



Double Jump Road Residential Estate Development

Preliminary Documentation Report

EPBC Referral 2024-09825

Volume 3.6

Appendix 12.1

29 July 2026

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Double Jump Road Residential Development

Woolshed Offset Management Plan

EPBC 2024/09825

28 August 2026

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Name	Position	Date
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1. Introduction

1.1 Background

Sutgold Pty Ltd (**Applicant**) will be required to deliver an environmental offset as compensation for residual significant impacts to habitat for Matters of National Environmental Significance (**MNES**) as part of the Double Jump Road Residential Development (**the Proposed Action**).

An Offset Management Plan (**OMP**, this document), prepared in accordance with National Environmental Protection Agency (**NEPA**) formerly the Department of Climate Change, Energy, the Environment and Water (**DCCEEW**) *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (EPBC Offset Policy)*, is a requested requirement of the Preliminary Documentation submission for EPBC Application 2024/09825 (refer Table 3 of the PD Report).

This OMP is a revision of a previously submitted OMP for the Proposed Action. Since the previous OMP submission, it has been resolved via NEPA for an additional offset area be incorporated as a part of the Proposed Action to better resolve the liability for significant impacts to MNES.

1.2 Purpose of Offset Management Plan

The overarching purpose of this draft OMP is to support the Preliminary Documentation Report, Version 4.0 (28 South Environmental, 2026) submission for EPBC Application 2024/09825. This OMP provides details of:

- The environmental offset required to be delivered by the Proponent as a consequence of anticipated residual significant impacts of the Proposed Action
- The proposed Offset Area, including location, size, condition, and relevant ecological/species values present
- How the nominated Offset Area will be legally secured
- The nature of the conservation gain, including completion criteria, to be achieved over the nominated offset period for relevant MNES on the proposed Offset Area
- Land management actions required over the offset period to support progress towards achieving the completion criteria
- A monitoring program required to measure progress towards achieving the completion criteria, including corrective actions
- Adaptive management, including corrective actions, and reporting requirements for the duration of the offset period.

As discussed above, through discussion with NEPA, this Offset is now provided in tandem with a separate offset area to appropriately resolve significant impacts to MNES.

1.3 Limitations

This OMP is to be read in conjunction with the Preliminary Documentation Report (**PD Report**), Version 4 (28 South Environmental, 2026). It (OMP) generally aligns with relevant principles and sections of the Environmental Management Plan Guideline (Department of Environment, 2014).

Values that have been adopted for use in calculations for Modified Habitat Quality Assessment (**MHQA**) for Koala (*Phascolarctos cinereus*), using the *Offsets Assessment Guide* (Department of Environment, 2012), are introduced and justified within **Section 7.10.2** of the Preliminary Documentation Report (28 South Environmental, 2026). Values that have been adopted for use in calculations for the Grey-headed Flying-fox Alternate Habitat Quality Assessment (**MHQA**) which is an adaption of *Offsets Assessment Guide* (Department of Environment, 2012), are

introduced and justified within **Section 7.10.2** of the Preliminary Documentation Report (28 South Environmental, 2026). Projected Habitat Quality value changes over the proposed 20 year offset, outlined in this document (OMP) reflect implementation of the specific management actions, interventions and performance criteria listed in this OMP (**Section 6**).

Survey methods deployed over the Offset Area incorporated standard practices from the *Guide to Determining Terrestrial Habitat Quality: A toolkit for assessing land based offsets under the Queensland Government Offsets Policy Version 1.2* (Department of Environment and Science, 2020) combined with the specific stocking rate factors from the *How to Use the Offsets Assessment Guide* (Department of Environment, n.d.).

1.4 Descriptive Terms and Nomenclature

Key descriptive terms that have been adopted throughout this OMP to describe aspects of offset delivery are presented in **Table 1**.

Table 1: Definitions of Key Descriptive Terms Used in this OMP

Term	Definition
The Proponent	Sutgold Pty Ltd.
Proposed Action	Double Jump Road Residential Development
Project Area	The Proposed Action extends across 38.1 hectares (ha) of four land parcels: ▪ Lot 1 on RP86773 (Lot 1); ▪ Lot 2 on RP86773 (Lot 2); ▪ Lot 5 on SP293881 (Lot 5); ▪ Lot 23 on SP325035 (Lot 23); and ▪ Lot 2 on RP165178 (Lot 2).
Disturbance footprint	The extent of clearing and development within the bounds of the impact site
Offset property	528-530 Woolshed Creek Road, Woolshed QLD (Lot 236 on CH312334)
Offset Area	Area to be secured for delivery of offset within the bounds of the offset property
Offset period	20 years from the commencement of offset

1.5 Responsible Entities

The roles and responsibilities of relevant entities are provided in

Table 2. The roles presented here exclude the regulatory role undertaken by the Commonwealth Government for the assessment and approval of the offset and the Queensland Government for registering and declaring the Voluntary Declaration (**VDEC**) over the nominated Offset Area.

