlets are to be worn to avoid injury to staff. Tools, such as shovels, should never be used to dig underneath the Echidna as these risk injury to the beak. Catchers must gently work their hands down each side of the Echidna avoiding the spines and get their hands under the animals back legs where the fur is soft, then link fingers and apply firm constant pressure in an upward direction to enable the echidna to be lifted free of the ground. Special care must be taken not to injure the beak. As echidnas are more prone to heat stress than cold stress (DPIE 2021), any echidna captured must be kept in cool ventilated conditions and released at or after dusk. If injured, the echidna must be taken to an appropriately qualified veterinarian or wildlife carer immediately. Echidnas should be transported in a ventilated plastic container.

Echidnas encountered between July and October may have pouch young (puggles) (DPIE 2021). Puggles may also be left in burrows by parents during foraging between December and March. If any Echidna puggles, not with parents, are encountered, Sydney Wildlife rescue or WIRES are to be notified immediately and the puggles taken to a vet for examination. The surroundings of any injured adults should also be checked for presence of puggles that may have been dislodged during trauma.

ii. Small Mammals

Small terrestrial mammals which have potential to occur within the Project Area include a range of species and groups including small gliders, mice, rats, Antechinus, rabbits and hares. Each group is likely to react differently to disturbance caused by clearing, with species such as hares likely to flee prior to clearing, but groups such as rodents and dasyurids seeking shelter.

Small terrestrial mammals are to be caught whenever possible, as they are fast moving and can quickly hide in small and hard to reach spaces once they have been initially disturbed. Small terrestrial mammals will typically be detected during clearing of suitable habitat such as hollow logs, log piles and rocky debris.

Small mammals are to be captured using a small soft net or using a towel thrown over the animal, then quickly moving the animal into a container or calico bag. Animals can be secured through the net or towel by using the index and middle fingers around the back of the neck, and the remainder of the hand controlling the body. Animals will be inspected for injury, and individually placed inside a calico bag or cardboard box appropriate for their size. The animal is to then be removed from the clearing area and placed in the designated fauna care area until the appropriate release time by the supervising fauna ecologist.

If injured animals are detected, the ecologist must be notified, and will assess the animals' condition and transport to a vet. Injured animals are to be placed in suitably sized boxes with towels/catch bags for padding and for transport to the vet.

Rabbits and hares are pest species in NSW and are to be contained and taken to the closest vet for humane euthanasia.

iii. Large Mammals

Large mammals considered to have the potential to occur within the Project Area is limited to macropods (**Section 4.3.4.1**) and foxes.

Feral animals such as foxes and dogs are not to be captured unless injured. All will attack violently if threatened, thus it may be safer for these individuals to be avoided. If safe to do so, these animals are to be restrained in a large hessian sack and transported securely to a vet.

4.3.4.3. Arboreal Mammals

Arboreal mammals are likely to be encountered during clearing operations. Mammals such as Ring-tail Possums and Brush-tailed Possums have the potential to occur within the Project Area. As a result, it is vital that all hollows/habitat features be thoroughly checked prior to felling, as well as after felling has occurred.

Possums are relatively adept at moving on the ground, thus present a challenge for spotter catchers. Capture is best undertaken when animals are in a confined space, such as in a tree hollow. The first option should be to avoid capture of the animal and allow the individual to self-relocate. If feasible, relocate the entire log/hollow to a suitable nearby release area and allow the animal to self-relocate. If capture is required, a bag is to be placed over the tree hollow and the animal encouraged from the opposite end. Where this is not possible and the animal is moving on the ground, a team of two ecologists are to attempt the capture with approaching the animal from two different angles and guide it away from other trees that it could run and climb up before being checked for injuries. Each person will have a towel, large catch bag and/or pillowcase and wear thick gloves. The towel can be used to throw over and slow down the possum or glider while using the sides of the towel to wrap the animal up. The animal is to be then taken to the designated fauna care areas for further examination. The supervising fauna ecologist is to hold the possum with towel covering and holding the base of the head gently with one hand and around the hips of the back two legs with the other hand while the towel is moved to inspect the different parts of the possum's body for obvious signs or injuries such as puncture wounds by the second person. The animal can then be placed inside a small cardboard box or catch cage with the towel for subsequent release (if uninjured) at dusk by the supervising fauna ecologist or transported to the vet (if injured).

