scratched or bitten, where practical the spotter/catcher should wear the appropriate gloves. Gliders are smaller than possums so it will be easier to get a grip around the back of the neck. Once the glider is caught it is to be placed into an appropriately sized calico bag, where multiple gliders are found in one hollow, they should be housed in one large calico bag.

3.6.3   Non-venomous Snakes

Caution should be taken when handling non-venomous snakes. If the identification cannot be confirmed prior to handling or if there is any uncertainty the snake should be handled as if it is venomous. Where possible the hook and bag technique should be used, where this is not possible the animal can be restrained at the base of the skull with a thumb and forefinger either side of the head and to the rear of the lower jaw.

When a snake is sighted, warn others of its location and ask them to stand back as you capture and secure the animal. Place the animal into snake hoop bag and securely close the bag. The bag should be placed in safe location and everyone should be made aware not to touch any bags containing fauna.

3.6.4   Venomous Snakes

Do not handle Venomous snakes unless you have completed a venomous snake handling course with a suitably qualified trainer and have been approved by Joel Keady to handle venomous snakes. Where practical use the hook and bag method to capture venomous snakes.

When a snake is sighted, warn others of its location and ask them to stand back as you capture and secure the animal. Place the animal into snake hoop bag and securely close the bag. The bag should be placed in safe location and everyone should be made aware not to touch any bags containing fauna. All containers or bags containing a venomous animal should be labelled and closed using zip ties.

3.6.5   Monitors

Monitors can be caught by the base of the tail; caution should be taken as these animals are powerful and their bite can easily result in severe infections. When you have grabbed an animal take care as they will easily swing towards the handler and can cause severe injuries through scratching and biting. Once the animal is under some control, use a catch bag or towel to cover their head, this will allow the handler to take hold of the neck. The hand/arm holding the neck must align the wrist and forearm along the back of the monitor, the animal can then be lifted. Tilt the head/neck back a small amount and hold the animal (away from your body) be careful of the tail as it will be used to strike.

These animals need to be released straight away or placed into a suitably sized pet carrier or calico/hessian bag.

3.6.6   Frogs

The spread of disease, such as the chytrid fungus, may occur as a result of handling frogs. Unnecessary handling should be avoided, and the specimen released as soon as possible. When handling amphibians, the handler should wear unused disposable gloves or capture and handle frogs in single use lightweight plastic bags. Bare hands may be used provided they are wiped before each capture with a sterilising alcohol-based hand disinfectant.

3.6.7   Bats/Flying Foxes

Bats should not be handled by staff that are not immunised. Bats should always be handled with gloves, flying foxes should be handled with heavy duty gloves. Bats can carry a disease called Lyssavirus which is closely related to the common rabies. If handlers are bitten or scratched it should be reported immediately.

If several micro-bats are removed from one hollow, they should all be stored in the same calico bag.

3.7   Storing Captured Fauna

Captured fauna should be secured in either a calico bag, snake bag or pet carrier after being captured. If an animal is placed into a bag the end should be securely knotted closed and then tied using a bag tie or zip-tie.

These bags should be placed in a quite dark location that is the appropriate temperature for the species that has been captured. Captured fauna should be released into suitable habitat as soon as possible. Some species are nocturnal and cannot be released till dusk, extra care should be taken when storing an animal for this long a period to ensure it is not stressed or over/under heated.

If an animal is injured or orphaned, it should be secured in a manner that prevents unnecessary stress or increases the severity of its injuries. It should be transported to a wildlife carer or vet clinic as soon as possible.

3.8   Releasing Captured Fauna

When releasing animals away from disturbed habitat, attention must be paid to several factors, including weather conditions, seasonal conditions and the animal's ecology. Native Fauna should be released:

- Into suitable Habitat with an adequate food supply
- In appropriate weather, season and time of day. This is particularly important for migratory species.
- Under circumstances which will not cause additional stress, such as extreme weather conditions, the wrong time of day (i.e. nocturnal species)
- In the appropriate social group. Some animals fare better if released into social groups.
- Within 1km of the site as per DES guidelines.

Fauna should be released at a suitable time of day, in a protected location close to the site. Data should be recorded and kept on all fauna species trapped and relocated in accordance with DES guidelines under the Rehabilitation Permit issued to AWEC.

If situations occur where animals can be re-released on the clearing site once clearing is complete the following criteria must be followed:

- Sufficient habitat is retained on site to support the animal's required niche, considering factors such as: vulnerability to predation; availability of nesting sites, hollows or microhabitats and the availability of water and sufficient food sources.
- Habitat corridors retained are of a suitable size, topography and vegetation cover to provide effective routes for normal ecological processes such as immigration, emigration, recruitment and dispersal.
- Habitat blocks and corridors are of sufficient size to maintain ecological integrity and effectiveness, considering likely edge effects.
- Long term risk factors to individual and population survival associated with the development have been (or will be) adequately managed or mitigated. For example: domestic animal control, motor vehicle/road impacts, swimming pool risk.

3.9 Injures & Euthanasia

Euthanasia is sometimes required to alleviate any pain or suffering of an injured captured animal that is not capable of recovering to a degree to be released back into its natural habitat. Any euthanasia that is required should be done promptly and, in the manner, most humane to that species.

Any injured animals that have a reasonable chance of being rehabilitated and released back into their natural habitat should immediately be given the care that they require. Any animals that require medical attention to treat or diagnose an injury should be taken to the closest vet. Any orphaned young or fauna with minor injuries (e.g., concussion) should be taken to the closest carer. Some animals for example koalas will require specialist care and the closest suitable care facility should be contacted.

Recommended Wildlife Surgery:

- RSPCA Wildlife Hospital, Wacol 1300 ANIMAL
- Wildcare Australia Inc (07) 5527 2444

3.10 Clearing Methodology

Proposed disturbance site is to be sequentially cleared west towards the back of the clearing zone in direction of the undisturbed habitat using excavators and bulldozers.

After under scrubbing of each area is complete, non-habitat trees (i.e., trees other than those identified as habitat trees) will be cleared and stockpiled for mulching. Clearing of non-habitat trees will only occur where their removal will not impact on identified habitat trees (e.g., canopies do not interconnect with habitat trees).

(e) After under scrubbing and clearing of non-habitat trees, an elevated work platform or cherry-picker will be used in conjunction with a chainsaw operator and suitably qualified fauna spotter/catcher to inspect and remove hollows a necessary prior to habitat tree felling. This method involves the fauna spotter/catcher inspecting each of the potential habitat features

(usually hollows, dreys and arboreal termite nests) to determine the presence of arboreal fauna. This process is detailed following the step-by-step basis below:

1. The fauna spotter/catcher (with arborist unless the fauna spotter/catcher is a qualified chainsaw operator) will inspect each visible hollow or potential habitat resource (i.e., ringtail possum drey) identified in each tree using the cherry-picker. This is usually carried out by simply looking into hollows with the assistance of a small torch, however, burrow and bore-scopes can also be useful for deep hollows.

2. If fauna is located within a hollow, a piece of towel or rag will be firmly placed in the entrance to prevent the wildlife form escaping as in most cases arboreal fauna become aware of the presence of the fauna spotter/catcher and may attempt to flee the nesting/denning hollow due to a perceived threat. If an occupied ringtail possum drey is encountered, the fauna spotter/catcher should quietly approach (i.e., avoid contacting other branches) the drey in the cherry-picker and physically capture the possum by placing the entire drey in a catch bag or only the possum if it emerges from the drey.

3. Once the hollow entrance has been secured the arborist or fauna spotter/catcher will cut the entire hollow limb off below the cavity where the branch remains solid. In circumstances where a hollow continues into the main stem of the tree, a small window will be carefully cut into the hollow, allowing the fauna spotter/catcher to plug the hollow above and below the window, then the hollow limb removed and lowered to the ground in sections.

4. When the fauna has been safely secured within its hollow, the entire limb can then be placed in the cherry-picker or lowered to the ground using ropes depending on the size of the limb.

5. This limb will then be placed in a cool, quiet location until translocation to the recipient habitat site, when at dusk the entrance is re-opened to allow the fauna to emerge of its own accord.

3.11 Checking Hollows

Habitat trees of high importance should be felled last, after surrounding less important vegetation has been cleared to allow easy access of special plant and equipment (such as an EWP), and to allow unhindered lowering of hollow bearing limbs.

Prior to felling any hollow bearing trees, the hollows are to be checked for occupants. A fibre optic camera on an extended pole will be used to check all hollows prior to the trees being felled. All the trees containing a hollow with an occupant will be marked and the machine operator will be notified of its location. Where ground conditions allow a cherry picker will be used to either the remove the animal from the hollow or close the hollow up and remove the entire hollow containing the animal and bring it down with the EWP. Prior to any intervention, exit holes should be plugged to prevent escape of wildlife.

If ground conditions do not allow the use of an EWP, a tree climber is to be used to remove the hollows prior to the tree being softly felled using on site machinery.

3.12 Native Beehive Relocation

All native beehives of the genera *Tetragonula* (*syn Trigona*) and/or *Austroplebelia* are to be recovered during vegetation clearing associated with "bulk earthworks/civil works" for relocation into the retained vegetation and/or recovered and "boxed up" (if damaged) for later installation.

If a native beehive is located on site, its entrance is to be blocked off prior to sunrise. The extent of the beehive within the hollow is to be established using a fibre optic camera. The beehive is then to be cut out and both ends of the hive sealed off using treated wood. The beehive is then to be relocated to a suitable location and left-over night. The next morning at sunrise the entrance is to be opened.

3.13 Habitat Replacement

The aim of nest boxes is to compensate for the loss of habitat features by developing the site. The types of nest boxes installed was influenced by the Fauna Pre-clearance survey conducted on site by AWEC and the fauna captured and sighted during the clearing works on site.

Nest boxes will be sourced from Hollow Log Homes and hollows suitable to the species sighted/signs of species sighted/captured on site will be ordered. Nest boxes will be fixed to trees using a method designed to ensure no damage is done to the tree as the tree matures (See Figure 4). Possum and glider boxes will be placed in the foliage to protect them from hot afternoon sun and can be positioned facing any direction except for west. The nest boxes should be placed in an area that gives protection from direct sunlight and the entrance should face away from prevailing winds and rain. Nest boxes for possums should be attached approximately 2-4m off the ground and 3- 6m high for glider and bird boxes (Franks, 2006). The nest boxes should be placed within an area that contains suitable species and quantities of food trees that are favoured by the species that the nest box was designed for.

The compensation ratio to be applied where hollows are identified as being utilised by possums, gliders or hollow dependant bird species will be a 1:1 ratio. In the case where hollows are identified but occupancy is not confirmed a 3:1 compensation ratio will be utilised (Smith, 1999).

The amount of arboreal fauna captured during the disturbance activity will also influence the quantity and type of habitat replacement features that will be required. Suitable nest boxes will be provided if possums, gliders or hollow dependent birds are found to be utilising hollows within the proposed disturbance site. Installing these nest boxes prior to clearing works commencing will ensure that hollow dependant species have immediate access to suitable habitat.

3.14 Fauna Management Measures- Clearing Works

Objective	Management Methods	Responsibility	Timing
Pre-clearing			
Mitigate the risk to native fauna	The vegetation in the Ecological Corridor and Green Space precincts will be protected during the clearing and construction works through a combination of fencing and flagging barriers. The mesh fencing will be of fauna friendly design during clearing works to allow fauna escape where necessary, and then where works cross the Ecological Corridor precinct amended to exclusion design during construction to prevent fauna within the Ecological Corridor precinct entering these works areas. All habitat trees including hollow bearing trees are to be flagged by the fauna spotter-catcher during their pre-clearance survey prior to the pre-start meeting. The demarcation of these trees will also help guide the management of hollow salvaging for the Nest Box Strategy Pre-clearance surveys will be undertaken by the Fauna Spotter in accordance with requirements imposed by DES within two weeks prior to the commencement of the action. At the pre-start meeting, the Fauna Spotter is to outline the clearing process and the requirements of the approved WPMP. A quick active fauna inspection is to be conducted the morning prior to clearing works commencing, active search over micro-habitats for any fauna, locate any potential nesting sites, ensure all habitat trees are marked and inspect canopy for the presence of koalas. Any fauna sighted during the pre-clearance survey should be relocated to a nearby suitable habitat.	Fauna Spotter	Pre-construction
Clearing and Grubbing			
	Immediately prior to the commencement of clearing of native vegetation a daily visual inspection of the area must be carried out by the fauna spotter-catcher. Fauna spotter-catcher is to be present on site during all clearing		Earthworks

Objective	Management Methods	Responsibility	Timing
Reduce risk to native fauna during disturbance activities	operations to supervise and direct clearing works, and to respond to any situations that may arise in relation to fauna. In the event of an animal being located, an area of 5m radius should be established around the tree excluding machinery from the area until the animal has relocated (usually overnight). S/C's must hold or be approved to work under DES a Rehabilitation spotter/catcher endorsed permit and damage mitigation permit. Clearing direction will occur towards the ecological corridor or vegetated areas to the west of the site and be managed by the project Fauna Spotter-catcher to allow all fauna unimpeded movement towards remaining vegetated areas that have been designated during the staged clearing process. All habitat trees and hollow bearing trees will be inspected using a thermal drone to determine if they are occupied. Any occupied trees will be blocked off and relocated using an EWP/tree climber where practical and site conditions allow. Any habitat or hollow bearing trees with un-confirmed occupancy are to be soft-felled in order to reduce the risk of injury to any fauna in-habiting the tree and to reduce the risk of damaging the hollows. Any injured wildlife will be taken to receive veterinary attention within 24 hours if required. If veterinary attention is not required any injured or orphaned wildlife is to be transferred to a suitably qualified Wildlife Carer. Any native fauna orphaned or injured by the development process must be immediately reported to the DES (1300 130 372) or RSPCA (1300 264 625).	Fauna spotter and construction/ clearing crew	
Koala Management			
To protect the local population of Koalas	If a koala is sighted within the site a koala spotter will be on site to manage and monitor the animal until it has self-relocated out of the site. A koala spotter is to be present on the first day of clearing works with the sole responsibility to inspect all the vegetation proposed for disturbance for the presence of koalas. *Nature Conservation and Other Legislation (Koala protection) Amendment Regulation 2020*, the following measures will be undertaken to	Fauna spotter and clearing crew	Earthworks

Objective	Management Methods	Responsibility	Timing
	minimise, reduce or mitigate impacts to koalas in potential koala habitat areas: Sequential clearing will be utilised to assist fauna in relocating to nearby habitat on their own accord. No tree in which a Koala is present and no tree with a crown overlapping a tree with a Koala present will be disturbed. A 50m buffer around any tree containing a Koala is to be established and works to seize within this buffer until the has moved off on its own accord. A vegetation corridor is to be left where practical to allow the koala to self-relocate to a suitable area that is not a proposed disturbance site. In areas containing a dominance of koala food trees and positively identified Koala sightings and/or identified scat or scratch marks a koala spotter is to be present during clearing activities. If a Koala is not injured but refuses to move from the clearance area on its own accord after two days, the S/C will liaise with DES and negotiate appropriate methods for removal and relocation. A DES approved Koala Spotter is a person who holds a tertiary qualification in Biology or Zoology, or who is demonstrably experienced in the identification and location of Koalas in their natural habitat and has authorisation from DES to conduct such activities. Prior to the commencement and during felling operations, it is the responsibility of the DES approved Koala spotter to: • be present at the site of felling operations • Identify any tree at the site within which a Koala is present, as well as any tree that has a crown which is intermeshed or overlapping with such a tree; and • Advice the person who is authorised to conduct the felling operation, or that person's representative, of the precise location of each such tree.		
Releasing Fauna			
To reduce the impact the project has on native fauna	The animal must be released as near as practical to the point of capture. Where practical animals should be relocated with the hollow in which they were found or a suitable nest box.	Fauna spotter	Project Duration

Objective	Management Methods	Responsibility	Timing
	When releasing wildlife attention must be paid to several factors, including weather conditions, seasonal conditions and the animal's ecology. Fauna should be released at a suitable time of day in a suitable location.		