Table 2: Roles and Responsibilities of Relevant Entities

Role:	Proponent	Entity:	Sutgold Pty Ltd.
Responsibilities:			
- Preparation and lodgement of the Legally Binding Mechanism (see Section 2) with the Queensland Government. - Obtain and comply with all conditions of the EPBC approval for the Proposed Action. - Enter into a commercial agreement with an Offset Provider for the delivering of EPBC compliant offsets. - Fund all management obligations / actions / tasks as listed in the approved OMP at the offset area for the life of offset. - Report on the EPBC approval in Annual Compliance Reports or as triggered within conditions.			
Role:	Environmental Consultant	Entity:	28 South Environmental (or future independent consultant)
Responsibilities:			
- Collection, interrogation and analysis of robust scientifically justified survey data for use as the baseline values at the offset area. - Repeating surveys as per the currency in this Offset Management Plan or as per conditions of approval for measuring improvement outcomes. - Assist with the preparation and lodgement of the Legally Binding Mechanism (see Section 2) with the Queensland Government. - Audit offset reports against approval conditions as part of the Annual Compliance Reports for the Proposed Action.			
Role:	Offset Provider	Entity:	Cherish the Environment Foundation Limited
Responsibilities:			
- All on-ground implementation of the OMP. - Monitoring and reporting on OMP actions, tasks and outcomes. - Appointment of relevant experts or experienced contractors to undertaken specified tasks as required by the OMP. - Corrective actions for any non-compliance activities. - Review, amendment and adaptive management changes of the approved OMP over the life of the offset.			

The Woolshed Offset will be provided to resolve significant residual impacts to Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) habitat as a part of the Proposed Action. This Offset is being provided in addition to another offset proposed to resolve the liability for significant residual impacts at 160 McGearys Road, Thagoona (Thagoona Offset Area). The Woolshed Offset Area will be subject to detailed offset delivery works, including assisted regeneration through extensive weed removal and supplementary planting in areas of existing regulated vegetation.

2. Legal Security of Proposed Woolshed Offset Area

Within 18 months of the Commencement of the Proposed Action, the Approval Holder will propose to NEPA to place a covenanted biodiversity offset area, registered on title (under the *Land Titles Act 1994* (Qld) or *Land Act 1994* (Qld)) over the Woolshed Offset Area. This is a protective mechanism ensuring protection in perpetuity. If NEPA approve of this mechanism, a covenant will be finalised over the offset.

A Voluntary Declaration (**VDEC**), the highest level of protection under the *Vegetation Management Act 1999* (Qld) (**VM Act**) will be obtained for the offset. Once gazetted the VDEC will ensure that the Woolshed Offset Area is statutorily secured under a Regulated Category A designation, until the offset achieves remnant status; the OMP will be the management document for achieving the ecological benefit under State legislation. This VDEC will be established prior to the commencement of the Action.

VDECs afford protection of the Offset until the ecological benefit prescribed by the management is achieved (i.e. they 'time out'). Beyond this, the offset is transferred to Regulated Category B vegetation, to which all management exemptions and accepted clearing provisions under State Regulations would apply. To ensure the Offset is preserved in perpetuity for ecological benefit, the Covenant under the *Land Titles Act 1994* (Qld) or *Land Act 1994* (Qld) is necessary.

VDECs whilst current and Covenants afford the same protection level as National Park in Queensland and provide NEPA with a higher level of confidence that the offset will be protected for the duration of the impacts associated with the proposed action. Further, prior to expiry of the VDEC the Offset Provider – Cherish the Environment Foundation (**Cherish**) will seek to have it incorporated into Ipswich City Council's conservation estate.

The Proponent (Approval Holder) or their engaged provider will be responsible for the delivery and management of offset works during the establishment and through the 20-year maintenance period and per any other Conditions of Approval. Upon the completion of works the offset will be retained in perpetuity; or, if desired by Ipswich City Council (**ICC**) (or the Queensland Government), the land may be gifted back for protection and environmental conservation purposes upon successful completion of relevant offset goals and requirements outlined.

3. Project Area

The following section provides a high-level summary of the Proposed Action and the MNES that have been identified, through assessment, as subject to residual significant impact due to the Proposed Action.

3.1 Project Area and Proposed Action

A summary of the Proposed Action is provided in **Table 3**. Further details on the Proposed Action, including timing, staging and infrastructure components, are provided in **Section 2** of the Preliminary Documentation Report (28 South Environmental, 2026).

Table 3: Summary of the Impact Site and Proposed Action

Item	Detail	
EPBC Number	2024/09825	
Project Name	Double Jump Road Residential Development	
Proponent & ACN	Sutgold Pty Ltd	
Proposed Action	The Proposed Action comprises the development of a 294 lot, residential development, two medium density residential areas, a small commercial and retail zone, two local parks, road and infrastructure and development of ecological enhancement corridors and wildlife management infrastructure	
Project Area address	42-44, 48, 50, 52, 56 Double Jump Road, Victoria Point, Queensland	
Lot/Plan	Lot 1 on RP86773, Lot 2 on RP86773, Lot 5 on SP293881, Lot 23 on SP325035 and Lot 2 on RP165178	
Project Area	Total area: 38.22 ha; Directly impacted area: 32.57 ha	
Tenure	Freehold	
Soils (Land Zone Classifications)	Western and northern areas: Woogaroo Subgroup (RJbw) of the late Triassic / early Jurassic geological era Southern and eastern areas: Brisbane Tuff (RiF) of the Late Triassic geological era	
Vegetation communities	Total: 4.27 ha Impact: 0.79 ha Avoided: 3.47 ha	Vegetation Community: Mixed Patchy Regrowth and Remnant Broad-leaved Paperbark (<i>Melaleuca quinquenervia</i>) woodland to open forest Condition: Remnant, Regrowth, Grassland Regional Ecosystem (RE) equivalence: 12.3.6
	Total: 14.38 ha Impact: 12.94 ha Avoided: 1.44 ha	Vegetation Community: Exotic dominated pastoral grassland with scattered relict paddock trees open woodland Condition: Pastural Grassland and Scattered Open Woodland RE equivalence: 12.12.14
	Total: 19.57 ha Impact: 18.83 ha	Vegetation Community: Exotic dominated pastoral grassland with scattered veteran paddock trees forming open woodland dominated by Scribbly Gum (<i>Eucalyptus racemosa</i>) Condition: Pastural Grassland and Scattered Open Woodland