Arboreal mammals are to be checked for obvious physical injury before release, and it is to be determined by the supervising fauna ecologist whether normal locomotion and response is occurring. All injured animals must be taken to the vet immediately for assessment and possible rehabilitation. Any possums or gliders captured, once checked for injuries by an experienced carer or vet, shall only be released after dusk and prior to dawn by an experienced catcher/rescuer. Nominated release sites have been identified and shown in **Figure 6**.

When disturbed, adult possums may abandon vulnerable young in order to escape danger and are unlikely to return for them. While efforts will be made to release in family groups, any young juveniles separated from parents must be kept warm, quiet and dark with a towel in a box and Sydney Wildlife Rescue or WIRES is to be contacted for further care of juveniles.

4.3.5. Bats

Bats include both megachiropteran bats (Flying-foxes) and microchiropteran bats (microbats).

In order to facilitate detection of microbats, hollows are to be extensively checked and cracked open. Secondary detection such as the use of auditory cues (such as high pitched clicking and chattering) as well as checks for guano (bat faeces) around the base of trees during pre-clearance surveys can also be used to detect this group.

If microbats are detected during clearing, only appropriately vaccinated ecologists are to handle them. There is potential that bats carry the Australian bat lyssavirus, a virus similar to rabies, which is fatal if contracted. To this end, supervisors are to be notified when microbats are detected. Microbats are to only be handled by experienced/trained and vaccinated ecologists using gloves and are to be stored in hung calico bags in a cool dark place. Similar species are to be kept together, as mixtures of microbat species can lead to predation. No more than 5 individuals are to be kept in a single large calico bag. Microbats should only be released at dusk when other microbat activity is observed, or a bat soft release box can be installed in the relocation area and bats placed inside, allowing them to leave on their own. These bat soft release boxes should be checked in the morning to ensure all bats have self-relocated.

Handling microbats requires a greater level of feel of the bat and so lighter and thinner gloves are required. Puncture resistant/tear resistant nitrile gloves with thin gloves must be used when handling microbats. In the event of a scratch or bite, the gloves must be checked for any breach to allow the handler to know that no exposure has occurred. A pen must be used to mark the glove where bite occurred, then remove and hold up to the light to see if glove was penetrated. In the event of penetration through gloves, the relevant person must immediately seek medical attention and obtain additional vaccination booster shots as required.

Microbats are to be identified to species level by an experienced fauna ecologist, following inspection for injury. If normal locomotion cannot be achieved, the animal is to be taken to a vet that accepts microbats for further treatment/assessment.

Megachiropteran bats are unlikely to be encountered during clearing works as no roosting camps are present onsite and foraging occurs at night, outside of allowed construction hours. Nonetheless, in the unlikely event of an encounter, similar handling procedures to those for microbats should be implemented. However, due to size difference and higher risk of bite penetration, the vaccinated ecologists should utilise thicker gloves, such as welding gloves when handling Flying foxes. No more than one individual should be placed in a large calico bag and they should be released after dark. Soft release boxes are not to be utilised for Flying-foxes.

4.3.6. Invertebrates

If any native snails are found, they must be kept dry and cool. This is simply achieved by placing them in a small jar, box or container with a few leaves or bark to shelter underneath. If more than two or three snails are found, then the additional snails are to be put into another container. They generally can survive for several days, especially if kept cool and dry if they need to be held for longer periods then this needs to be dealt on a case-by-case basis by a suitably qualified person.

4.4. Post Clearing Fauna Encounter Protocols

Although it is unlikely that fauna will be encountered within the Project Area after vegetation clearance has taken place, there is the potential for large, mobile species such as macropods to occur, most likely in transit between areas of habitat outside the clearing area.

If fauna are encountered, works should stop until the animal has left the construction zone. In the first instance, they should be encouraged to leave of their own accord by slowly approaching them. This should be undertaken very slowly, ensuring that the animal does not feel trapped by being pushed into an area from which there is no escape and that there is a large open area that the animal can retreat to. The animal should not be approached closer than 5 m in the first instance to avoid stressing the animal or incurring injuries if the animal becomes aggressive. No attempt should be made to capture the animal under any circumstances and they are not to be handled by any person other than a qualified fauna ecologist or animal carer. If the animal does not relocate voluntarily, or appears to be injured or sick, the site supervisor will contact the Project Ecologist (or animal carer) to advise on further procedures.