Mulching Works

Objective	Management Methods	Responsibility	Timing
To reduce the impact the project has on native fauna	Trees identified by the project Fauna Spotter-catcher with hollows should have the hollow section salvaged and preserved and should be suitably mounted on suitable trees within the Ecological Corridor precinct as part of the Nest Box Strategy. All translocations of hollows should be recorded and form part of the fauna spotter post-works report. All the hollow features within the cleared vegetation should either be removed so that they can relocated into the protected areas or destroyed. This reduces the risk of any native fauna occupying the cleared vegetation stockpiles and being injured during the mulching works. Stockpiled vegetation, topsoil and other materials can quickly become temporary habitat for animals displaced during the actual clearing and earthworks. Prior to removal of any stockpiled vegetation, the Fauna Spotter Catcher must inspect for any fauna using the stockpile as temporary shelter. If vegetation is left stockpiled overnight, the fauna spotter-catcher must inspect the vegetation prior to chipping or removal from site.	Fauna spotter and construction/ clearing crew	Clearing Works

Reporting

Objective	Management Methods	Responsibility	Timing
To reduce the impact the project has on native fauna	Wildlife Habitat Management Plan – Aspects of the planning, design, construction and ongoing operation of the project in which risks to wildlife have been identified. This plan should also include recommendations and outline the type, frequency and timeframes for monitoring Wildlife Capture and Disposal Plan – Should contain the following details for each captured animal: a. Species b. Identification name or number c. Sex (M, F or unknown) d. Approximate Age or Age Class (neonate, juvenile, sub-adult, adult) e. Time and date of capture f. Method of capture g. Exact point of capture (GPS coordinates) h. State of health i. Incidents associated with capture likely to affect health j. Veterinary intervention or treatments k. Time held in captivity l. Disposal method (euthanasia, translocation, re-release) m. Date and time of disposal n. Detailed of disposal (GPS points of release) o. For released animals, location relative to point of capture Animal Injury and Euthanasia Report – similar details for the Wildlife Capture and Disposal Plan should be included in this report.	Fauna Spotter	Post-clearing Works
Earthworks and Construction Phase			

Objective	Management Methods	Responsibility	Timing
To reduce the impact the project has on native fauna	The Contractor shall ensure that to the extent possible project infrastructure and auxiliary works (laydown areas, stockpile sites, site office) are constructed in a manner that does not create additional hazards for wildlife. To minimise impacts and conflicts between native animals, vehicular movement and access during construction, site access should be controlled via a single entry and exit point. Inspect open trenches, culverts and other structures prior to works being undertaken within an area to determine whether there are any trapped or injured native fauna species present and act as appropriate. Trenches, manholes, excavations for footings, etc. while open pose threats to native animal entrapment and should be backfilled as soon as possible. In some location's barriers may be required overnight to eliminate the accidental capture of animals moving through the site. Educate staff, including sub-contractors, in relation to the risk of fauna injury and deaths and how to manage animals which are displaced, including threatened species. All native wildlife is protected (including snakes) and shall not be intentionally harmed as a result of work or workers actions. All native animal fatalities must be reported immediately to the Environmental Coordinator. Where any site staff (contractors or subcontractors) witness or locates distressed, injured or orphaned animals they should immediately contact the Fauna Spotter Catcher and Environmental Coordinator. Works within the area of the animal must cease until further instruction is provided by one of the above authorities.	Construction Crew	Clearing Works

4   RESULTS

4.1   Survey Results

4.1.1   Site Overview

This site consists of dense woodland scrub with large areas covered in *Lantana camara*. There is a mix of large and regrowth trees. Species include Wattle, Spotted Gum, Blood Wood, Ironbark, Scribbly Gum. Ground cover is a mix of dry dirt, short grass, medium leaf litter and weeds. Clearing works left habitat trees until last, inspections for wildlife was frequent during under scrubbing and shearing works (**FIGURE 2**).

FIGURE 2 – SITE DURING WORKS

4.1.2   Habitat features & Fauna signs

During clearing works the most habitat features recorded were thirty-two arboreal termite mounds, then ten areas of dense vegetation. Only two trees were identified as hollow bearing with a total of three hollows within. There was minimal evidence of fauna use with only thirteen signs of fauna. A large, inactive bird of prey nest (likely wedgetail eagle) was also recorded on the western side of the site (geolocation not recorded due to technology error ; **FIGURE 3**).

The details of these features and signs are displayed **FIGURES 4 - 7**, and the ID numbers correspond with the numbers in **APPENDIX 1**.

TABLE 2 - HABITAT FEATURES & FAUNA SIGNS

Habitat features		Count
Arboreal termite mound		32
Burrows		2
Dense vegetation		10
Hollow-bearing tree		2
Fissured bark		5
Woody debris		3
	Total	54
Fauna signs		
Scat		5
Scratch marks		4
Tracks		4
	Total	13
Nests		
Woven nest		1
Stick nest		1
	Total	2
	Grand total	**69**

FIGURE 3 – BIRD OF PREY NEST

FIGURE 4 - CLEARING RESULTS OVERVIEW MAP

FIGURE 5 - CLEARING RESULTS INSET MAP 1

FIGURE 6 - CLEARING RESULTS INSET MAP 2

FIGURE 7 - CLEARING RESULTS INSET MAP 3

4.1.3 Fauna Assemblage

The fauna assemblage observed at this site consisted largely of Least Concern bird species, but also included some mammal, amphibian and reptile species (**TABLE 3**). Several sightings of the Endangered koala were recorded, which are detailed in **SECTION 4.1.6**.

TABLE 3 – SIGHTED FAUNA BIODIVERSITY

Common name	Scientific name	Conservation Status
Amphibian species		
Eastern sedgefrog	*Litoria fallax*	Least Concern
Bird species		
Australian magpie	*Gymnorhina tibicen*	Least Concern
Australian white ibis	*Threskiornis molucca*	Least Concern
Blue-faced honeyeater	*Entomyzon cyanotis*	Least Concern
Cattle egret	*Bubulcus ibis*	Least Concern
Fairy martin	*Petrochelidon ariel*	Least Concern
Laughing kookaburra	*Dacelo novaeguineae*	Least Concern
Magpie-lark	*Grallina cyanoleuca*	Least Concern
Masked lapwing	*Vanellus miles*	Least Concern
Noisy miner	*Manorina melanocephala*	Least Concern
Pied butcherbird	*Cracticus nigrogularis*	Least Concern
Pied currawong	*Strepera graculina*	Least Concern
Pied currawong	*Strepera graculina*	Least Concern
Rainbow lorikeet	*Trichoglossus moluccanus*	Least Concern
Rufous fantail	***Rhipidura rufifrons***	**Special Least Concern**
Sulphur-crested cockatoo	*Cacatua galerita*	Least Concern
Tawny frogmouth	*Podargus strigoides*	Least Concern
Torresian crow	*Corvus orru*	Least Concern
Wedge-tailed eagle	*Aquila audax*	Least Concern
Welcome swallow	*Hirundo neoxena*	Least Concern
Willie wagtail	*Rhipidura leucophrys*	Least Concern
Mammal species		
Common brushtail possum	*Trichosurus vulpecula*	Least Concern
Eastern grey kangaroo	*Macropus giganteus*	Least Concern
Koala	***Phascolarctos cinereus***	**Endangered**
Northern brown bandicoot	*Isoodon macrourus*	Least Concern
Red-necked wallaby	*Notamacropus rufogriseus*	Least Concern
Squirrel glider	*Petaurus norfolcensis*	Least Concern
Reptile species		
Green tree snake	*Dendrelaphis punctulatus*	Least Concern

4.1.4 Fauna Capture & Relocation

Three animals were successfully relocated outside of the clearing area (**TABLE 4 and FIGURE 4**).

TABLE 4- RELOCATED FAUNA

Date	Scientific name	Common name	Capture location		Release location		#	Released?	Comments
13/02/2023	*Petaurus norfolcensis*	Squirrel glider	-27.732	152.9905	-27.731	152.9904	1	Yes	
14/02/2023	*Pogona barbata*	Bearded dragon	-27.7325	152.9882	-27.7323	152.988	1	Yes	
14/02/2023	*Pogona barbata*	Bearded dragon	-27.7317	152.9886	-27.7314	152.9886	1	Yes	
22/02/2023	*Petaurus breviceps*	Sugar glider	-27.734	152.9969			1	No	Taken to vet for care.
						TOTALS	4	3 released, 1 animal taken to vet.	

4.1.5 Animal Injury and Euthanasia report

No animals were euthanized and one animal was injured during these stages of clearing (**TABLE 5**).

TABLE 5- INJURED FAUNA

Date	Scientific name	Common name	Capture location		Details
22/02/2023	*Petaurus breviceps*	Sugar glider	-27.734	152.9969	Individual's tail was pinched in a branch and was taken to local veterinary clinic for care.

4.1.6 Koalas on site

There were eleven koala sightings recorded between February 7th and 14th 2023, captured by foot and thermal drone (**TABLE 6**). Several of these occurred outside of the clearing footprint (**FIGURE 5**). All measures outlined in the methods were followed to avoid injuring koalas.

TABLE 6– DETAILS OF KOALAS RECORDED ON SITE

Date sighted	Latitude	Longitude	Clearing footprint
14/02/2023	-27.73264351	152.9928368	Inside
14/02/2023	-27.73318924	152.9876016	Outside
14/02/2023	-27.73286492	152.9940166	Inside
14/02/2023	-27.732161	152.986685	Outside
14/02/2023	-27.732634	152.992803	Inside
14/02/2023	-27.733237	152.987558	Outside
09/02/2023	-27.73074341	152.9893617	Outside
09/02/2023	-27.73225577	152.9864804	Outside
10/02/2023	-27.73344421	152.9906291	Inside
07/02/2023	-27.73238698	152.9896414	Inside
08/02/2023	-27.7324619	152.9870036	Outside

FIGURE 8 – IMAGES OF KOALAS ON SITE

4.2 Identified Risks to Wildlife

The Wildlife Protection and Management Plan (AWEC 2023) identified that this site contained a large number of significant habitat features and clearing could impact a variety of fauna – including local significant species.

There were several koalas sighted during clearing works, the development of this site may result in not only habitat loss, but habitat fragmentation and loss of connectivity between other areas. These koalas will be more at risk vehicular and domestic animal altercations from the development of this site.

To mitigate the impacts from clearing at this site the measures from that plan were followed.

5 CONCLUSION

Australia Wide Environmental Consultants (AWEC) were commissioned by Shadforth Civil Contractors to manage fauna during clearing of Precincts 8 and 10, Everleigh, Greenbank, Queensland.

This site contained a large number of habitat features and signs of fauna. Three animals were relocated out of the footprint, one was taken into care due to a minor injury. Eleven records of koala were recorded, these animals were carefully monitored and managed throughout the clearing works. No fauna fatalities occurred, and no fauna breeding sites were disturbed.

A suitably qualified and licenced FSC was on site for the duration of clearing and shearing works to ensure all fauna management measures were adhered to. Wildlife Warriors Code of Practice was adhered to for the duration of clearing and shearing works.

6 RECOMMENDATIONS

To minimise the cumulative impact on the fauna assemblage in the area it is recommended that wildlife friendly measures are included in development of this site (i.e., wildlife friendly fencing, signage, lighting). To replace the loss of the three hollows removed, it is recommended that one nest box is installed into nearby vegetation.

7 REFERENCES

Australia Wide Environmental Consultants (AWEC), 2023, Wildlife Protection and Management Plan, Everleigh, Precincts 8 and 10, Greenbank, QLD.

Department of Environment and Science, (2021), Spatial modelling for koalas in South East Queensland: Report, version 2.0, Brisbane: Department of Environment and Science, Queensland.

Eyre Tj, Ferguson Dj, Hourigan Cl, Smith Gc, Mathieson Mt, Kelly, Al, Venz Mf & Hogan, Ld. 2012. Terrestrial Vertebrate Fauna Survey Guidelines For Queensland. Qld.Gov.Au. (2018), From Https://Www.Qld.Gov.Au/__Data/Assets/Pdf_File/0022/68224/Fauna-Survey-Guidelines.Pdf.