Item	Detail	
	Avoided: 0.74 ha	RE equivalence: 12.9-10.4
Disturbance footprint	32.57 ha	

3.2 MNES Impact Summary

28 South conducted likelihood of occurrence assessments of MNES that may occur on, or adjacent to the impact site. The assessment was informed by previous assessment of values in proximity to the Proposed Action, mapped vegetation communities and targeted species surveys and site assessments for habitat characteristics and quality.

Assessment of the potential impacts to MNES concluded that, after exhaustion of all reasonable avoidance and mitigation measures, residual significant impacts to habitat for the following protected matters:

- Koala (*Phascolarctos cinereus*) - Endangered: 32.57 ha new impact
- Grey-headed flying-fox (*Pteropus poliocephalus*) - Vulnerable: 32.57 ha new impact

Full details of these desktop and field assessments are provided in Section 3 of the Preliminary Documentation Report (28 South Environmental, 2026). Impact assessment and Residual Impacts are assessed in Section 4 and Section 6 of the PD Report (ibid).

As mentioned in **Section 1.5** of this OMP, the Woolshed Offset Area is not proposed in solidarity to resolve the significant residual impacts of the Proposed Action, but is instead, proposed in tandem with the Thagoona Offset Area.

4. Woolshed Offset Area

This section provides a description of the nominated Offset Area and its suitability for providing the conditions necessary to maximise the likelihood of offset success.

4.1 Description of the Offset Area

4.1.1 Overview

The Proponent has entered into a Heads-of-Agreement with a third party offset provider Cherish to deliver and manage the offset for a 20-year period at a property 74 km to the west of the proposed action, located at 528-530 Woolshed Creek Road, Woolshed, within the Ipswich City Council Local Government Area.

The Woolshed Offset Area is situated 25 km to the west of Ipswich, 8 kilometres to the north-west of Rosewood, 52 km to the south-west of Brisbane and 55 km to the east of Toowoomba. Contextually, the Woolshed Offset Area is strategically situated on the Little Liverpool Range which traverses from Minden to Main Range (west of Aratula) a distance of some 58 km.

The area that is nominated for delivery of offset is summarised in **Table 4**. The location of the Offset Area relative to other natural features in the regional landscape is shown in **Figure 1**.

Table 4: Summarised Details of proposed Woolshed Offset Area

Item	Detail	
Address	528-530 Woolshed Creek Road, Woolshed	
Lot/Plan	Lot 236 on CH312334	
Area	Total area of offset property = 88.63 ha	
Tenure	Freehold	
Land zoning	The entirety of the Offset Area is zoned as 'Rural' under the Ipswich City Plan 2025 Scheme	
Distance from impact site	The Offset Area is 74 km west of the Project Area	
Land Zone Classification	Land Zone 12 – Hills and lowlands on granitic rocks	
Vegetation communities within the Offset Area	Offset Area Assessment Unit: OA AU1 Total: 61.35 ha	Condition: Remnant RE Description: RE 12.9-10.2 <i>Corymbia citriodora</i> subsp. <i>variegata</i> +/- <i>Eucalyptus crebra</i> open forest on sedimentary rocks
	Assessment Unit: OA AU2 Total: 20.63 ha	Condition: Pastural Grassland RE Description: RE 12.8.17 Mixed woodland with combinations of <i>Eucalyptus crebra</i> , <i>Eucalyptus melanophylla</i> , <i>Eucalyptus tereticornis</i> , <i>Corymbia tessellaris</i> , <i>Corymbia intermedia</i> woodland on Cainozoic igneous rocks.
	Assessment Unit: OA AU3	Condition: Pastural Grassland

Item	Detail	
	Total: 6.65 ha	RE Description: RE 12.8.24 <i>Corymbia citriodora</i> subsp. <i>variegata</i> , <i>Eucalyptus crebra</i> +/- <i>Eucalyptus moluccana</i> open forest. Occurs on Cainozoic igneous rocks

4.1.2 Topography, Terrain and Aspect

The Woolshed Offset Area is situated on the in the western slopes of the Little Liverpool Range which extends from Lowood to the north (containing the southern migration of the Brisbane River) to the Border Ranges east of Aratula. The Offset Area itself consists of hilly terrain with a series of steep (15-20%) to very steep (20-25%) terrain rising from 113 metres AHD in the west, to 360 metres AHD in east. There is a line of high points connected by spurs in the eastern portion of the Woolshed Offset Area. These tend to align north-west to south-east. The eastern (narrow) portion of the Woolshed Offset Area occupies topographically steep terrain with a northerly aspect.

The Woolshed Offset Area lies within the Woolshed Creek subcatchment of Lockyer Creek, Brisbane River Catchment. Two minor drainage features (unmapped by *Water Act 2000* (Qld) drainage feature mapping) bisect the Offset Area traversing north-westerly to Woolshed Creek, 2.5 km distant. **Figure 2** presents the Offset Area topography, elevation and other relevant features on-site.