5. Reporting Requirements

5.1. Pre-clearance Survey Letter

A pre-clearance survey letter will be provided to the client for submission to Council following completion of the pre-clearance surveys. The letter will identify and itemise the habitat features recorded from the Project Area as well as the type and number of species recorded and relocated. The pre-clearance survey letter will provide the following information as a minimum:

- Types of habitat features present (tree hollows, nest/drey, logs, roosting cavity etc), including the identification of whether or not any additional features have been identified to what is included in this FMP;
- Location of habitat features;
- Number of potential salvage features;
- Any fauna encountered/observed; and
- Recommendations of additional mitigation measures (if required).

5.2. Clearance Supervision Letter

Following the completion of all clearing and attendant supervision, a clearance supervision letter will be prepared itemising the extent of habitat cleared as well as a full list of species encountered/relocated. The clearance supervision letter will provide the following information as a minimum:

- Name of species captured and date of capture;
- Health of species captured;
- Date of relocation, transport to vet or handover to wildlife carer, as relevant;
- Location of release point within the fauna release area;
- Details of relocation protocols employed, including personnel carrying out relocation;
- Locations of any relocated habitat features;
- Total number of individuals relocated;
- Details of any fauna were injured and required further care including reference/call sheet number for licenced wildlife carer organisation; and
- Details of any fauna deaths.

6. References

Cumberland Ecology. 2024. ISPT/Aliro Summit, Kemps Creek: Biodiversity Development Assessment Report. Carlingford Court.

DCCEEW. 2024. EPBC Protected Matters Search Tool. Department of Climate Change, Energy, the Environment and Water, Canberra.

DPE. 2024. BioNet Atlas. Department of Planning and Environment.

DPIE. 2021. Initial treatment and care guidelines for rescued echidnas. Environment, Energy and Science Group, Department of Planning, Industry and Environment, Parramatta, NSW.

OEH. 2011. Code of Practice for Injured, Sick and Orphaned Protected Fauna. NSW Office of Environment and Heritage, Sydney.

APPENDIX A :

Fauna Species Recorded within the Project Area and Locality



Table 2 Fauna species recorded within the Project Area and wider locality

Scientific Name	Common Name	Exotic	BC Act Status	EPBC Act Status	Project Area ¹
Actinopterygii					
<i>Anguilla reinhardtii</i>	Longfin eel				
<i>Anguilla australis</i>	Shortfin Eel				
<i>Cyprinus carpio</i>	Carp	*			
<i>Gambusia holbrooki</i>	Mosquito Fish	*			
Amphibia					
<i>Crinia signifera</i>	Common Eastern Froglet				Yes
<i>Pseudophryne bibronii</i>	Bibron's Toadlet				
<i>Uperoleia fusca</i>	Dusky Toadlet				
<i>Uperoleia laevis</i>	Smooth Toadlet				
<i>Limnodynastes dumerilii</i>	Eastern Banjo Frog				
<i>Limnodynastes peronii</i>	Brown-striped Frog				Yes
<i>Limnodynastes tasmaniensis</i>	Spotted Grass Frog				
<i>Litoria caerulea</i>	Green Tree Frog				
<i>Litoria dentata</i>	Bleating Tree Frog				
<i>Litoria fallax</i>	Eastern Dwarf Tree Frog				Yes
<i>Litoria latopalmata</i>	Broad-palmed Frog				
<i>Litoria peronii</i>	Peron's Tree Frog				Yes
<i>Litoria tyleri</i>	Tyler's Tree Frog				
<i>Litoria verreauxii</i>	Verreaux's Frog				
Reptilia					
<i>Chelodina longicollis</i>	Eastern Snake-necked Turtle				Yes
<i>Diplodactylus vittatus</i>	Wood Gecko				
<i>Concinnia tenuis</i>	Barred-sided Skink				
<i>Cryptoblepharus virgatus</i>	Cream-striped Shinning-skink				
<i>Ctenotus robustus</i>	Robust Ctenotus				
<i>Eulamprus quoyii</i>	Eastern Water-skink				
<i>Lampropholis delicata</i>	Dark-flecked Garden Sunskink				
<i>Lampropholis guichenoti</i>	Pale-flecked Garden Sunskink				