Mcelroy C, Ingleby S, Tipping J, Stokes J, Barclay S. 2004. Survey Guidelines For Australia's Threatened Mammals. Environment.Gov.Au. (2011), https://www.awe.gov.au/sites/default/files/documents/survey-guidelines-mammals.pdf

Nature Conservation and Other Legislation Amendment Act 2016, Queensland Government, https://www.legislation.qld.gov.au/view/html/asmade/act-2016-022/lh

Nature Conservation and Other Legislation (Koala Protection) Amendment Regulation 2020, Queensland Government, https://www.legislation.qld.gov.au/view/pdf/asmade/sl-2020-0009

The State of Queensland (Department of Resources), (2021), Queensland Spatial Catalogue, https://qldspatial.information.qld.gov.au/catalogue/custom/index.page

Triggs, B., (2004). Tracks, Scats, And Other Traces. 2nd Ed. South Melbourne, Vic.: Oxford University Press.

8   APPENDICES

Below in **Appendix 1** is the details of the survey results, including ID numbers which correspond to **FIGURES 3 - 6**.

APPENDIX 1 – DETAILED SURVEY RESULTS RECORDS

ID	Feature	Latitude	Longitude
1	Tracks (snake)	-27.738181	152.9988556
2	Tracks	-27.73391121	152.9881896
3	Dense vegetation	-27.73321533	152.9882538
4	Arboreal termite mound	-27.73300171	152.9882745
5	Arboreal termite mound	-27.7325592	152.9882837
6	Dense vegetation	-27.73141479	152.989099
7	Dense vegetation	-27.73114014	152.9896101
8	Scratch marks	-27.73101807	152.9901766
9	Scratch marks	-27.73114014	152.9903603
10	Scratch marks	-27.73132309	152.990751
11	Scat	-27.73126221	152.9907189
12	Scat	-27.73156362	152.9913489
13	Arboreal termite mound	-27.73163245	152.9920307
14	Dense vegetation	-27.73176575	152.9921946
15	Scratch marks	-27.73252869	152.9935349
16	Arboreal termite mound	-27.73260498	152.9932258
17	Scat	-27.7326217	152.9928227
18	Arboreal termite mound	-27.73432803	152.9984939
19	Arboreal termite mound	-27.73471069	152.998793
20	Dense vegetation	-27.73742676	152.9991083

ID	Feature	Latitude	Longitude
21	Arboreal termite mound	-27.73769885	152.9990256
22	Fissured bark	-27.73747253	152.9988605
23	Woody debris	-27.73670959	152.9988483
24	Scat	-27.73677063	152.9987413
25	Arboreal termite mound	-27.73735046	152.9998323
26	Arboreal termite mound	-27.73760986	153.0005344
27	Arboreal termite mound	-27.7376709	153.0006872
28	Woven nest	-27.73744202	153.0000195
29	Tracks	-27.73750213	153.000318
30	Arboreal termite mound	-27.73352051	153.000292
31	Dense vegetation	-27.73335266	153.0003239
32	Woody debris	-27.73356628	153.0004347
33	Arboreal termite mound	-27.73363713	153.0005898
34	Arboreal termite mound	-27.73355103	153.0012739
35	Arboreal termite mound	-27.73370361	153.0013051
36	Dense vegetation	-27.73287964	153.0005009
37	Arboreal termite mound	-27.7328534	153.0006654
38	Arboreal termite mound	-27.73330688	153.0009902
39	Arboreal termite mound	-27.73320653	153.0014415
40	Arboreal termite mound	-27.73346289	153.0013229
41	Fissured bark	-27.7335176	153.0011283
42	Dense vegetation	-27.73291016	153.0009966
43	Arboreal termite mound	-27.73287964	153.0016208

ID	Feature	Latitude	Longitude
44	Arboreal termite mound	-27.73283633	153.0018667
45	Woody debris	-27.73280334	153.0016319
46	Arboreal termite mound	-27.73249817	152.9992978
47	Fissured bark	-27.7330083	153.0001204
48	Arboreal termite mound	-27.73338318	152.9999403
49	Arboreal termite mound	-27.73348999	152.9998531
50	Scat	-27.73325384	152.999883
51	Arboreal termite mound	-27.73327637	152.9996954
52	Hollow-bearing tree (1 large hollow)	-27.73210477	152.9915633
53	Arboreal termite mound (with hollow)	-27.73265076	152.9904397
54	Arboreal termite mound (with hollow)	-27.73220693	152.9907098
55	Tracks	-27.7336731	152.9896574
56	Arboreal termite mound	-27.73350525	152.9904631
57	Arboreal termite mound	-27.73336792	152.9909655
58	Arboreal termite mound	-27.7332145	152.9909563
59	Burrow	-27.7333374	152.9917255
60	Burrow	-27.73327637	152.99179
61	Arboreal termite mound	-27.73344793	152.9926053
62	Arboreal termite mound	-27.73311276	152.9903073
63	Dense vegetation	-27.73294067	152.9905528
64	Arboreal termite mound	-27.73323059	152.9927929
65	Fissured bark	-27.73257446	152.991042
66	Dense vegetation	-27.73283386	152.992148

ID	Feature	Latitude	Longitude
67	Fissured bark	-27.73271179	152.9905299
68	Hollow-bearing tree (2 medium hollows)	-27.73370706	152.9893668

Appendix D
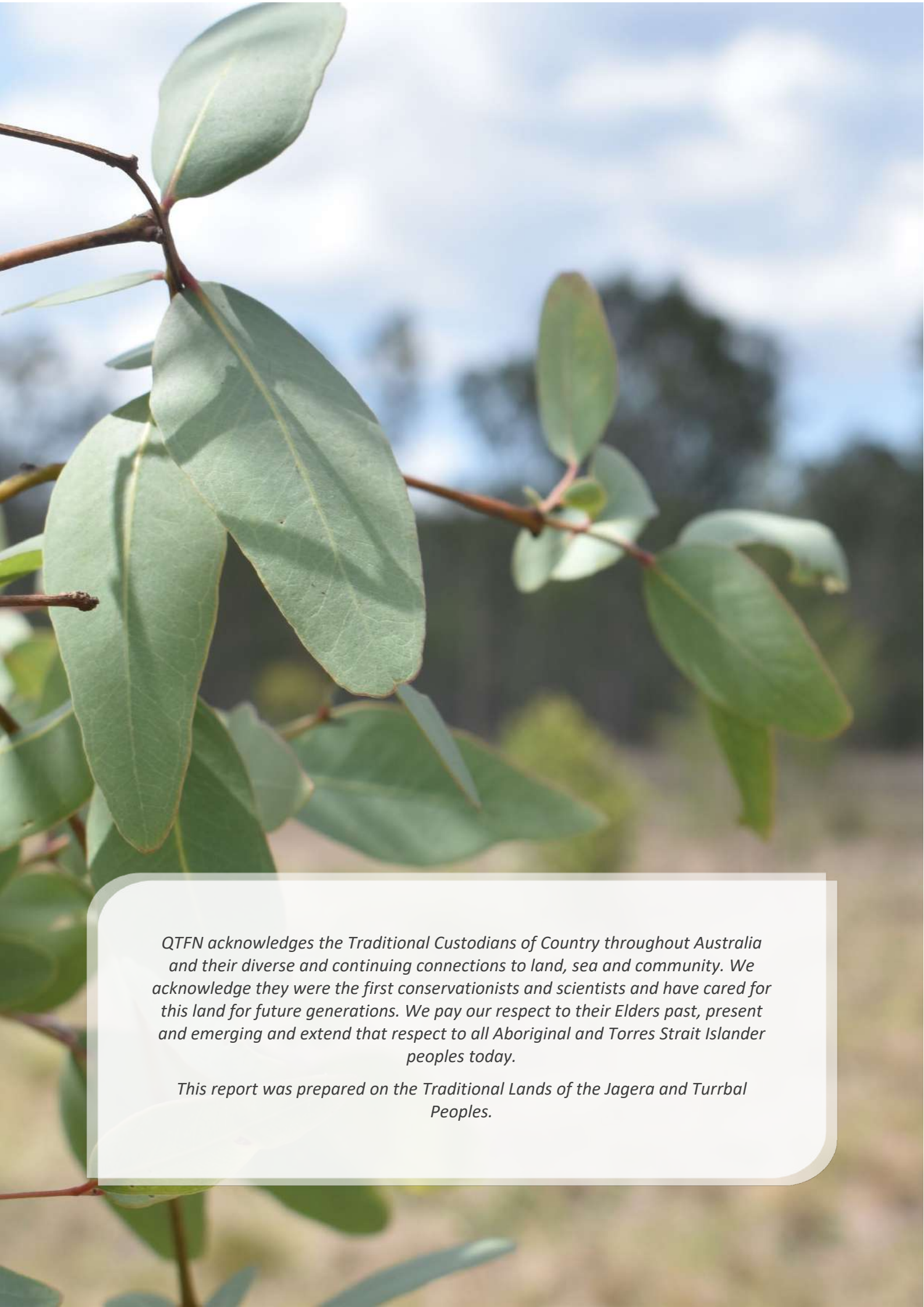
Offset Area Management Report prepared by QTFN – Year 3

Aroona Station Offset Area Management Report –Year 3

EPBC 2016/7817

V1 | January 2024

Table of Contents

List of Tables

List of Maps

List of Figures

List of Appendices

Document Control

Current document	
Title	Aroona Station Offset Area Management Report Baseline Year 3 EPBC 2016/7817
Date	January 2024
Prepared by	Georgina Braun

Document Issue			
Issue	*Date*	*Prepared by*	*Checked by*
Draft	07/12/2023	GB	KC, CS
Final	25/01/2024	GB	LO

Disclaimer

This report has been prepared for Mirvac Queensland Pty Ltd by the Queensland Trust for Nature. QTFN cannot accept any responsibility for any use of or reliance upon the contents of this report by any third party.

Reports and/or Plans by Others

Reports and/or plans by others may be included within this Offset Area Management Report to support the document.

CHAPTER 1:   INTRODUCTION

The purpose of this document is to report on the management actions and outcomes required for the provision of koala (*Phascolarctos cinereus*) habitat offset, by Approval EPBC 2016/7817 issued pursuant to sections 130 and 133 of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC 1999). The focus of the plan is on the protection and enhancement of the koala habitat associated with the secured offset for the Mirvac Queensland Pty. Ltd. EPBC 2016/7817. This document will report in accordance with stipulations and requirements laid out in the Offset Area Management Plan.

The structure of the document reflects the requirements of the Department of Climate Change, Energy, the Environment and Water (DCCEEW) (previously DAWE) and details the key threatening processes which could impact on the existing koala population. The chapters that comprise the document report on the overall health of the koala population, vegetation composition, and actions to minimise threats to koalas. The management regime put in place by the Queensland Trust for Nature (QTFN) will enhance existing koala habitat through the exclusion of land practices detrimental to the site and will track improvements and progress in the annual offset report over the active management period.

This report is the third submitted to date since the approval date for the offset (EPBC 2016/7817) on the 11th October 2019 and commencement of the action on the 18th November 2020. The past and future reporting requirements are listed below.

Milestone	Due Date	Status
Approval of EPBC 2016/7817	11th October 2019	Completed
Legal Security	4 December 2020	Completed
Year 1 Annual Report + Baseline	4 December 2021 + 3 months	Submitted January 2022
Year 2 Annual Report	18 November 2022 + 3 months	Submitted January 2023
Year 3 Annual Report	18 November 2023 + 3 months	Submitted January 2024
Year 4 Annual Report		
Year 5 – Intensive Review		
Year 6 -9 Annual Report		
Year 10 – Intensive Review		
Year 11 -14 Annual Report		
Year 15 – Intensive Review		
Year 16 -19 Annual Report		
Year 20 – Intensive Review		

1.1 SUMMARY OF COMPLIANCE

This document stands as a compliance report for the agreed upon management conditions (Table 1) outlined in the EPBC2016/7817 Offset Area Management Plan.

Reporting period for this report is 18th November 2022 until 17th November 2023.

It is acknowledged that any non-compliance with the conditions must be reported by no later than 2 business days after becoming aware.

Table 1. Compliance summary and checklist for all conditions relevant to this reporting interval under the OMP.

Key Actions and Monitoring Requirements	Reporting Requirements	Compliance
Management Action 1 – selective chemical/mechanical management		
• Develop and implement a weed strategy, with a particular focus on weeds with particularly ability to impact on koala movement and structural vegetation composition (mainly *Lantana camara* and *Schinus terebinthifolius*), and under the Biosecurity Act 2014, to reduce weed cover to target thresholds. • Undertake weed management according to principles outlined in section 7.1	*Lantana camara* and *Schinus terebinthifolius* cover is reduced across the offset area, and weeds are not impacting on the movement of koalas across the site and not negatively impacting on recruitment of koala and GHFF food and shelter trees. Year 5, 10, 15 and 20 assessment unit Non-native Plant Cover KPIs achieved	Yes Ongoing
Management Action 2- ecological burns		
• Develop and implement a Fire Management Strategy with particular focus on Regional Ecosystem burning intervals and property fire history. • Undertake ecological burns in accordance with principles outlined in this section.	Year 5, 10, 15 and 20 assessment unit MHQA KPIs achieved for: • Koala Site Condition • GHFF Site Condition • GHFF Species Stocking Rate	Yes Ongoing
Management Action 3 – wildfire hazard reduction		
• Hazard reduction action will take place to reduce fuel loads based on Overall Fuel Hazard Assessment. • Install firebreaks and fire trails (access tracks). • Prescribed burning will be undertaken in consultation with, and under the guidance of the Queensland Rural Fire Brigade and in compliance with the Fire and Emergency Services Act 1990. • Inspect firebreaks and access tracks, undertake any maintenance required to achieve compliance with Fire Management Plan.	No recorded high-intensity fires in the offset area. No recorded injury or death from fire. Implementation of Fire Management Plan reduces fuel levels. Vegetation composition not negatively affected by fire regime. Minimise the risk of koala and GHFF mortality within the offset area due to prescribed burning. Year 5, 10, 15 and 20 assessment unit MHQA KPIs achieved	Yes Ongoing
Management Action 4 – direct seeding where natural regeneration is lacking		
• Conduct direct seeding of native species in areas where natural regeneration not occurring. • Species mix to be representative of Preclear Regional Ecosystem	Year 5, 10, 15 and 20 assessment unit MHQA KPIs achieved for: • Koala Site Condition • GHFF Site Condition • GHFF Species Stocking Rate Livestock are excluded from offset area other than for the purposes of hazard reduction actions. Large offset areas are legally secured.	Yes Ongoing

Management Action 5: Legal protection from incompatible land uses		
• Legally secure the offset area by way of voluntary declaration under the Vegetation Management Act 1999 prior to commencement of Stage 2 of the action. • The voluntary declaration will be in place for the duration of the impact, or until such time as another enduring protection mechanism (such as a Nature Refuge under the Nature Conservation Act 1992) has been formally registered on title and evidence of this has been provided to the Department.	Large offset areas for koala and GHFF habitat protected for the duration of the impact.	Yes 4/12/20

Management action 6: Monitoring and control of introduced predators		
• Conduct a baseline survey to establish introduced predator abundance and location on the property. This can be undertaken through the use of remote motion-activated cameras and/or identification of scats. • Establish a Relative Abundance Index and confidence intervals around associated population trends. • Implement introduced predator control program. The control program and techniques (trapping, baiting, shooting) will be informed based on the results of the abundance surveys. Where practical, and to increase the effectiveness of a control program, the landholder will seek to coordinate control programs with comparable activities being undertaken by neighbouring landholders. • Set-up a community engagement program including but not limited to interpretive signs, fact sheets and community presentations with the aim to raise community awareness and encourage responsible pet ownership. • Directly input into the Little Liverpool Range Strategy for controlling introduced predators across the Range.	Relative abundance index does not increase from baseline for feral animal abundance. Annual report to include all feral animal survey data. No recorded injury or death from introduced predator attacks within the offset area.	Yes Ongoing..