4.1.3 Geology and Soils

The 1:100,000 detailed surface geology across the western part of the Offset Area is dominated by early Jurassic to Middle Jurassic sedimentary geology of the rocks of the Koukandowie Formation (Jbmk). Lithology includes lithofeldspathic labile and sublabile to quartzose sandstone, siltstone, shale, minor coal, ferruginous oolite. This equates to Landzone 9-10 - fine to coarse grained sedimentary geology, with respect to the categorisation framework for Queensland's Landzones (Wilson, 2012). Spotted Gum (*Corymbia citriodora* subsp *variegata*) and Narrow-leaved Red Ironbark (*Eucalyptus crebra*) woodlands and open forests are strongly associated with the deeper loamy soils of the Woogaroo Subgroup (Harms, 1999).

The 1:100,000 detailed surface geology across the eastern part of the Offset Area is a stratified and volcanic metamorphic unit TV/2-SEQ (Tv/2). Lithographically the dominant rock is basalt with minor volcanic breccia. This equates to Landzone 8 - Cainozoic igneous rocks (Wilson, 2012).

4.2 Ecological Characteristics

4.2.1 Regional Ecosystems

The Queensland Regulated Vegetation Management Map (Version 7.05) identifies most of the Woolshed Offset Area as **remnant vegetation**, within a mosaic of of-concern and least concern regional ecosystems (RE), including RE 12.8.17/12.8.16 and RE 12.9-10.2 under Section 20A of the *Vegetation Management Act 1999* (Qld). A portion of the site in the west is mapped for high-value regrowth Category C vegetation. Pre-clear REs of the Woolshed Offset Area are listed in **Table 5**.

Table 5: Pre-clear Regional Ecosystems on Woolshed Offset Area

Regional Ecosystem code	Short description (REDD v13.1)
RE 12.9-10.2 ¹	<i>Corymbia citriodora</i> subsp. <i>variegata</i> +/- <i>Eucalyptus crebra</i> open forest

¹ <https://apps.des.qld.gov.au/regional-ecosystems/details/?re=12.9-10.2>

Regional Ecosystem code	Short description (REDD v13.1)
RE12.8.17 ² / 12.8.16 ³	mixed polygon of either <i>Eucalyptus crebra</i> , <i>E. melanophloia</i> , <i>E. tereticornis</i> , <i>Corymbia tessellaris</i> , <i>C. intermedia</i> woodland with minor inclusions of <i>Eucalyptus crebra</i> +/- <i>E. melliodora</i> , <i>E. tereticornis</i> subsp. <i>Basaltica</i> woodland
RE 12.3.7 ⁴ / 12.3.3 ⁵	mixed polygon of predominantly <i>Eucalyptus tereticornis</i> , <i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i> +/- <i>Melaleuca</i> spp. fringing woodland and / or <i>Eucalyptus tereticornis</i> woodland
RE12.9-10.7 ⁶	<i>Eucalyptus crebra</i> +/- <i>E. tereticornis</i> , <i>Corymbia tessellaris</i> , <i>Angophora</i> spp. and <i>E. melanophloia</i> woodland

4.2.2 Vertebrate Pest Species

4.2.2.1 Desktop Review

Various pest vertebrate species have been either confirmed as utilising the Woolshed Offset Area, or likely to occur, through reference to historical observation data and undertaking surveys specific to this project. These species are identified in **Table 6** with the method of observation and a high-level summary of the risk each species poses to the offset species of relevance and the success of site rehabilitation efforts.

Table 6: Vertebrate Pest Species Confirmed Utilising the Offset Area

Binomial name	Common name	Pest status	How recorded	Risk to offset species	Risk to rehabilitation success
<i>Canis lupis familiaris</i>	Wild dog	Restricted	ALA and survey	Predation	Nil
<i>Felis cattus</i>	Feral cat	Restricted	ALA	Spread of disease	Nil
<i>Vulpes vulpes</i>	Fox	Restricted	ALA and survey	Predation	Nil
<i>Lepus capensis</i>	Brown hare	Invasive	ALA	Nil	Ringbarking, grazing and browsing, and preventing regeneration of seedlings
<i>Dama</i> sp. <i>Cervus</i> sp. <i>Rusa</i> sp. <i>Axis</i> sp.	Deer	Restricted	ALA	Nil	Ringbarking, grazing and browsing, and preventing regeneration of seedlings
<i>Sus scrofa</i>	Wild pig	Restricted	ALA	Nil	Grazing and browsing, and preventing regeneration of seedlings

Notes:

ALA = Atlas of Australia Living; **C** = Calls (audible); **O** = Observation (in person); **CT** = Camera trap; **T** = Tracks