Scientific Name	Common Name	Exotic	BC Act Status	EPBC Act Status	Project Area ¹
<i>Saproscincus mustelinus</i>	Weasel Skink				
<i>Tiliqua scincoides</i>	Eastern Blue-tongue				
<i>Amphibolurus muricatus</i>	Jacky Lizard				
<i>Intellagama lesueurii</i>	Eastern Water Dragon				
<i>Pogona barbata</i>	Bearded Dragon				
<i>Varanus varius</i>	Lace Monitor				
<i>Morelia spilota spilota</i>	Diamond Python				
<i>Dendrelaphis punctulatus</i>	Common Tree Snake				
<i>Cryptophis nigrescens</i>	Eastern Small-eyed Snake				
<i>Furina diadema</i>	Red-naped Snake				
<i>Notechis scutatus</i>	Tiger Snake				
<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake				
<i>Pseudonaja textilis</i>	Eastern Brown Snake				
Aves					
<i>Hirundapus caudacutus</i>	White-throated Needletail		V	V	
<i>Anthochaera phrygia</i>	Regent Honeyeater		CE	CE	
<i>Dromaius novaehollandiae</i>	Emu				
<i>Coturnix sp.</i>	Unidentified Quail				
<i>Gallus gallus</i>	Red Junglefowl	*			
<i>Pavo cristatus</i>	Indian Peafowl	*			
<i>Synoicus ypsilophora</i>	Brown Quail				
<i>Anas castanea</i>	Chestnut Teal				
<i>Anas gracilis</i>	Grey Teal				
<i>Anas platyrhynchos</i>	Mallard	*			
<i>Anas rhynchotis</i>	Australasian Shoveler				
<i>Anas superciliosa</i>	Pacific Black Duck				
<i>Aythya australis</i>	Hardhead				
<i>Chenonetta jubata</i>	Australian Wood Duck				Yes
<i>Cygnus atratus</i>	Black Swan				Yes
<i>Malacorhynchus membranaceus</i>	Pink-eared Duck				
<i>Oxyura australis</i>	Blue-billed Duck		V		
<i>Stictonetta naevosa</i>	Freckled Duck		V		

Scientific Name	Common Name	Exotic	BC Act Status	EPBC Act Status	Project Area ¹
<i>Poliocephalus poliocephalus</i>	Hoary-headed Grebe				Yes
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe				
<i>Columba livia</i>	Rock Dove	*			
<i>Geopelia humeralis</i>	Bar-shouldered Dove				
<i>Geopelia placida</i>	Peaceful Dove				
<i>Lopholaimus antarcticus</i>	Topknot Pigeon				
<i>Macropygia phasianella</i>	Brown Cuckoo-Dove				
<i>Ocyphaps lophotes</i>	Crested Pigeon				Yes
<i>Phaps chalcoptera</i>	Common Bronzewing				
<i>Spilopelia chinensis</i>	Spotted Turtle-Dove	*			
<i>Podargus strigoides</i>	Tawny Frogmouth				
<i>Apus pacificus</i>	Fork-tailed Swift			Mig.	
<i>Anhinga novaehollandiae</i>	Australasian Darter				
<i>Microcarbo melanoleucos</i>	Little Pied Cormorant				
<i>Phalacrocorax carbo</i>	Great Cormorant				
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant				
<i>Phalacrocorax varius</i>	Pied Cormorant				Yes
<i>Pelecanus conspicillatus</i>	Australian Pelican				
<i>Ardea intermedia</i>	Intermediate Egret				
<i>Ardea pacifica</i>	White-necked Heron				
<i>Bubulcus ibis</i>	Cattle Egret				
<i>Casmerodius modesta</i>	Eastern Great Egret				
<i>Egretta garzetta</i>	Little Egret				
<i>Egretta novaehollandiae</i>	White-faced Heron				Yes
<i>Ixobrychus flavicollis</i>	Black Bittern		V		
<i>Nycticorax caledonicus</i>	Nankeen Night Heron				
<i>Platalea flavipes</i>	Yellow-billed Spoonbill				
<i>Platalea regia</i>	Royal Spoonbill				
<i>Threskiornis moluccus</i>	Australian White Ibis				Yes
<i>Threskiornis spinicollis</i>	Straw-necked Ibis				
<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk				
<i>Accipiter fasciatus</i>	Brown Goshawk				
<i>Accipiter novaehollandiae</i>	Grey Goshawk				