Management action 7: Revegetation		
• Implement a revegetation program in cleared areas using best practice techniques with tree and shrub species representative of the pre-clearance Regional Ecosystem including koala and GHFF food and shelter trees (see Appendix G for proposed species list). Revegetation details outlined in section 7.7. • Exclude livestock from areas undergoing revegetation activities. • Legally secure the offset area.	80% survival of seedlings. Year 5, 10, 15 and 20 assessment unit MHQA KPIs achieved for: • Koala Site Condition • GHFF Site Condition • GHFF Species Stocking Rate Livestock are excluded from offset area other than for the purposes of hazard reduction actions (hazard reduction using livestock only to occur when OMU3 areas reach a height able to withstand the introduction of cattle). Large offset areas are legally secured.	Yes Ongoing

Management action 8: Koala Species Stocking Rate survey		
• Undertake koala density/occurrence surveys using SAT methodology (Phillips and Callaghan 2011) within the offset area. • Repeated surveys to be undertaken at 5-year intervals. • Koala SAT surveys to be undertaken by a suitably qualified ecologist with extensive experience with koala surveys.	Year 5, 10, 15 and 20 assessment unit MHQA KPIs achieved for Koala Species Stocking Rate.	Yes Ongoing

Management action 9: Cattle Grazing Management

• Cattle grazing to be used only as a wildfire hazard fuel reduction tool in accordance with Management Action 3 – Wildfire hazard reduction. • Ensure that all livestock are excluded from planting/revegetation area (e.g. by fencing) for a minimum of 5 years, or until a suitably qualified independent expert has determined that planted koala and grey-headed flying-fox feed trees are of sufficient size to withstand impact from cattle. • ▪ Provide the Department with a report from the suitably qualified independent expert verifying that planted koala and grey-headed flying-fox feed trees are of sufficient size to withstand impact from cattle. • Ensure that any grazing is managed so as to prevent the risk of injury or mortality of Koalas.	No material adverse impacts to target habitat quality improvement outcomes. Vegetation composition not negatively affected by cattle grazing. Year 5, 10, 15 and 20 MHQA KPIs achieved for: • Koala Site Condition • o GHFF Site Condition	Yes Ongoing

1.2   SETTING AND LOCALITY

By way of Deed, Mirvac Queensland Pty. Ltd. secured delivery of an Offset Area Management Plan and registration of a Voluntary Declaration under the Vegetation Management Act 1999 (QLD) (VMA) of a staged offset area imposed by EPBC Approval 2016/7817 as part of the offset for the Greenbank development.

The voluntary declaration was secured on the 4th of December 2020 and reporting for EPBC 2016/7817 will include information from 2021 onwards.

1.2.1   Aroona Station Locality

The offset area pertaining to EPBC 2016/7817 is managed as part of a larger conservation property located on Alpers Road, Mount Mort, Queensland comprised of multiple lots; Part of lot 54 on CC1018, Part lots 44 and 45 on CC32, Part of Lot 6 on RP21558, Part of lot 13 on RP21558, Part of lot 31 on CH312311, Part lot 216/CH311631, Part of 218 on CH311734, Part lot 222/CH311798, Part lot 30/CH312310, and Part lot 64/CC552, totalling approximately 686.44ha (Map 1). The whole site, henceforth referred to as 'Aroona Station', was gifted to QTFN in 2015 with the wish to see the property managed for both its production and conservation value, under a variety of income initiatives.

The tenure of the site is freehold, wholly owned by QTFN. It is included within the Ipswich City Council and Lockyer Valley Regional Council Local Government Areas. On a regional scale, the site is part of the Little Liverpool Range, providing connectivity to Main Range National Park and the Great Eastern Ranges.

The Range stretches for 90km from Laidley, through Mount Mort to Thornton and Mulgowie, and encompasses 20,400ha of land. It is an important wildlife corridor, providing habitat for several vulnerable species including the glossy black-cockatoo *(Calyptorhynchus lathami)*, powerful owl *(Ninox strenua)*, grey-headed flying-fox *(Pteropus poliocephalus)* spotted-tailed quoll *(Dasyurus maculatus maculatus)*, brush-tailed rock-wallaby *(Petrogale penicillata)* and koala *(Phascolarctos cinereus)*.

Climate data for the area gives a highest mean maximum and lowest minimum temperature of 31.7°C and 6.3°C respectively for 2023. The annual rainfall is 572mm up to November 2023 (BoM 2023), with the wettest month in January and the driest month in October.

The site contains six Regional Ecosystems (REs):

- 12.3.3 Endangered: *Eucalyptus tereticornis* woodland on Quaternary alluvium
- 12.3.7 Least Concern: *Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca spp.* fringing woodland
- 12.8.9 Least Concern: *Lophostemon confertus* open forest on Cainozoic igneous rocks
- 12.8.16 Least Concern: *Eucalyptus crebra +/- E. melliodora, E. tereticornis* woodland on Cainozoic igneous rocks
- 12.8.17 Least Concern: *Eucalyptus melanophloia +/- E. crebra, E. tereticornis, Corymbia tessellaris* woodland on Cainozoic igneous rocks

- 12.9-10.17a Least concern: *Lophostemon confertus* or *L. suaveolens* dominated open forest usually with emergent *Eucalyptus* and/or *Corymbia* species on sedimentary rocks
- 12.9-10.7 Of concern: *Eucalyptus crebra* +/- *E. tereticornis*, *Corymbia tessellaris*, *Angophora spp*, *E. melanophloia* woodland on sedimentary rocks

The highest point of the site is 670m above sea level on the northern block, close to the border of lot 45 on CC32, and is one of the two peaks of Mount Beau Brummel. The Geological Survey of Queensland 1:100,000 Ipswich Geological Map (DME 2008) lists the geology as:

- Qa SEQ: Quaternary; clay, silt, sand, gravel, flood plain alluvium
- Tit SEQ: Tertiary: trachyte (anorthoclase and riebeckite trachyte)
- Jbmk: Jurassic; lithofeldspathic labile and sublabile to quartzose sandstone, siltstone, shale, minor coal, ferruginous oolite marker
- Jbmg: Jurassic; lithic labile and feldspathic labile sandstone

1.3   EPBC 2016/7817 OFFSET AREA ATTRIBUTES

The EPBC 2016/7817 offset area contains multiple parcels within the Aroona Station property, on the northern and southern land parcels (Map 1). The vegetation composition and land use history vary across the property.

The offset area contains remnant vegetation typical of eucalypt Forest and dry sclerophyll (RE12.8.9). Surrounding vegetation is consistent with varying ages of mature eucalypt regrowth forest (RE12.8.16/RE12.9-10.7), previously cleared for cattle grazing purposes. The lowland offset areas are typical of alluvial blue gum and melaleuca flats (RE12.3.3/12.3.7). Vegetation remains along creek lines providing important dispersal pathways. However, the flats have been historically cleared for cattle grazing and will benefit from revegetation activities.

Map 1. Offset area in the context of Aroona Station and the Little Liverpool Range.
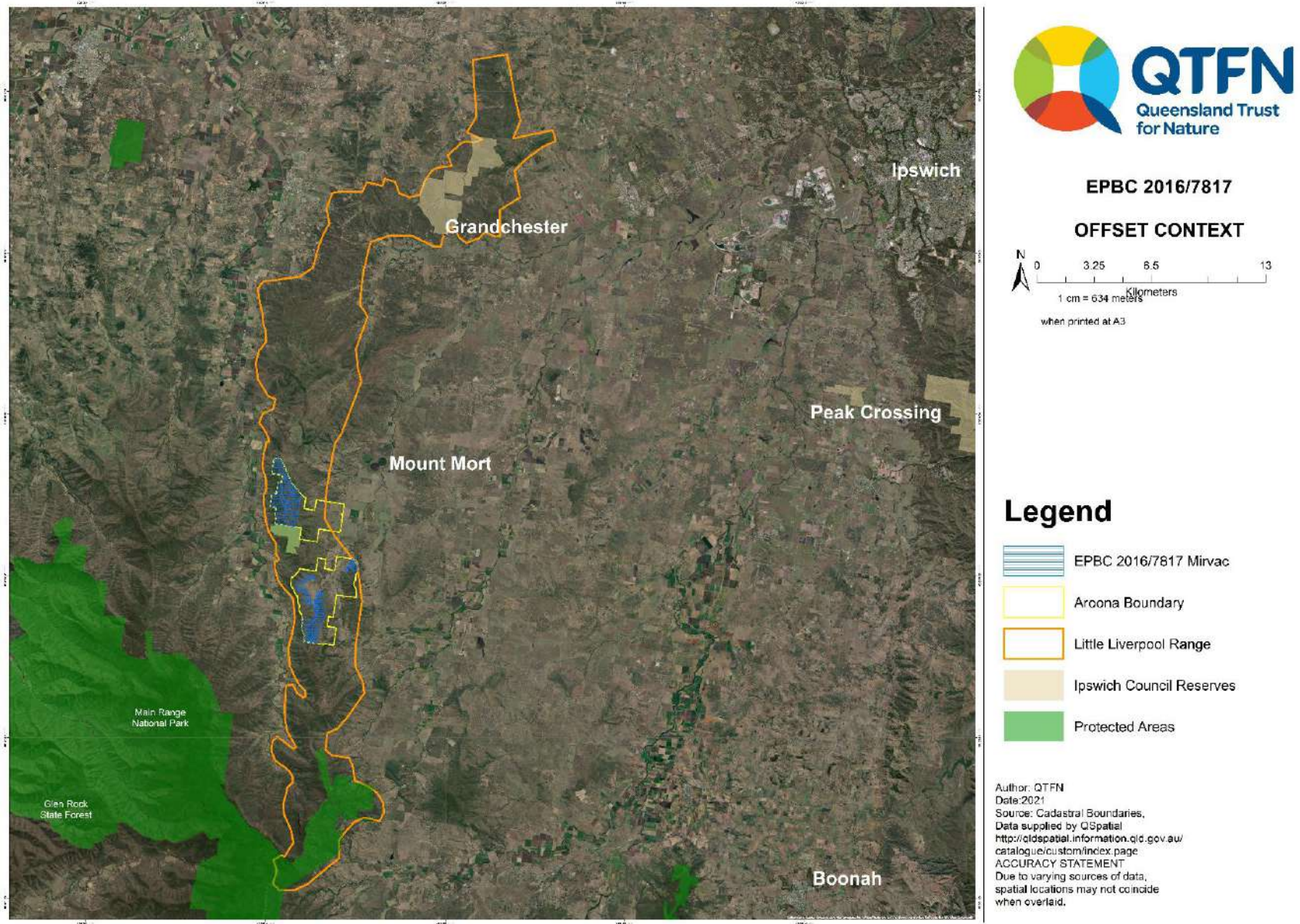
CHAPTER 2: OFFSET MANAGEMENT REPORT

This chapter summarises the annual survey data and methodology in line with the Offset Area Management Plan and the final Approval Conditions set by the relevant parties. Management actions and reporting relevant to each condition will be discussed in each section.

2.1 HABITAT CREATION AND QUALITY IMPROVEMENT

Management Action 4 and 7

An ecological assessment was conducted at Aroona Station in 2016 by AusEcology. The surveys were carried out using the methodology outlined in Offset Management Plan, where BioCondition plots were established and data relating to the habitat quality of the land-based offset was collected, in line with the modified version of the Queensland State Governments *"Guide to determining terrestrial habitat quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy"* Version 1.2 April 2017 (the Guideline). These plots, herein referred to as 'Habitat Quality Transects', allowed for the assessment of the offset area and were designed to determine the condition of the vegetation and its suitability as an offset for the koala and the grey-headed flying-fox.

The site was broken up into eleven assessment units based on regional ecosystem (RE) and vegetation status (remnant, regrowth and cleared). Fourteen Habitat Quality Transects were established across these assessment units. The transects were distributed in such a way as to provide a representative sample of the RE, and gradient condition states of each AU present on the property.

For the purposes of managing the offset, the land was categorised into three management units, remnant (OMU- 1), regrowth (OMU-2) and cleared (OMU-3) Broadly, condition and management actions required are similar for all REs in remnant status, all REs in regrowth status and all cleared areas. As a result, it was decided to assess habitat quality and potential improvements based on OMUs. Operational management units are made up of assessment units relating to the regional ecosystems and vegetation classes within the offset area Table 2. OMU's are used to demonstrate management actions and impacts across vegetation groups.

2.1.1 Management Actions

OMU 1 AND OMU 2 – Habitat Quality Improvement

All actions outlined in this document contribute to the management of OMU1 and OMU2 to improve habitat quality.