² <https://apps.des.qld.gov.au/regional-ecosystems/details/?re=12.8.17>

³ <https://apps.des.qld.gov.au/regional-ecosystems/details/?re=12.8.16>

⁴ <https://apps.des.qld.gov.au/regional-ecosystems/details/?re=12.3.7>

⁵ <https://apps.des.qld.gov.au/regional-ecosystems/details/?re=12.3.3>

⁶ <https://apps.des.qld.gov.au/regional-ecosystems/details/?re=12.9-10.7>

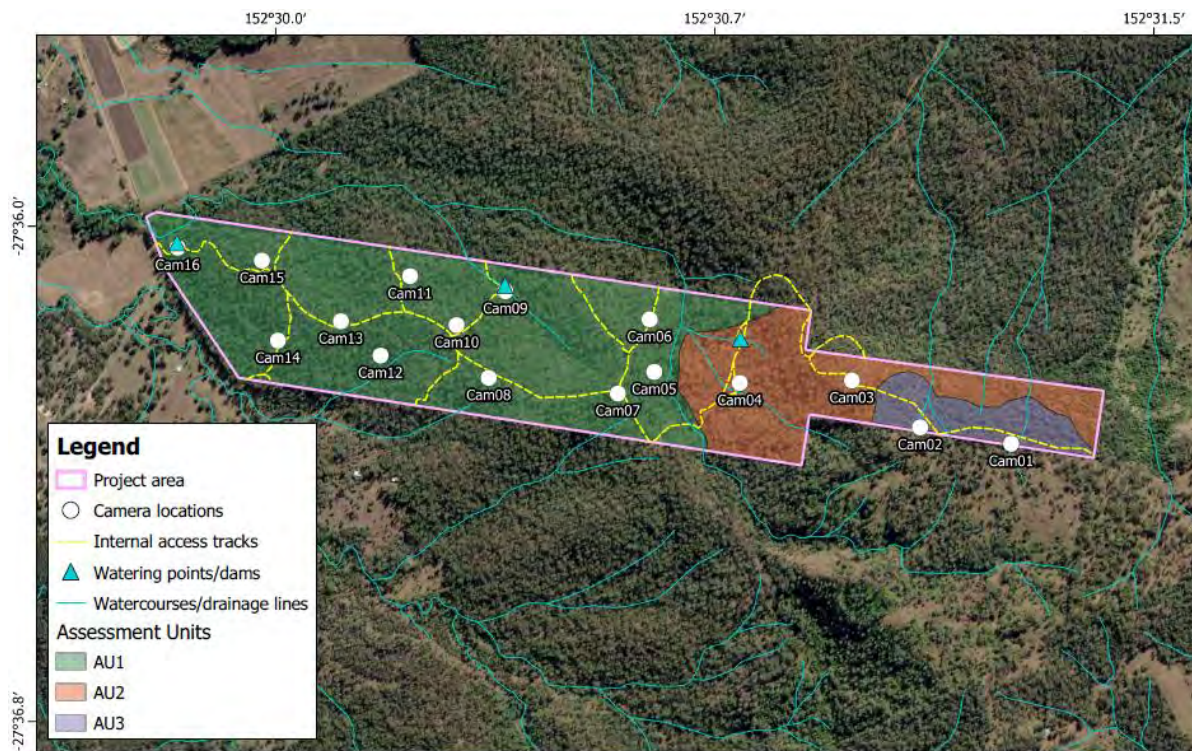
4.2.2.2 Baseline Fauna and Vertebrate Pest Assessment

This assessment consisted exclusively of a camera trap survey. A total of 16 trail cameras were deployed in a semi-regular grid across the project area, encompassing all assessment units (**Inset 1**). Cameras were deployed on 17 January 2025 and collected on 3 February 2025 (17 consecutive nights). The total survey effort was 260 camera trap-nights. All cameras were set on trees at ~50 cm above the ground.

A technical paper outlining the assessment survey conditions, camera setup, conditions and detailed discussion of results is contained in **Attachment 1**.

4.2.2.3 Results

A total of 32 taxa were recorded on camera traps. Of these, 29 were identifiable to species level, one to genus level, and two to family level (Table 1 of **Attachment 1**). Five pest taxa were identified, including one amphibian and four mammals. Native taxa identified included two reptiles, 13 birds, and 12 mammals.



Inset 1. Location of camera traps

4.2.2.4 Pest Species

At least two, and possibly as many as four, wild dogs (*Canis familiaris* x *C. dingo*) were identified on camera⁷ (camera sites 2, 3 15 and 16).

Four other pest species were recorded; Red Fox (*Vulpes vulpes*) at camera 15 and 16, European Rabbit (*Oryctolagus cuniculus*) camera 7, Black Rat (*Rattus rattus*) camera 5 and Cane Toad (*Rhinella marina*) all sites bar cameras 5, 9 and 11.

Although not detected by camera traps, cattle (*Bos taurus*) and deer are present on site, and have been noted on account of tracks around waterbodies, dung (cattle) and calls (cattle).

4.2.2.5 Endemic Species

Twenty-seven (27) endemic species; 2 reptiles, 13 birds and 12 mammals were recorded. No threatened species under Commonwealth or Queensland legislation were recorded on cameras. One Special Least Concern (SLC) species (Nature Conservation (Animals) regulation 2020 (Qld)), the Short-beaked Echidna (*Tachyglossus aculeatus*), was recorded on seven cameras.

4.2.3 Weeds

4.2.3.1 Initial Scouting Assessment

Weed species were initially assessed by the following means:

- 3 x Bio-condition (MHQA) transects
- 1 x Tertiary site
- 3 x Quaternary site

Surveys established that weeds are present across all assessment units that occur within the Offset Area but are most prevalent (up to 70% of cover of Lantana* (*Lantana camara*) in AU2 (regrowth), making AU2 largely inaccessible. A total of 12 weed species were recorded across the Offset Area during surveys, with a clear dominance by Lantana* (*Lantana camara*). All weed species recorded during field surveys are presented in **Table 7**. Survey methodologies and AUs are visually represented in **Figure 3**.