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<i>Aquila audax</i>	Wedge-tailed Eagle				
<i>Aviceda subcristata</i>	Pacific Baza				
<i>Circus approximans</i>	Swamp Harrier				
<i>Elanus axillaris</i>	Black-shouldered Kite				
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle		V		
<i>Haliastur sphenurus</i>	Whistling Kite				
<i>Hieraaetus morphnoides</i>	Little Eagle		V		
<i>Lophoictinia isura</i>	Square-tailed Kite		V		
<i>Falco berigora</i>	Brown Falcon				
<i>Falco cenchroides cenchroides</i>	Nankeen Kestrel				
<i>Falco longipennis</i>	Australian Hobby				
<i>Falco peregrinus</i>	Peregrine Falcon				
<i>Fulica atra</i>	Eurasian Coot				Yes
<i>Gallinula tenebrosa</i>	Dusky Moorhen				Yes
<i>Porphyrio porphyrio</i>	Purple Swamphen				Yes
<i>Porzana pusilla</i>	Baillon's Crake				
<i>Himantopus himantopus</i>	Black-winged Stilt				
<i>Elseyornis melanops</i>	Black-fronted Dotterel				
<i>Erythronyx cinctus</i>	Red-kneed Dotterel				
<i>Vanellus miles</i>	Masked Lapwing				Yes
<i>Rostratula australis</i>	Australian Painted Snipe		E	E	
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper			Mig.	
<i>Gallinago hardwickii</i>	Latham's Snipe			V	
<i>Chroicocephalus novaehollandiae</i>	Silver Gull				
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo				
<i>Cacatua sanguinea</i>	Little Corella				
<i>Cacatua tenuirostris</i>	Long-billed Corella				
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo		V	V	
<i>Eolophus roseicapilla</i>	Galah				Yes
<i>Nymphicus hollandicus</i>	Cockatiel				
<i>Zanda funerea</i>	Yellow-tailed Black-Cockatoo				
<i>Glossopsitta concinna</i>	Musk Lorikeet				

Scientific Name	Common Name	Exotic	BC Act Status	EPBC Act Status	Project Area ¹
<i>Glossopsitta pusilla</i>	Little Lorikeet		V		
<i>Lathamus discolor</i>	Swift Parrot		E	CE	
<i>Melopsittacus undulatus</i>	Budgerigar				
<i>Platycercus elegans</i>	Crimson Rosella				
<i>Platycercus eximius</i>	Eastern Rosella				Yes
<i>Psephotus haematonotus</i>	Red-rumped Parrot				Yes
<i>Trichoglossus chlorolepidotus</i>	Scaly-breasted Lorikeet				
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet				Yes
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo				
<i>Chalcites basal</i>	Horsfield's Bronze-Cuckoo				
<i>Chalcites lucidus</i>	Shining Bronze-Cuckoo				
<i>Eudynamys orientalis</i>	Eastern Koel				
<i>Heteroscenes pallidus</i>	Pallid Cuckoo				
<i>Scythrops novaehollandiae</i>	Channel-billed Cuckoo				
<i>Ninox novaeseelandiae</i>	Southern Boobook				
<i>Ninox strenua</i>	Powerful Owl		V		
<i>Tyto javanica</i>	Eastern Barn Owl				Yes
<i>Tyto novaehollandiae</i>	Masked Owl		V		
<i>Ceyx azureus</i>	Azure Kingfisher				
<i>Dacelo novaeguineae</i>	Laughing Kookaburra				Yes
<i>Todiramphus sanctus</i>	Sacred Kingfisher				
<i>Eurystomus orientalis</i>	Dollarbird				
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper		V	V	
<i>Cormobates leucophaea</i>	White-throated Treecreeper				
<i>Ailuroedus crassirostris</i>	Green Catbird				
<i>Ptilonorhynchus violaceus</i>	Satin Bowerbird				
<i>Malurus cyaneus</i>	Superb Fairy-wren				Yes
<i>Malurus lamberti</i>	Variegated Fairy-wren				
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill				
<i>Acanthiza lineata</i>	Striated Thornbill				
<i>Acanthiza nana</i>	Yellow Thornbill				
<i>Acanthiza pusilla</i>	Brown Thornbill				Yes
<i>Acanthiza reguloides</i>	Buff-rumped Thornbill				