Rehabilitation actions are conducted line with the Aroona Station Weed Management Strategy and the Aroona Station Fire Management Plan, detailed in sections 2.5, and 2.8, respectively.

Monitoring transects were established, located in Map 6.
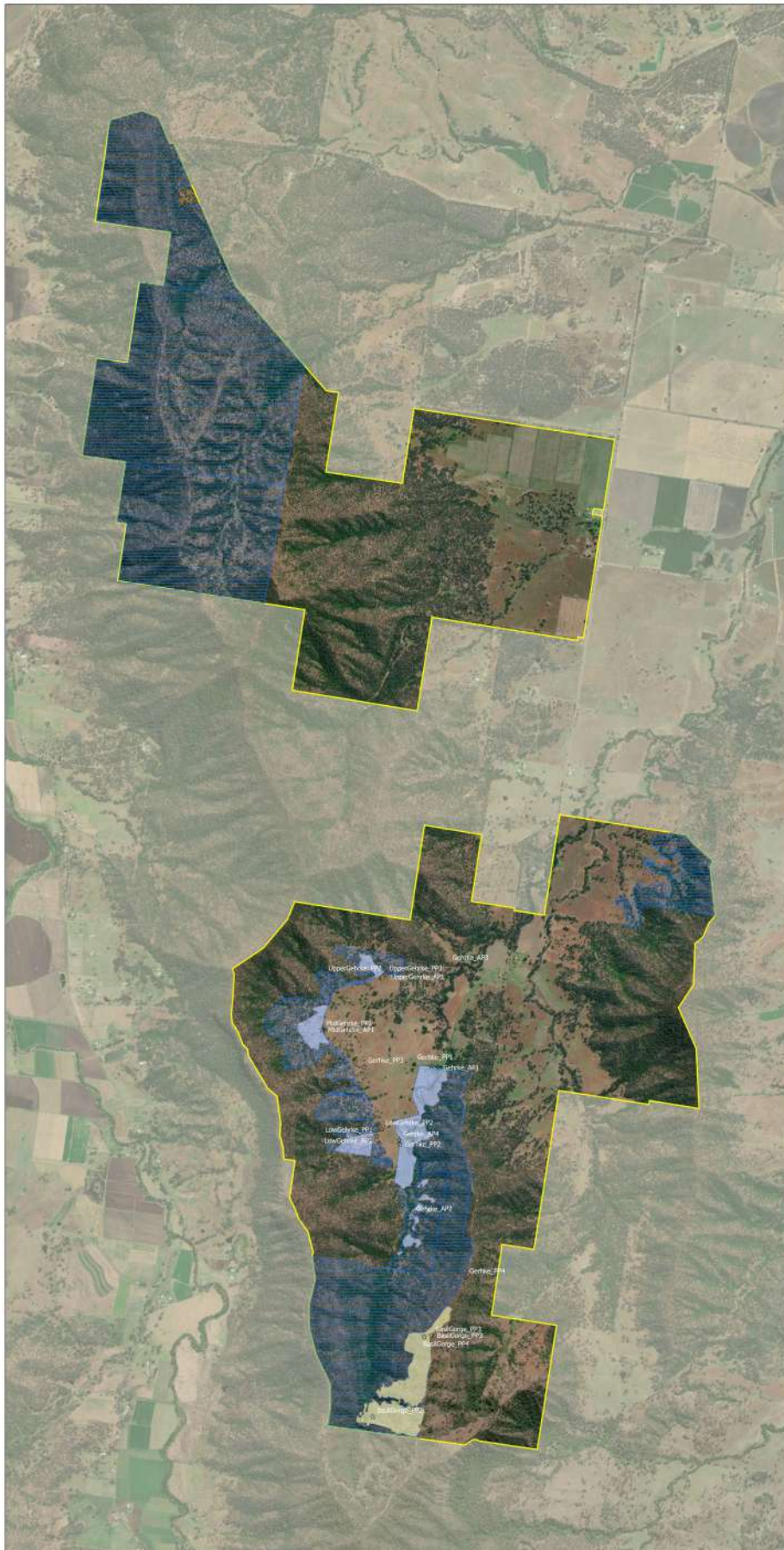
OMU3 – Habitat Creation

Revegetation actions within the offset area are complete and are now undergoing maintenance phase (Figure 1). This includes all tree planting and direct seeding events, totalling 29ha and 23.5ha, respectively (Map 2). Photo monitoring points are established and are presented in Appendix 1.

An above average rainfall season has been promising for the revegetation activities. Trees planted in 2021 at roughly 30cm heights are now ranging between 1m and 2.5m growth. Survival counts are also showing above 80% success. Infill planting is not required. The revegetation from March 2022 continues to show promising growth although slower than that of the 2021 plantings, likely associated with less rainfall received. Competition with grasses is a limiting factor, but spray rings are being utilised to suppress grass growth around saplings. Twelve-month survival assessments show above 80% survival. Assessments of direct seeding show recruitment is occurring. Where areas are lacking, supplementary seed will be dispersed.

Figure 1. Revegetation activities within the offset area. Aerial view of two years of growth along alluvial blue gum flats; top: aerial verse on ground, middle: baseline verse present. Bottom: one year growth.
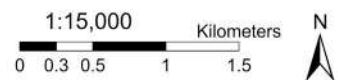
Map 2. Habitat Recreation - revegetation zones

2.2 GREY HEADED FLYING FOX FORAGE HABITAT

MANAGEMENT ACTION 4 and 7

Proximity of grey-headed flying fox (GHFF) colonies to the offset site were determined in a desktop analysis using the National Flying-fox Monitoring viewer (DoE) and cross checked using the state mapping for flying-fox roost sites (DES 2019). Flying-fox camps within 30 km of the site are listed in Table 3**.**

Table 2. Grey-headed Flying-fox Camps.

Camp name	Level	Proximity to site
Boonah, Bicentennial Park	3	23.5km
Laidley, Laidley Plainlands Road	2	24.5km
Gatton, Tenthill Creek	2	26.3km

2.2.1 Management actions and species occurrence

Flowering grey-headed flying fox forage trees were GPS located and recorded throughout the reporting year (Map 4). This allowed for a spatial and seasonal representation of food availability in between milestone reporting years (5 yearly). Grey-headed flying fox individuals were observed on the property in September 2023.

The abundance and coverage of flowering trees appeared lower than the previous year, perhaps related to climatic or seasonal variations. However, forage was observed year-round. *Corymbia intermedia* and *Eucalyptus tereticornis* were the most dominant flowering forage tree, consistent with previous years. Further, a subspecies of *E. tereticornis, E. tereticornis basaltica* was observed flowering the high country during late winter.

Table 3. GHFF Forage Species Calendar (blue shading = literature based flowering times, X = observed flowering in offset area).

Species	OMU 1	OMU 2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Angophora floribunda	Y	Y												
Lophostemon confertus	Y	Y											X	
Melia azedarach	Y	Y												
Corymbia intermedia	Y	-			X	X	X			X				
Corymbia tessellaris	Y	Y												
Eucalyptus crebra	Y	Y				X							X	
Eucalyptus melanophloia	Y	Y												
Eucalyptus melliodora	-	Y								X				
Eucalyptus tereticornis	Y	Y								X	X		X	
Ficus coronata	-	Y												
Ficus opposita	Y	Y												
Grevillea robusta											X			

Map 3. GHFF forage trees in flower across offset area.
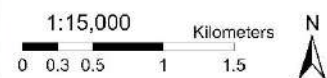
2.3   SPECIES STOCKING RATE

MANAGEMENT ACTION 8

Baseline data was collected from 2016 to 2019 across the offset site using multiple survey methodologies, summarised in Table 5. These surveys will be carried out across the offset area though the lifetime of the offset to report on the effectiveness of management actions and the increase in koala abundance and activity.

Table 4. Koala monitoring methods.

Methodology	Frequency	Characteristic monitored	Result
Opportunistic observations	Annually	Scat monitoring, wildlife camera observations, and opportunistic searches	Demonstrated presence and usage of koalas across the offset area.
SAT surveys (Phillips and Callaghan 2011)	5-yearly, at year 5, 10, 15 and 20	SAT monitoring, recording the presence of koala scats under food and habitat trees. Survey will record activity and abundance of koalas.	Demonstrated increase in koala density and abundance through an increase in scats recorded during SAT

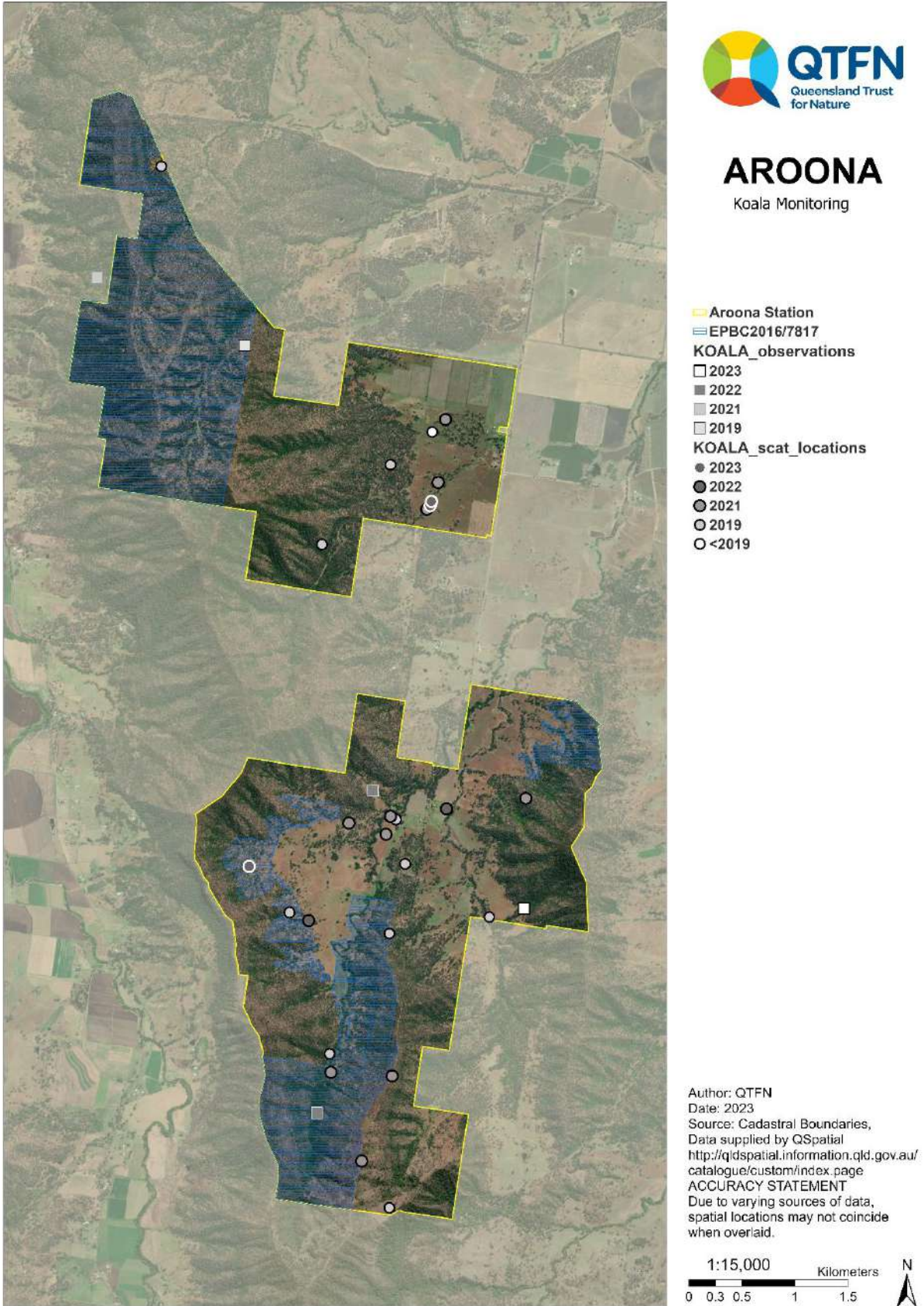### 2.3.1   Management actions and species occurrence

Opportunistic scat surveys were conducted across the reporting period (Map 4).

One koala was observed on Aroona Station via motion sensor camera trap (Station F) outside of the offset area but within contiguous habitat (Figure 2).

Figure 2. Koala observed on Aroona Station.

Map 4. Koala occurrence.

2.4   EXTENT OF WEED COVER

MANAGEMENT ACTION 1

At the commencement of site management, weed extent was be mapped across the property. This will form the basis for the targeted areas for treatment. Monitoring will occur on an annual basis and the extent and abundance of weed cover in OMU-01, OMU-02 and OMU-03 will be measured through the improvement in non-native plant cover, measured through quadrats in Habitat Quality Transects assessments. Milestone surveys in the form of Habitat Quality Transects assessment will measure the success of the weed treatment every 5 years.

Baseline weed assessments were conducted in 2021 and will be conducted annually for the duration of the offset management plan. Permanently marked transects were surveyed according to Nelder *et al* 2015 in a 100 x 10m transect (Map 5). Photo points were recorded at each transect to ensure that the progress of the site could be monitored (Appendix 3).

Weed coverage is recorded and mapped spatially at a one-hectare scale of the property (Map 6). Due to the isolated distribution of Chinese celtis (*Celtis sinensis*) and cat's claw *(Dolichandra unguis-cati),* these species are not mapped for coverage.

2.4.1   Monitoring in this period

Weed assessments continue to be conducted annually and compared to results from the baseline survey of 2021. Permanently marked transects were surveyed according to Nelder *et al* 2015 in a 50 x 10m transect. Photo points were recorded at each transect so that the progress of the site could be monitored (Appendix 2). The target weed species identified as a threatening process to koalas is *Lantana camara*. Whilst other weeds were measured for overall ecological health, the focus of the weed management is the control and eradication of L. camara, as it has the capacity to prevent koala movement and access to food and shelter trees.

The target weed species identified as a threatening process to koalas are lantana (*Lantana camara),* broad-leaved pepper (*Schinus terebinthifolius),* Chinese celtis and cat's claw. Whilst other weeds were measured for overall ecological health, the focus of the weed management is the control and eradication of these woody weeds, as they have the capacity to prevent koala movement and access to food and shelter trees, particularly in riparian corridors.