Table 7: Weed Species Recorded Across the Offset Area

Species	Common Name	Status	
		Comm.	State
<i>Asparagus africanus</i> *	Climbing Asparagus Fern	-	Restricted
<i>Baccharis halmifolia</i> *	Groundsel bush	-	Restricted
Mother-of-millions*	<i>Bryophyllum delagoense</i>	-	Restricted
Balloon vine*	<i>Cardiospermum grandiflorum</i>	-	Restricted
<i>Lantana camara</i> *	Lantana	WoNS	Restricted

⁷ While these animals are identified here as wild dogs, some authorities will likely consider them to be true dingoes (*Canis dingo*) following in-depth genetic analysis of over 5000 "wild dogs" (including 356 from Queensland) which showed >98% of animals tested comprised at least 50% dingo ancestry (Cairns et al. 2022).

* Exotic and naturalised species

Species	Common Name	Status	
		Comm.	State
<i>Lantana montevidensis</i> *	Creeping lantana	-	Restricted
<i>Melinis repens</i> *	Red natal grass	-	Restricted
<i>Ligustrum sinense</i> *	Chinese privet	-	Restricted
<i>Opuntia tomentosa</i> *	Velvety tree pear	WoNS	Restricted
<i>Senecio madagascarensis</i> *	Fireweed	WoNS	Restricted
<i>Tecoma stans</i> *	Tecoma	-	Restricted

4.2.3.2 Baseline Weed Assessment

A comprehensive weed assessment of the Woolshed Offset Area was undertaken in January 2025. The technical note outlining methods, sampling effort and results is found as **Attachment 2**. Based on departmental comments provided by NEPA on 26 March 2025, a specific memo was prepared to better detail the extent of Lantana* (*Lantana camara*) throughout the Offset Area, and document how such extent negatively impacts Koala and Grey-headed Flying-fox (MNES) see **Attachment 3**.

Weed assessment was performed by random meander through the parts of the Woolshed Offset Area which allowed unimpeded foot traverse. In more elevated parts of the site, especially on clay soils derived from basalt (Land Zone 8), access to much of the offset area was not possible on account of a near continuous thicket (refer **Inset 2**). In these areas, assessment was limited to surveying weeds from along the edge of fire breaks established within the Offset Area in December 2024. Supplementary weed information was also derived from BioCondition Transects.

In the field, three qualitative measures of abundance were applied, being (ranked from lowest to highest); Low (1-5 individual stems at an observation point), Moderate (6-20 individual stems at an observation point) and High (>21 individual stems at an observation point).

Three (3) WoNS are present within the Offset Area:

- Lantana* (*Lantana camara*)
- Velvety Tree Pear* (*Opuntia tomentosa*)
- Fireweed* (*Senecio madagascarensis*).

Ten (10) Category 3 Restricted Matter (*Biosecurity Act 2014* (Qld)) weeds are present within the Offset Area:

- Climbing Asparagus* (*Asparagus africanus*)
- Groundsel Bush* (*Baccharis halmifolia*)
- Mother-of-millions* (*Bryophyllum delagoense*)
- Balloon Vine* (*Cardiospermum grandiflorum*)
- Lantana* (*Lantana camara*)
- Creeping Lantana* (*Lantana montevidensis*)

- The distribution of weeds encountered in the field are presented in **Inset 2** (source: **Figure 2, Baseline Weed Assessment Technical Paper- Attachment 2**).



The remaining species were somewhat randomly dispersed throughout the site. However, Climbing Asparagus Fern* (*Asparagus africanus*) was found to coincide with dense Lantana* (*Lantana camara*) infestations where it was observed to extend into and smother the canopy of the mature trees.

The majority of these weed infestations were low density with only 1-5 individuals per data point. The predominantly low densities of these other species could be due to the suite of native grasses suppressing their germination and competing for resources including soil moisture, nutrients and light in native dominated areas and Lantana* (*Lantana camara*) would perform the same suppressing actions as natives where it forms large thickets. Any infestations that were considered to be a high-density infestation typically occurred in and around drainage features and gullies within the site. These areas are where the passage of water is likely to foster the ideal conditions for plant growth, attract animals acting as dispersal vectors for these species and experience movement of plant matter and material by overland flow in extreme weather events.

The highest weed diversity was associated with tracks, drainage features and creek lines within the offset area. This is due to constant disturbance in these areas promoting weed succession, potential importing of invasive species by vehicles and easy mobility for species that could disperse the seeds of invasive species.

Chinese Privet* (*Ligustrum sinense*) was sporadically distributed throughout the eastern part of the Offset Area; however, survey bias could be leading to an underestimation of its abundance as access to the remainder of the eastern portion of the offset was significantly reduced due to the high density of Lantana* (*Lantana camara*) preventing further ingress to these locations.