Scientific Name	Common Name	Exotic	BC Act Status	EPBC Act Status	Project Area ¹
<i>Gerygone mouki</i>	Brown Gerygone				
<i>Gerygone olivacea</i>	White-throated Gerygone				
<i>Sericornis frontalis</i>	White-browed Scrubwren				
<i>Smicrornis brevirostris</i>	Weebill				
<i>Pardalotus punctatus</i>	Spotted Pardalote				
<i>Pardalotus striatus</i>	Striated Pardalote				Yes
<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill				
<i>Anthochaera carunculata</i>	Red Wattlebird				
<i>Anthochaera chrysoptera</i>	Little Wattlebird				
<i>Anthochaera phrygia</i>	Regent Honeyeater		E	CE	
<i>Caligavis chrysops</i>	Yellow-faced Honeyeater				
<i>Manorina melanocephala</i>	Noisy Miner				
<i>Manorina melanophrys</i>	Bell Miner				
<i>Meliphaga lewinii</i>	Lewin's Honeyeater				
<i>Melithreptus lunatus</i>	White-naped Honeyeater				
<i>Myzomela sanguinolenta</i>	Scarlet Honeyeater				
<i>Philemon corniculatus</i>	Noisy Friarbird				
<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater				
<i>Ptilotula fusca</i>	Fuscous Honeyeater				
<i>Ptilotula penicillata</i>	White-plumed Honeyeater				
<i>Cinclosoma punctatum</i>	Spotted Quail-thrush				
<i>Falcunculus frontatus frontatus</i>	Eastern Shrike-tit				
<i>Psophodes olivaceus</i>	Eastern Whipbird				
<i>Daphoenositta chrysoptera</i>	Varied Sittella		V		
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike				
<i>Lalage sueurii</i>	White-winged Triller				
<i>Colluricincla harmonica</i>	Grey Shrike-thrush				
<i>Pachycephala pectoralis</i>	Golden Whistler				
<i>Pachycephala rufiventris</i>	Rufous Whistler				
<i>Oriolus sagittatus</i>	Olive-backed Oriole				
<i>Sphecotheres vieilloti</i>	Australasian Figbird				
<i>Artamus cyanopterus</i>	Dusky Woodswallow		V		

Scientific Name	Common Name	Exotic	BC Act Status	EPBC Act Status	Project Area ¹
<i>Artamus personatus</i>	Masked Woodswallow				
<i>Artamus superciliosus</i>	White-browed Woodswallow				
<i>Cracticus nigrogularis</i>	Pied Butcherbird				
<i>Cracticus torquatus</i>	Grey Butcherbird				
<i>Gymnorhina tibicen</i>	Australian Magpie				Yes
<i>Strepera graculina</i>	Pied Currawong				
<i>Strepera versicolor</i>	Grey Currawong				
<i>Rhipidura albiscapa</i>	Grey Fantail				
<i>Rhipidura leucophrys</i>	Willie Wagtail				Yes
<i>Rhipidura rufifrons</i>	Rufous Fantail				
<i>Corvus coronoides</i>	Australian Raven				Yes
<i>Corvus mellori</i>	Little Raven				
<i>Grallina cyanoleuca</i>	Magpie-lark				Yes
<i>Myiagra cyanoleuca</i>	Satin Flycatcher			M	
<i>Myiagra inquieta</i>	Restless Flycatcher				
<i>Myiagra rubecula</i>	Leaden Flycatcher				
<i>Corcorax melanorhamphos</i>	White-winged Chough				
<i>Eopsaltria australis</i>	Eastern Yellow Robin				
<i>Microeca fascians</i>	Jacky Winter				
<i>Petroica rosea</i>	Rose Robin				
<i>Cisticola exilis</i>	Golden-headed Cisticola				
<i>Acrocephalus australis</i>	Australian Reed-Warbler				Yes
<i>Cincloramphus timoriensis</i>	Tawny Grassbird				
<i>Poodytes gramineus</i>	Little Grassbird				
<i>Hirundo neoxena</i>	Welcome Swallow				Yes
<i>Petrochelidon ariel</i>	Fairy Martin				
<i>Petrochelidon nigricans</i>	Tree Martin				
<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	*			
<i>Turdus merula</i>	Eurasian Blackbird	*			
<i>Acridotheres tristis</i>	Common Myna	*			Yes
<i>Sturnus vulgaris</i>	Common Starling	*			
<i>Zosterops lateralis</i>	Silvereye				
<i>Dicaeum hirundinaceum</i>	Mistletoebird				