2.4.1.1   Results

Offset specific trends

Woody weed cover remains relatively stable within the offset area, despite active control. This is due to the extensive baseline coverage and re-emergence of lantana post ecological burn. Active control has seen a reduction in *Celtis sinensis* and *Dolichandra unguis-cati* to 13% and 6% respectively. *Lantana camara* remains the dominant species (100% occupancy) and occurs in varying densities within transects, whereas S*chinus terebinthifolius* and *Celtis sinensis* remain constricted to creek lines and gullies (Figure 3). This is to be expected during and post extensive wet seasons. Strategic management will be actioned to ensure control is conducted where effective. Note, surveys were conducted in March 2023. Active management has been conducted post data collection.

Property wide trends

Similarly, across the Aroona Station property woody weed cover remains stable. Due to an above average rainfall attributed to the extensive La Nina season, woody weed growth has benefited.

2.4.2   Management outcomes

The Weed Strategy 2020-2025 outlines the principles and approach to weed management at a property wide scale. Results from this survey have informed the approach for the next five years.

A long-term contract agreement has been executed with a contractor to complete weed control across the offset area to ensure progress is made to the best of our ability, to achieve year 5 milestones. Due to the large scale at which works are conducted, multiple work zones are active across the lowlands and upland forests to allow for flexibility and adaptability to weather conditions. Management during this reporting period is shown in Map 6 with progress made along Gehrke Creek alongside revegetation and moving into the high country starting from the north.

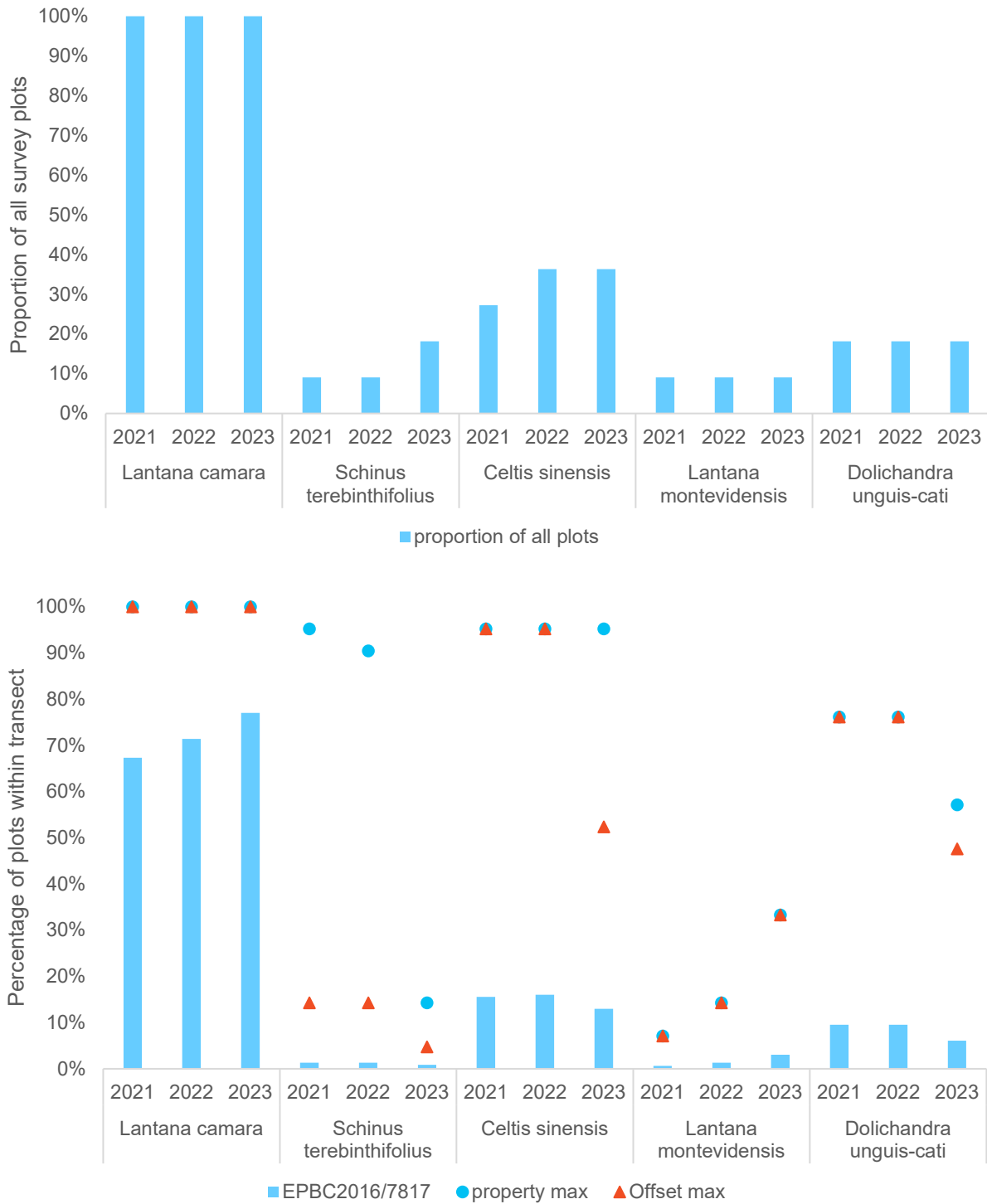Retreatment of isolated patch of *Lantana montevidensis* is required.

Figure 3. The percentage of the weed transects across EPBC 2016/7817 offset site with weed cover (top), and the average percent coverage of all transects across offset site (bottom) with maximum coverage across whole of property (red circle) and offset specific (orange triangle).

Map 5. Weed extent across the property, the larger the circle the higher the density within the transect sampled, x= absent.
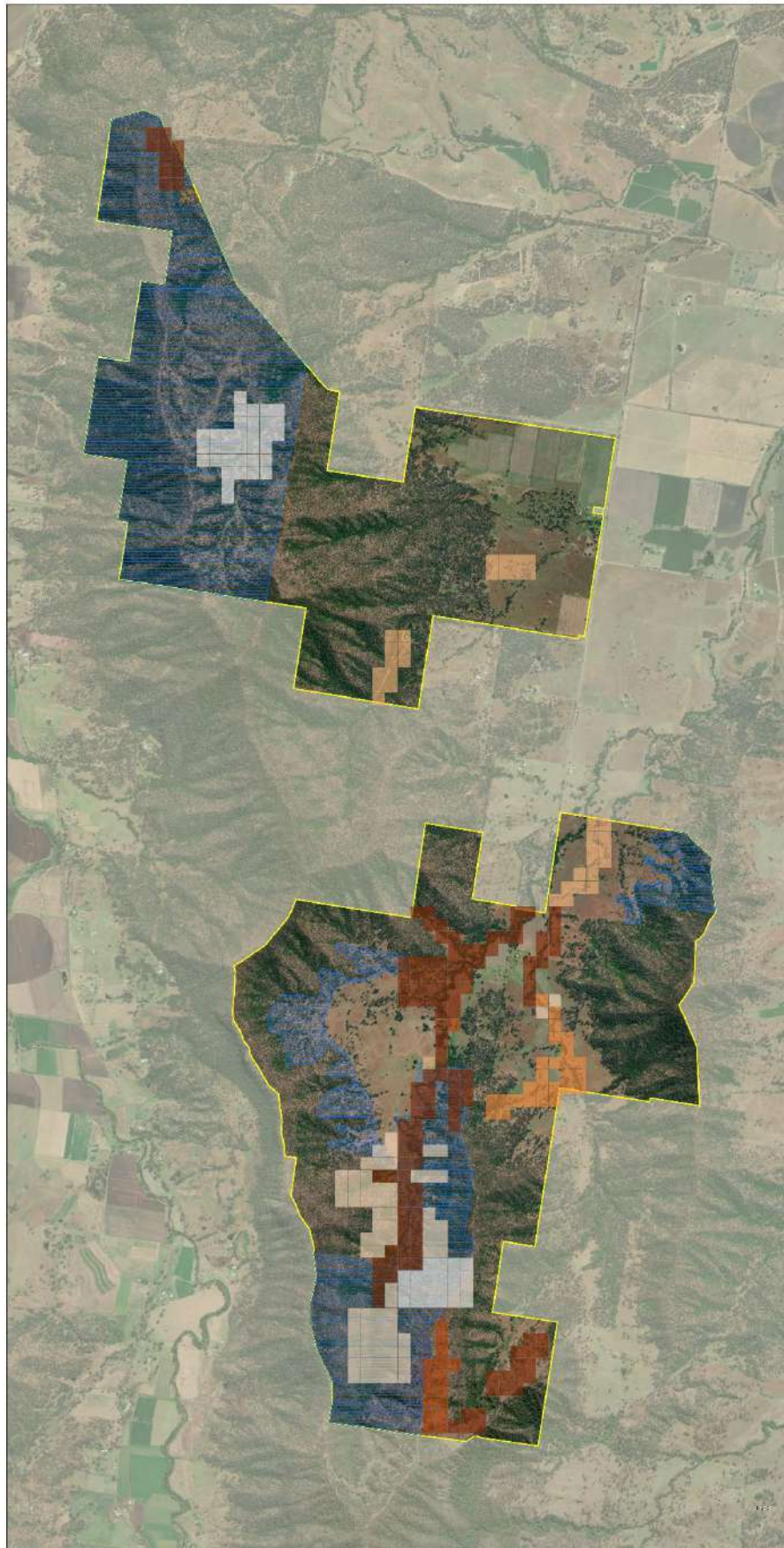

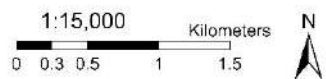| Lantana | Broad-leaved pepper | Chinese Celtis | Cat's Claw |

Map 6. Weed treatment

2.5   NON-NATIVE PREDATORS AND HERBIVORES

MANAGEMENT ACTION 6

Wild dogs/dingoes, feral foxes and feral cats are restricted invasive animals under the *Biosecurity Act 2014* (QLD), and do not require specific control measures. It states, "The Act requires everyone to take all reasonable and practical steps to minimise the risks associated with invasive animals under their control". The adaptive predator control measures, rigorous monitoring and coordinated landscape approach that will be implemented at the offset site go far beyond the minimal requirement of reducing the risks associated with invasive animals.

As part of the management program, baseline monitoring will be undertaken on the property and a relative abundance index (RAI) calculated for wild dogs and foxes. Where post control surveys indicate that there has been a recurrence of wild dogs and/or foxes on the site, control measures will be actioned using methods (e.g. controlled shooting and/or trapping) as determined by a pest control professional in consideration of these monitoring results.

Predator home ranges exceed the Aroona Station property area, and the EPBC 2016/7817 offset area within. Therefore, as predator abundance and activity can be influenced by multiple factors including, seasonality, food availability and neighbouring predator control works, it is important to provide context for the surrounding landscape of the offset area.

Predator management on Aroona Station has occurred since 2018. To date, dingoes (*Canis lupus*), foxes (*Vulpes vulpes*) and cats (*Felis catus*) have all been recorded on-site in camera trapping, from visual sightings or from the collection of scats. A property wide scale assessment was conducted to ensure that detection of predator activity is maximised, to reflect the large home ranges, and best inform management actions. Pursuant to the Offset Management Plan, this will best inform the property wide predator control program. Regardless, specific attention will be paid to individuals observed on camera trap stations directly within the offset area.

Table 5. Average foraging range for three target predators ascertained from the literature (Harden 1985; Meek 1999; Meek & Saunders 2000; Molsher et al. 2005; McNeill et al. 2016), and the camera trap stations that therefore assess the RAI of each species within.

Species	Radius	Camera stations with territories that overlap EPBC 2016/7817
Dog (*Canis lupus*)	2 to 3km	a/b/c/d/e/f/g/h/i/j/k/l/m/n/o/p/q
Cat (*Felis catus*)	600m? to 1km	a/b/c/d/e/f/g/h/i/j/k/l/m/n/o/p/q
Fox (*Vulpes vulpes*)	~900m	a/b/c/d/e/f/g/h/i/j/k/l/m/n/o/p/q

2.5.1   Monitoring in this period

Feral predator abundance has been monitored on Aroona Station using two methods since 2018: camera trapping and scat searches.

Given that the movement range of these feral predators extends beyond the specific offset area, RAI are presented including the data from any camera trapping station with projected territories of any feral animal that overlap with the offset area. Observations specific to cameras within the offset area are presented in maps.

The home-ranges of non-native predators; dogs, foxes and cats in both peri-urban and agricultural are presented in Table 7. Operating under this assumption, we placed a network of 16 camera trapping stations that ensured coverage of the entire property (Map 8). Cameras were deployed for a 40-day trapping interval in each season, and all photos were databased, categorised and analysed using Camelot (©WildLabs, 2018), with an independence threshold of 10min.

Camera trapping is performed biannually to account for seasonal variation in predator behaviour. To demonstrate a significant reduction in non-native predator numbers over time within the offset site, the response variables able to be used are discussed below.

Metric 1 –RELATIVE ABUNDANCE INDEX - a relative measure of abundance based on the frequency and duration of time each predator species is recorded on camera i.e. how many are there relative to survey time.

Metric 2 –OCCUPANCY – the proportion of camera trapping stations at which a predator was detected i.e. how many locations that had evidence of predators in the area.

2.5.1.1   Results

Climate and weather conditions influence the occupancy of feral animals. During dry weather periods, animals display a lower occupancy score as they (and their prey) are constrained to water sources. During wet weather periods, the occupancy score is likely to increase as the animals find prey across the landscape.

Dogs (*Canis lupus familiaris/dingo*), foxes (*Vulpes vulpes*) and feral cats (*Felis catus*) have been recorded within the Aroona Station property.

A significant increase in pest fauna relative abundance is observed for the winter 2023 season, despite active management and removal of wild dog individuals. Multiple contributing factors may explain this peak, including bottom up factors such as weather, climate, prey abundance, or top down factors relating to behavioural response to lethal control actions.