4.2.3.2.1 Transformer Weeds and Threats To Habitat and MNES Species

Lantana* (*Lantana camara*) is a rough-textured and usually prickly shrub with oppositely arranged leaves. Its dense flower clusters consist of numerous small tubular flowers. Lantana* (*Lantana camara*) is a habitat transformer (**transformer weed**⁸) because it can change the structure and nature of ecosystems (National Lantana Management Group 2009). It is a highly invasive shrub that can form dense thickets and smother native plants. Transformer weed invasion alters the three dimensional arrangement, nature and abundance of food resources within an ecosystem and as such can have a profound impact on animal (State of Victoria, 2019). Lantana* (*Lantana camara*):

- **Displaces native species:** Lantana* (*Lantana camara*) can outgrow and shade out native plants, which can impact biodiversity.
- **Alters fire regimes:** Lantana's dense stands can increase the risk of fire.
- **Is toxic to animals:** Lantana's leaves and seeds can be toxic to many animals, causing gastrointestinal issues, photosensitivity, and death.
- **Affects food resources:** Lantana* (*Lantana camara*) can alter the food resources available to animals.
- **Impedes access to habitat:** dense impenetrable stands limit the ability for mid to large sized animals to freely move through dense thickets, leaving animals prone to predation and reducing social interaction.

Lantana* (*Lantana camara*) infestations can have a significant impact on protected species within the offset area. Several studies have outlined the effects of Lantana* (*Lantana camara*) on native ecosystems. Gooden et al (2009) assessed the condition of native plants in areas infested with Lantana* (*Lantana camara*) and without an infestation. The study showed invasion by Lantana* (*Lantana camara*) led to a reduction in species richness compared to uninvaded areas with lower fern, herb, tree and vine species richness. Additionally, infestation suppresses canopy recruitment with juvenile tree densities are lower in areas invaded by Lantana* (*Lantana camara*) compared to uninvaded areas. Adult densities were the same across both conditions, suggesting that Lantana* (*Lantana camara*) suppresses the germination of other species to reduce competition with native vegetation to perpetuate their dominance within an invaded area.

It is thought that this dominance within an area is achieved by the secretion of essential oils, leachate, residues and rhizosphere of Lantana* (*Lantana camara*) including phenolic compounds, sesquiterpenes, triterpenes and flavonoid compounds into the soil to suppress the germination and growth of other species (Kato-Noguchi & Kurniadie, 2021). Ruwanza (2020) had a similar finding to Gooden et al (2009) showing decreased native species richness with increasing Lantana* (*Lantana camara*) infestation as well as decreases in native species cover and density.

Invasion by Lantana* (*Lantana camara*) and its effects on native vegetation can negatively impact threatened species including Koala (*Phascolarctos cinereus*) and the Grey-headed Flying-fox (*Pteropus poliocephalus*). The proliferation of Lantana* (*Lantana camara*) will affect the Koala (*Phascolarctos cinereus*) habitat and population dynamics through manipulating tree canopy change; by suppressing recruitment and skewing canopy population dynamics towards increasingly older age cohorts. In habitat previously considered suitable, Koala Habitat Trees (**KHTs**) will diminish over time. This will lead to the compounding loss of KHT within Lantana infested areas over time with canopy trees being replaced by Lantana* (*Lantana camara*) thicket as the Ecologically Dominant Layer.

⁸ By forming monocultures and dominating ecosystems, driven by an overriding advantage of recruitment success leading to the exclusion of competitors. Sheppard et al, 2010)

Gentle et al (2006) found that shading was the greatest limiting factor to the run-away spread and growth of Lantana* (*Lantana camara*), as the canopy becomes increasing 'open', light is no longer a factor limiting Lantana (*Lantana camara*) growth.

In addition to limiting germination of canopy species, in the case of severe infestations, Lantana* (*Lantana camara*) can grow into the canopy, smother canopy trees and cause the decline of the tree (McKercher, pers. obs. 30 January 2025). The reduction of mature canopy species will reduce the suitability of the property as an offset area for both Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) due to the gradual reduction in available forage and shelter habitat.

Lantana* (*Lantana camara*) can grow into impenetrable walls of dense vegetation. In addition to preventing significant recruitment of natives, dense infestations of Lantana* (*Lantana camara*) prevent Koala (*Phascolarctos cinereus*) from utilising forage habitat in significant infestations, either as shelter, forage or movement habitat. The NEPA Approved Conservation Advice for the Endangered Koala identifies that for habitat to be considered habitat critical to the survival of the Koala (*Phascolarctos cinereus*) free movement of Koala (*Phascolarctos cinereus*) to both find mates and move between food and shelter resources and to avoid predation is essential.

Koala (*Phascolarctos cinereus*) area most vulnerable to predation by Wild Dogs (*Canis lupus familiaris*) and Dingo (*Canis lupus dingo*) and other predators while travelling between habitat trees. If movement through habitat becomes impeded or the distance between accessible patches becomes too great due to Lantana* (*Lantana camara*) infestations, local Koala (*Phascolarctos cinereus*) will become more susceptible to attack by predators and extirpation. Additionally, greater investment in travel between patches and to mates reduce foraging time, intake of food resources and decreases mating success.

Another significant weed species, Climbing Asparagus Fern* (*Asparagus africanus*), is a long-lived climber or scrambling sub-shrub with woody and prickly stems. It is also considered a transformer weed. Its stems bear short side-branches and with numerous tiny 'leaves' that give them a ferny appearance. It is thought to have the potential to invade rainforests, open woodlands and riparian vegetation throughout the coastal and sub-tropical regions of eastern Australia. Climbing Asparagus Fern* (*Asparagus africanus*) scrambles over other vegetation and climbs up into the canopies of taller trees. It can often completely smother smaller trees, understorey shrubs and ground layer plants and its fibrous roots form dense mats just below the soil surface, which interfere with the establishment and survival of seedlings of native species⁹. It is already impacting the canopies within the Offset Area and has the potential to significantly more canopy.