Scientific Name	Common Name	Exotic	BC Act Status	EPBC Act Status	Project Area ¹
<i>Neochmia temporalis</i>	Red-browed Finch				
<i>Stagonopleura guttata</i>	Diamond Firetail		V	V	
<i>Stizoptera bichenovii</i>	Double-barred Finch				
<i>Taeniopygia guttata</i>	Zebra Finch				
<i>Passer domesticus</i>	House Sparrow	*			
<i>Anthus novaeseelandiae</i>	Australian Pipit				Yes
<i>Carduelis carduelis</i>	European Goldfinch	*			
Mammalia					
<i>Phascolarctos cinereus</i>	Koala		E	E	
<i>Ornithorhynchus anatinus</i>	Platypus				
<i>Tachyglossus aculeatus</i>	Short-beaked Echidna				
<i>Phascolarctos cinereus</i>	Koala		E	E	
<i>Vombatus ursinus</i>	Bare-nosed Wombat				
<i>Petaurus breviceps</i>	Sugar Glider				
<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum				
<i>Trichosurus vulpecula</i>	Common Brushtail Possum				Yes
<i>Macropus giganteus</i>	Eastern Grey Kangaroo				Yes
<i>Notamacropus rufogriseus</i>	Red-necked Wallaby				
<i>Osphranter robustus</i>	Common Wallaroo				
<i>Wallabia bicolor</i>	Swamp Wallaby				
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox		V	V	Yes
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat		V		
<i>Austronomus australis</i>	White-striped Freetail-bat				Yes
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat		V		Yes
<i>Ozimops planiceps</i>	South-eastern Free-tailed Bat				
<i>Ozimops ridei</i>	Eastern Free-tailed Bat				Yes
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat				Yes
<i>Chalinolobus morio</i>	Chocolate Wattled Bat				
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle		V		
<i>Myotis macropus</i>	Southern Myotis		V		Yes
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat				
<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat				

Scientific Name	Common Name	Exotic	BC Act Status	EPBC Act Status	Project Area ¹
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat		V		Yes
<i>Scotorepens orion</i>	Eastern Broad-nosed Bat				Yes
<i>Vespadelus darlingtoni</i>	Large Forest Bat				
<i>Vespadelus pumilus</i>	Eastern Forest Bat				
<i>Vespadelus regulus</i>	Southern Forest Bat				
<i>Vespadelus vulturnus</i>	Little Forest Bat				
<i>Miniopterus australis</i>	Little Bent-winged Bat		V		
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat		V		
<i>Mus musculus</i>	House Mouse	*			
<i>Rattus fuscipes</i>	Bush Rat				
<i>Rattus norvegicus</i>	Brown Rat	*			
<i>Rattus rattus</i>	Black Rat	*			
<i>Canis lupus</i>	Dingo, domestic dog	*			
<i>Vulpes vulpes</i>	Fox	*			
<i>Felis catus</i>	Cat	*			Yes
<i>Lepus europaeus</i>	European Hare	*			
<i>Oryctolagus cuniculus</i>	Rabbit	*			
<i>Cervus elaphus</i>	Red Deer	*			
<i>Cervus timorensis</i>	Rusa Deer	*			
<i>Dama dama</i>	Fallow Deer	*			
Insecta					
<i>Danaus plexippus</i>	Monarch Butterfly	*			
<i>Graphium sarpedon</i>	Blue Triangle				
<i>Rhyothemis graphiptera</i>	Graphic Flutterer				
Gastropoda					
<i>Bradybaena similaris</i>	Asian trampsnail	*			
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail		E		
<i>Cantareus aspersa</i>	Garden Snail	*			
<i>Austrothyrida capillacea</i>	Common Southern Carnivorous Snail				

FIGURES



Figure 1. Location of the study area



Figure 3. Fauna habitat features recorded within the study area



Figure 4. Known native fauna roosts or nest trees recorded within the study area



- Legend**
- Project Area
 - Herding Direction
 - Macropod Exit Point

Image Source: Nearmap © (2024) Dated: 29/5/2024
Data Source: Sixmaps Clip & Ship, DCS Spatial Services
NSW Department of Customer Services



Spatial Reference: GDA 1994 MGA Zone 56

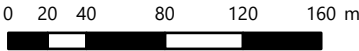


Figure 5. Macropod herding plan



Figure 6. Location of fauna release sites