Under the macropredator release hypothesis, an increase in wild dogs would suggest a suppression of meso-predators such as the fox and feral cat. However, this is not observed within this sampling season, as an increase in activity was observed across all species. This inter-species trend may be attributed to a high abundance of prey available and little competition between the predatory species (Castle et al 2021). Scat analysis demonstrates a low diversity of prey species consistent with findings from Tatler et al. 2019 stating that during boom seasons with abundant prey, wild dog diet become less diverse and includes small mammals. It should be known this interpretation is limited by a low sample size analysed. Typically, wild dogs predate on medium to large mammals, whereas foxes will consume small to medium mammals (Davis et al. 2015, Castle et al. 2021). Northern brown bandicoots contributed to a large portion of wild dog diet, according to the scat analysis during this period. This is consistent with camera trap observations suggesting a seasonal boom in the species population, not atypical for this species ecology in response to resource availability and rainfall. Despite a below average rainfall year, resources remain adequately. As we are seeing an increase in activity (high RAI scores) across all predatory species and a low diversity diet it is possible the increase is related to an abundance of easy prey following the past extensive wet seasons.

During this monitoring period, several wild dogs were actively removed from the population. Wild dogs are territorial and form packs of varying sizes from breeding pairs to family groups. Pack dynamics facilitate hunting success, with functional packs of individuals working together able to hunt larger prey species (i.e. kangaroos, cows). Fragmentation of this social structure may cause changes to their behaviour, including switching to alternative prey that is easier to capture, or increased activity of young individuals seeking to claim empty territories.

It cannot be said with certainty what caused this increase in pest fauna abundance, but it is likely that a combination of the above factors contributed. It is to be noted that no threatened species, including koala were present in scat samples, nor any predator related mortality of koalas observed.

Active management of pest fauna species will continue, and monitoring will continue to determine if this is a short-term response to active management or seasonal factors.

Pigs (*Sus scrofa*) have also been observed in the property, mimicking RAI and occupancy trends of non-native predators. There was minimal evidence of pigs in the revegetation area and no disturbance observed. Management action will continue to be taken.

Native Fauna Observed

A high abundance of wallabies was observed with active breeding, particularly red-neck wallaby (*Notomacropus rufogriseus*) and whip tail wallaby (*Notomacropus parryi*). Additionally, small-medium mammal activity is high represented by long-nosed bandicoots (*Perameles nasuta*), northern brown bandicoots (*Isoodon macrourus*), brush-tailed phascogale (*Phascogale tapoatafa*), common brush-tailed possum (*Trichosurus vulpecula*) and short-eared brush-tail possum (*Trichosurus caninus*). A diversity of native birds was also observed. One koala (*Phascolarctos cinereus*) was observed at Camera F (see Section 2.3 for more information).
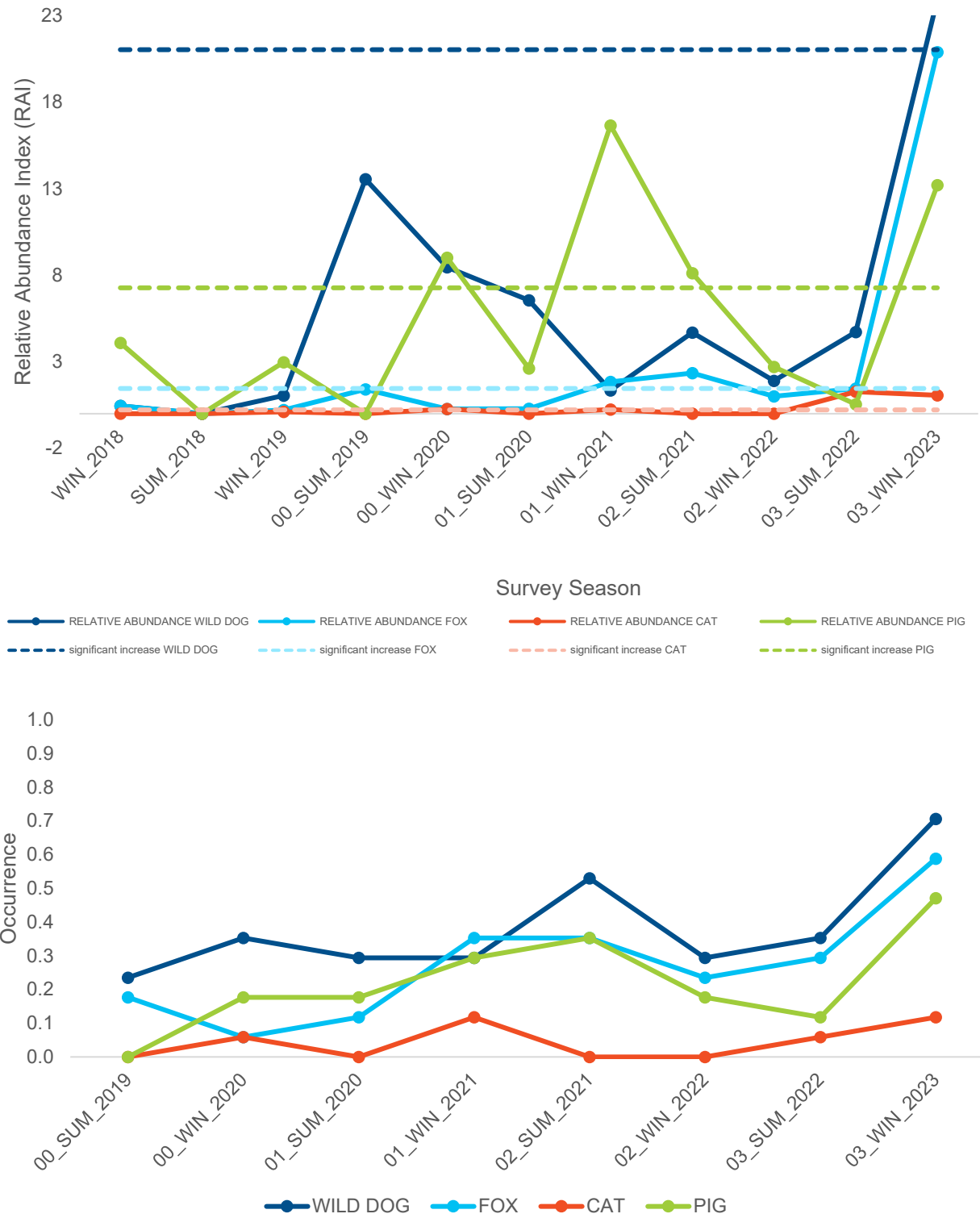
Figure 4. Relative Abundance Index (RAI) and Occupancy of predators across camera traps, and confidence limit threshold to show future deviations from the baseline.

Table 6. Occupancy, the number of camera traps with a 1km radius that overlaps with the EPBC2016/7817 offset area.

SEASON	Dogs	Foxes	Cats	Pigs
00_SUM_2019	3	2	0	0
01_WIN_2020	6	1	0	0
02_SUM_2020	4	2	0	2
03_WIN_2021	3	4	1	4
04_SUM_2021	5	2	0	2
05_WIN_2022	2	1	0	2
06_SUM_2022	4	4	1	2
07_WIN_2023	8	6	1	5

2.5.2   Supplementary scat searches

Throughout the year, predator scat is collected opportunistically across the property. In addition to opportunistic scat collection, scat is collected during bi-monthly traverses of the Aroona Station property, roadsides and creeks.

Scats are GPS located and collected for laboratory dietary analysis. Scat identification and dietary analysis gives an indication of species and predation trends over time, however, is not considered a metric in relation to accurately monitoring predator abundance.

Predator scat analysis

To date, predator scat analysis shows no presence of koala in any predators' diet on Aroona Station. In the past seven years, macropods have been the main fauna group present in predator scat, followed by small native mammals, birds and reptiles. Several non-native mammals were found in scat including goat and pigs since 2017.

QTFN have been actively collecting and analysing predator scat on Aroona Station since 2018 (Figure 5).

Predator scats continue to be found across the Aroona Station site and within the EPBC 2016/7817 offset area (Map 8). Although both foxes and dogs remain on the site, predatory scats collected during this reporting period suggest that neither predator is consuming koala, and the diets of most individuals is composed of macropods and small mammals (Table 8).

2.5.3   Management outcomes

A pest fauna management contractor is being engaged with a primary focus on reducing the number of dogs and foxes. Biannual monitoring using camera traps will continue, and the feral animal contractor will target the creek line within the offset area that regularly captures predators.

During January to March, five feral dogs (two male, three female) were dispatched alongside several feral pigs. Another female wild dog was dispatched during July to September alongside two feral pigs.

The inherent nature of controlling introduced predators over an unfenced site means some years will see an increase in numbers, regardless of measures put in place to control them.
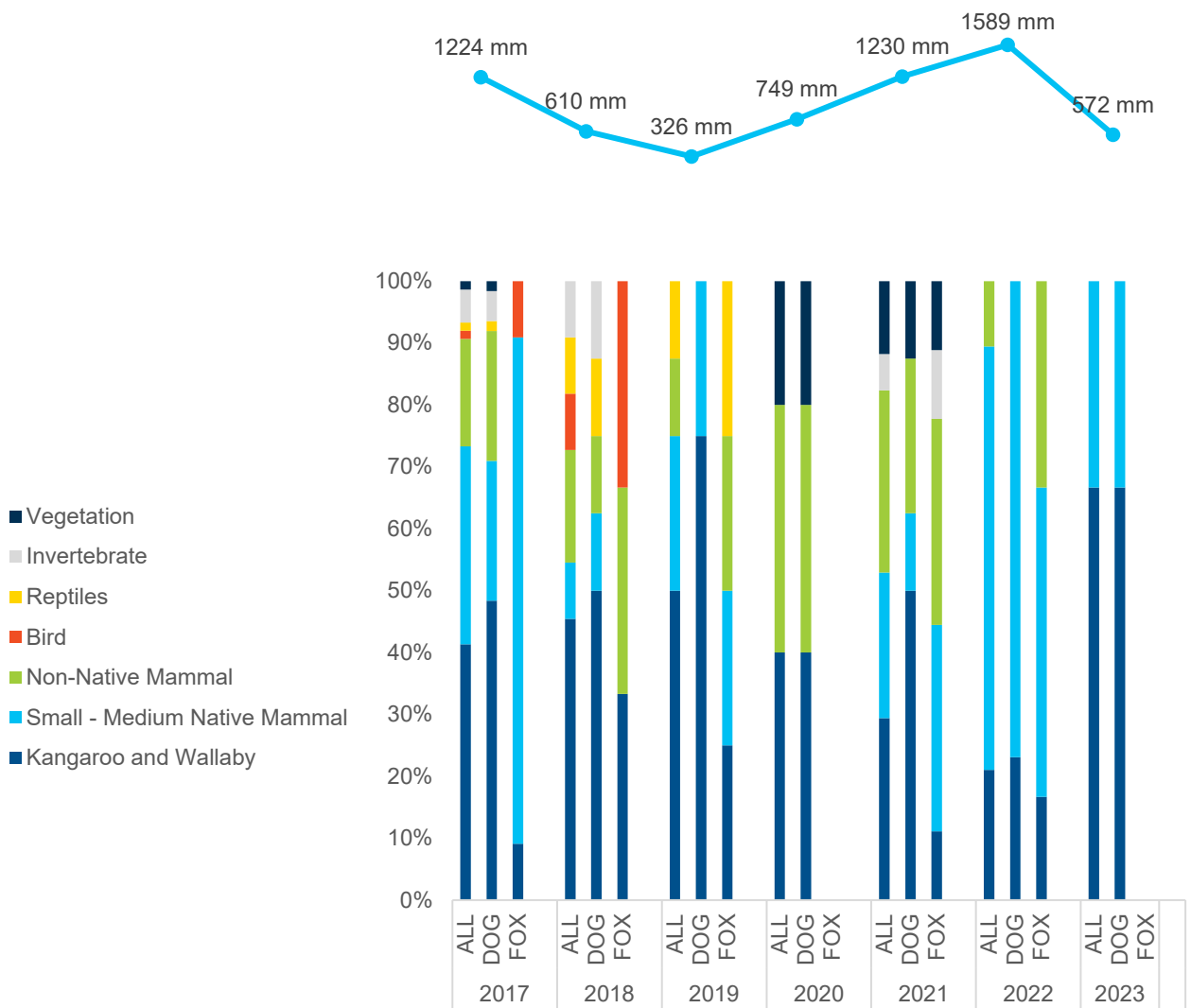
Figure 5 Long term predator diet analysis, percentage of prey type found in scat across years with annual average rainfall (points). i.e. in 2019, all reptile prey was only recorded in fox scat. No fox scats collected in 2020 or 2023.

Table 7. The types of prey item identified from fox and dog scat collected within the site from August 2022 to August 2023, sorted by the frequency of individual predators whose scat contained each prey type (e.g. Northern brown bandicoot were found in 40% of the 5 scats collected.

Common name	Species name	Frequency
Northern Brown Bandicoot	*Isoodon macrourus*	0.4
Swamp wallaby	*Wallabia bicolor*	0.4
Eastern Grey Kangaroo	*Macropus giganteus*	0.2
Red-necked Wallaby	*Macropus rufogriseus*	0.2

2.6 KOALA MORTALITIES ATTRIBUTABLE TO NON-NATIVE PREDATORS

MANAGEMENT ACTION 6

No koala mortalities caused by non-native predators was recorded in the last monitoring season.

2.6.1   Management outcomes

An inventory is kept for any incidences relating to koala mortalities attributable to non-native predators.

Map 7. Non-native predators and herbivores monitoring

2.7   STOCK MANAGEMENT

MANAGEMENT ACTION 9

2.7.1   Cattle grazing monitoring

Cattle grazing for the purpose of fuel hazard management was conducted in line with the decision matrix provided in the Offset Management Plan.

Fuel hazard assessments demonstrated that the near surface (grasses) fuel layer contributed the greatest to the high, very high and extreme overall ratings. The biomass in this layer is a significant food source for cattle before it cures and contributes further to fuel loads. When managed correctly, it can be reduced without impact on native recruitment.

- Frequency, duration and location of grazing, and stock density for each grazing period;

Where fuel hazard assessments scored high and very high, cattle were moved into offset areas until the fuel hazard was reduced. Only one grazing period was conducted between fuel hazard assessments. Cattle are excluded from revegetation areas. Some paddocks are large areas and grazed with open gates between adjacent paddocks. Consequently, grazing pressure is often dispersed across a large area for a longer grazing period. Grazing during the winter season provided beneficial in reducing fuel loads before pasture cured. These paddocks will be rested over the summer growing season.

A summary is provided in Table 9.

- The timing and frequency of monitoring undertaken; and

Fuel hazard assessments were conducted bi-annually, winter and summer (Table 9). The year 2023 has experienced below average rainfall contributing to growth and drying out of the near surface layer, reflected in the second assessment. Higher fuel hazard ratings are attributed to growth in the near surface fuel layer. Monitoring of grazing is conducted between hazard assessments and cattle removed when fuel hazard sufficiently reduced.

Details of any injury or mortality of individual koalas;

No evidence of koala injury or mortality caused by cattle grazing was recorded.

- Details of corrective actions already undertaken and/or proposed to be undertaken in the event of injury or mortality of individual Koalas as a result of grazing, and/or if monitoring demonstrates the outcomes under 15-18 are not achievable.

If it occurs in the future, cattle will be removed from the offset area and the cause of interaction will be investigated.

If target vegetation composition is negatively affected by cattle grazing, implement adaptive management actions which may include additional cattle exclusion areas, additional re-vegetation / rehabilitation in areas negatively affected by cattle grazing, reduce intensity of grazing for fuel reduction purposes, and exclude cattle from the offset area.

2.7.2   Management outcomes

Fauna friendly stock exclusion fencing installed around Operational Management Unit 3 areas are monitored and maintained. No wildlife incidents or mortality have been recorded with the newly installed fences.

Fuel hazard assessments will continue to be conducted.

Table 8. Cattle management summary.

Paddock	FHA	Cattle Hazard Reduction Triggered	Cattle Moved In	Cattle Moved Out	Head of Cattle	Days grazing	FHA	Cattle Hazard Reduction Triggered	Cattle Moved In	Cattle Moved Out	Head of Cattle	Days grazing
Basils	H		No grazing permitted in OMU3				VH		No grazing permitted in OMU3			
Desjardin	H		No grazing permitted in OMU3				H		No grazing permitted in OMU3			
Gerhke	H	Yes				0	H	Yes				0
Meiers	H		No grazing permitted in OMU3				VH		No grazing permitted in OMU3			
Mountain	H	Yes	26/01/2023	16/04/2023	156	80	L	No	10/08/2023	26/09/2023	70	47
Townson	H	Yes	7/05/2023	26/09/2023	70	142	H	Yes				
Mt Grey	H	Yes					VH	Yes				
Spring	H	Yes	10/05/2023	18/09/2023	60	131	H	Yes				
Wensley	H	Yes	23/03/2023	10/04/2023	136	18	VH	Yes	28/09/2023	13/10/2023	165	15

2.8   FIRE MANAGEMENT

MANAGEMENT ACTION 2 and 3

The threats to koalas from fire was addressed in accordance with OMP by referring to the 'Aroona Station Fire Management Plan'.

The Aroona Station Fire Management Plan divides the property into Fire Management Zones: Land Management Zones, Exclusion Zones and Asset Protection Zones. Within the Land Management Zones, the landscape is broken up into subzones or Fire Management Areas (FMAs) according to practicable containment lines. The Fire Management Plan details burning intervals recommended for these FMAs.

2.8.1   Management outcomes

One ecological burn was conducted on Aroona Station, within the offset area, resulting in a patchy mosaic (Map 9).

Fuel hazard assessments demonstrate high to very high fuel loads, with over 50% exceeding a 'High' hazard score. Ratings were variable within and across offset management areas. This is attributed to high surface fuel loads caused by increased grass growth during the wet season. Fuel loads remain high in areas of revegetation due to extensive grass growth. These areas cannot be managed with grazing or ecological burns, therefore, the surrounding areas are actively managed to reduce risk.

Fire break trails were inspected and maintained at regular intervals. A new fire break trail was installed in the south-eastern portion of the property to further improve ability to implement ecological burns, defend wildfires should they occur, and protect active revegetation zones.
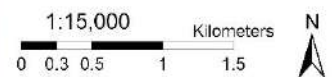
Map 8. Fire management within offset area.
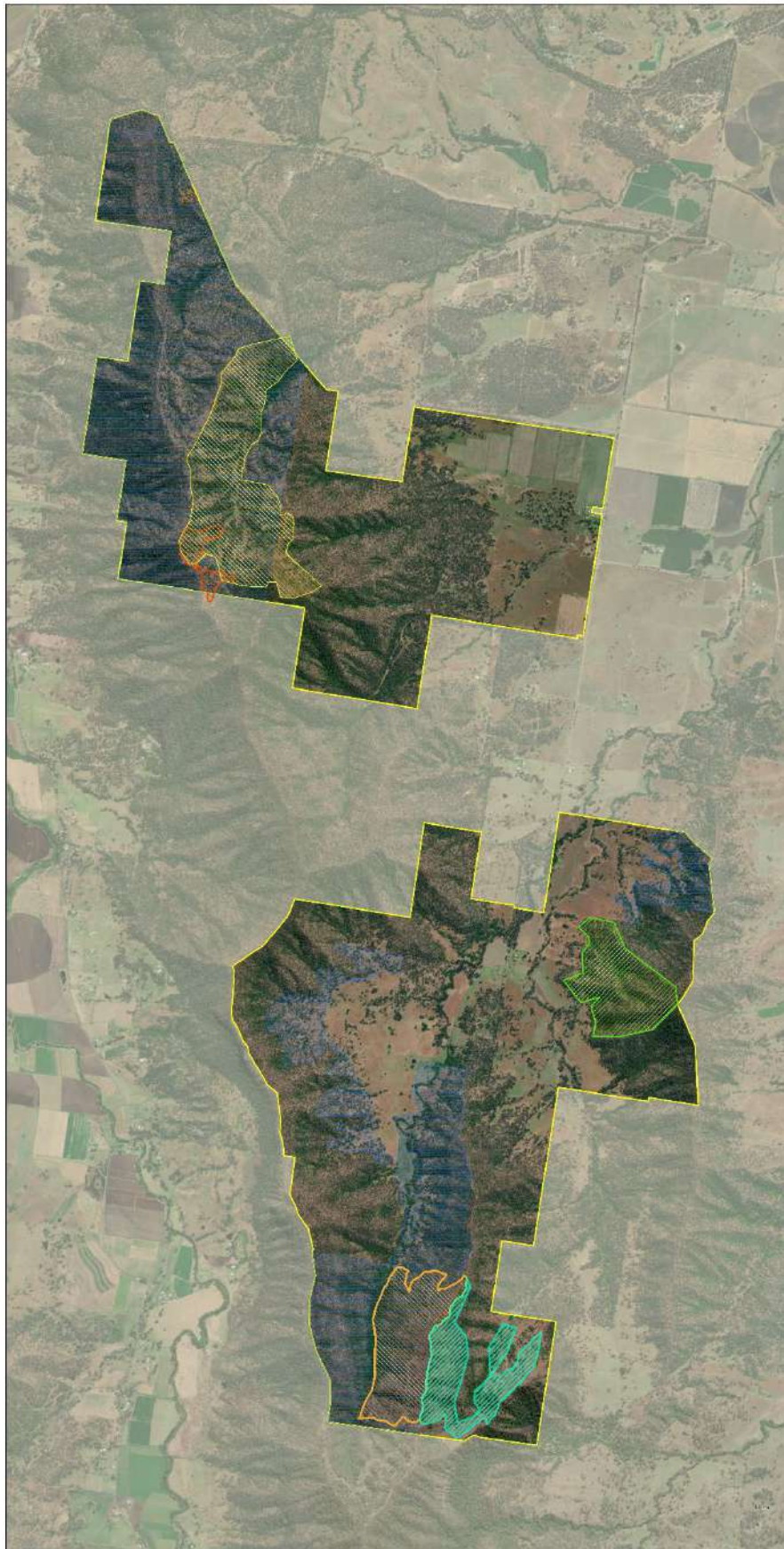
REFERENCE LIST

BoM, 2023, Climate statistics for Australian locations: Summary statistics, UNIVERSITY OF QUEENSLAND GATTON. Bureau of Meteorology, Australian Government, Canberra, viewed 5th December 2023, < http://www.bom.gov.au/climate/averages/tables/cw_040082.shtml >

Castle, Geoff & Smith, Deane & Allen, Lee & Allen, Benjamin. (2021). Terrestrial mesopredators did not increase after top-predator removal in a large-scale experimental test of mesopredator release theory. Scientific Reports. 11. 18205. https://doi.org/10.1038/s41598-021-97634-4 .

Davis, N. E., Forsyth, D. M., Triggs, B., Pascoe, C., Benshemesh, J., Robley, A., Lawrence, J., Ritchie, E. G., Nimmo, D. G., & Lumsden, L. F. (2015). Interspecific and geographic variation in the diets of sympatric carnivores: dingoes/wild dogs and red foxes in south-eastern Australia. PloS one, 10(3), e0120975. https://doi.org/10.1371/journal.pone.0120975

DME 2008, Queensland Geological Mapping (polygonised vector) Data: Regional & 1:100 00 Sheet areas, Department of Mines and Energy, Queensland

DoE 2014. Protected Matters Search Tool. Department of the Environment, Canberra, viewed 2nd June 2017, <http://www.environment.gov.au/epbc/pmst/index.html>

EPBC 1999, Australian Government Department of the Environment, Canberra.

Fitzgibbon, S. & Ellis, W. (2015) Koala Assessment at the Queensland Trust for Nature Koala Crossing property. Koala Ecology Group. The University of Queensland, Brisbane.

Harden, R.H. (1985). The ecology of the dingo in north-eastern New South Wales. I. Movements and home range. Australian Wildlife Research, 12(1), 25-37.

McNeill, A. T., Leung, L. K. P., Goullet, M. S., Gentle, M. N., & Allen, B. L. (2016). Dingoes at the doorstep: Home range sizes and activity patterns of dingoes and other wild dogs around urban areas of north-eastern Australia. Animals, 6(8), 48. **https://doi.org/10.3390/ani6080048**

Meek, P. D. (1999). The movement, roaming behaviour and home range of free-roaming domestic dogs, Canis lupus familiaris, in coastal New South Wales. Wildlife Research, 26(6), 847-855. DOI:10.1071/WR97101

Meek, P. D., & Saunders, G. (2000). Home range and movement of foxes (*Vulpes vulpes*) in coastal New South Wales, Australia. Wildlife Research, 27(6), 663-668. DOI:10.1071/WR98030

Meek PD, Ballard G and Fleming P 2012, 'An Introduction to Camera Trapping for Wildlife Surveys in Australia' Pest Smart Toolkit publication, Invasive Animals Cooperative Research Centre, Canberra, Australia.

Molsher, R., Dickman, C., Newsome, A., & Müller, W. (2005). Home ranges of feral cats (*Felis catus*) in central-western New South Wales, Australia. Wildlife Research, 32(7), 587-595. DOI:10.1071/WR04093

Phillips, S., Callaghan, J. (2011). The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*. Australian Zoologist, 35(3), 774-780. https://doi.org/10.7882/AZ.2011.029

Rhodes, J. R., Beyer, H. L., Preece, H.J. and McAlpine, C.A. (2015) South East Queensland Koala Population Modelling Study. UniQuest, Brisbane, Australia.

Tatler, J., Prowse, T.A.A., Roshier, D.A., Allen, B.L. and Cassey, P. (2019), Resource pulses affect prey selection and reduce dietary diversity of dingoes in arid Australia. Mam Rev, 49: 263-275. https://doi.org/10.1111/mam.12157

Woosnam-Merchez O, Cristescu R, Dique D, Ellis W, Beeton R, Simmonds J and Carrick F (2012), 'What faecal pellet surveys can and can't reveal about the ecology of koalas Phascolarctos cinereus', Australian Zoologist, Vol. 36 pp. 192-200.

APPENDIX

Appendix 1. Revegetation Photo monitoring points

ID	Latitude	Longitude
Zone 1 – Gehkre		
Gerhke_photopoint1	-27.837921	152.410891
2021	2023	

Gerhke_photopoint 2	-27.843501	152.408309
2021	2023	

Gerhke_photopoint 3	-27.837935	152.405464
2021	2023	

Gerhke_photopoint 4	-27.853073°	152.413571°
2021	**2023**	

Changed to aerial to better show planting

Gehrke_aerialphoto1	-27.837921	152.410891
2021	**2023**	

Gehrke_aerialphoto2	-27.848592	152.409315
2022	**2023**	

Gehrke_aerialphoto3	-27.830591	152.412327
2022	**2023**	

Gehrke_aerialphoto4	-27.843218	152.408263
2021	**2023**	

Zone 2 – Basils Gorge

BasilGorge_photopoint2	-27.8630402	152.406035
2021	**2023**	

BasilGorge_photopoint3	**-27.857305**	**152.410207**
2021	**2023**	

BasilGorge_photopoint4	**-27.857305**	**152.410207**
2021	**2023**	

Zone 7 – Middle Gehrke

MidGehrke_photopoint1	**-27.835259**	**152.402102**
2021	**2023**	

MidGehrke_aerialphoto1	-27.835259	152.402102
2021	**2023**	

Zone 8 – Upper Gehrke

UpperGehrke_photopoint1	-27.83133471000	152.40722426000
2021	**2023**	

UpperGehrke_photopoint2	-27.83133471000	152.40722426000
2021	**2023**	

UpperGehrke_aerialphoto1	-27.83133471000	152.40722426000
2021	**2023**	

Zone 9 – Lower Gehrke

LowGehrke_photopoint1	-27.8429224	152.4064424
2021	**2023**	

LowGehrke_photopoint2	-27.8424026	152.4068609
2021	**2023**	

LowGehrke_aerialphoto1	*-27.8429224*	*152.4064424*

2021   **2023**

Appendix 2. Weed Transect Monitoring Photos

Transect #4

Transect #6

Transect #7

Transect #8

2021

Transect #BC03

2021

Transect #BC04

Transect #BC06

2021

Transect #BC13

Transect #BC20

Transect #BC22

Appendix 3. Images from wildlife monitoring cameras

Dogs – *Canis lupus*

| Summer | Winter |

Fox – *Vulpes vulpes*

| Summer | Winter |

Pig – *sus scrofa*

| Summer | Winter |

Cat – *Felis catus*

| Summer | Winter |