Armstrong et al (2006) states that climbing asparagus can smother native canopy. The smothering, and eventual death, or canopy induced structural failure of canopy species will reduce the available food resources for the Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*). This reduction in the available resources will make the habitat un-useable by these species and reduce the suitability of this proposed Woolshed Offset Area with time in the absence of intervention to arrest these species.

See **Attachment 3**, where the impacts of Lantana* (*Lantana camara*) upon the Woolshed Offset Area are better described, and how, without control, habitat for relevant MNES will be impacted if control through the Offset is not implemented. **Attachment 3** is supported by advice from Dr Bill Ellis: an expert consulted for the purpose of preparing the Commonwealth's 2022 conservation advice for the koala. Dr Bill Ellis outlines the ecological impacts of Lantana:

- *Lantana prevents recruitment of koala food trees. In areas of heavy infestation, it is not common to find food trees regenerating;*
- *Restricts koala movement – koalas primarily move across the ground between trees and dense thickets of lantana make impede this activity. Koalas might therefore have to spend more time traversing these obstacles on the ground and hence have increased risk of predation; and*
- *Dense understory can add to dangerous fuel loads, resulting in more intense fires that can engulf canopies and be destructive in koala habitat.*

⁹ Brisbane City Council Weed Identification Tool - Climbing asparagus fern <https://weeds.brisbane.qld.gov.au/weeds/climbing-asparagus-fern> accessed 4 March 2025).

4.2.3.2.2 Loss of Ecosystem Values Without the Offset and Impacts upon MNES

The National Recovery Plan for Koala (DAWE 2022) identifies that habitat degradation is of significant concern for Koala (*Phascolarctos cinereus*). It notes a number of threats driving habitat degradation including timber harvesting, agriculture, fire and fire management, climate change, and invasion by weeds synergistically increasing impacts of disturbance.

Habitat degradation reduces the availability or increases the mortality of food and shelter trees, reduces the nutrient value and water content of food trees, and changes the configuration and relative abundance of habitat trees. These changes impact the species by making it more difficult for them to access food and shelter resources, increasing stress levels and disease, and leading to reduced breeding success, increased mortality and predation. It also leads to habitat loss as native vegetation is slowly changed to a composition and structure that no longer resembles the original state (Lindenmayer and Fischer 2006) and reduces availability and quality of resources for species and can drive population declines over the long term (extinction debt, Tilman et al. 1994).¹⁰

Superimposed on these threats is the presence of Lantana* (*Lantana camara*) and Climbing Asparagus Fern* (*Asparagus africanus*) which, as transformer weeds in combination with past timber harvesting, local clearing are driving ecosystem change and reducing the quality and availability of Koala (*Phascolarctos cinereus*) forage and shelter habitat and impairing recruitment of all component species of the ecosystem, but especially canopy species leading to collapse in value as Koala (*Phascolarctos cinereus*) habitat.

Many of the species which constitute Koala habitat at the Offset Area; Spotted Gum (*Corymbia citriodora subsp. variegata*), Narrow-leaved Red Ironbark (*Eucalyptus crebra*)¹¹, Silver-leaved Ironbark (*Eucalyptus melanophloia*), Pink Bloodwood (*Corymbia intermedia*), Moreton Bay Ash (*Corymbia tessellaris*) and Queensland Blue Gum (*Eucalyptus tereticornis*) are also key blossom forage species for Grey-headed Flying-fox (*Pteropus poliocephalus*), representing habitat critical to their survival as they are important winter and spring flowering species forming a significant Conservation gain on account of the offset component of their diet during resource bottlenecking and critical periods in the reproductive cycle of Grey-headed Flying-fox (*Pteropus poliocephalus*) (Commonwealth of Australia 2021, p.15).¹²

In **Attachment 3**, where the advice of Dr Bill Ellis is sought out, it is stated that:

Without any action to reduce the lantana, the site is likely to experience worsening lantana dominance, further delaying recovery and reducing habitat quality. Note: Lantana is recognized nationally as a major biodiversity threat, impacting over 1,300 native species. Its control aligns with obligations under the Biosecurity Act and EPBC offset principles

And there will be:

- *Continued suppression of canopy recruitment, leading to long-term decline in koala food and shelter resources;*
- *The site could well become a barrier to movement by koalas in the landscape, forcing koalas to spend more time on the ground where they are subject to greater risk;*
- *The bushfire intensity at the site and probability of fire is likely to increase over time, with potentially catastrophic outcomes for wildlife; and*
- *Spread of this species to adjacent properties, and the ongoing degradation of ecosystem function at the site and surrounds.*

Dr Bill Ellis states that if Lantana* (*Lantana camara*) control is undertaken at this Offset Area, accelerated regeneration of native species and improved koala habitat is expected through:

¹⁰ See **Attachment 3**.

¹¹ *Eucalyptus crebra* is referenced by the Grey-headed Flying-fox *National Recover plan* (Commonwealth of Australia 2021), as an important winter flowering species but not by Eby and Law (2008), despite it being a known winter flowering species in SEQ

¹² See **Attachment 3**.

- Accelerated forest regeneration, improving forage and shelter resources for koalas;
- Better habitat connectivity and hence reduced risk to koalas while moving; and
- Reduced bushfire intensity and improve ecosystem resilience.

4.3 Offset Area Suitability

The potential occurrence of Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) within the Woolshed Offset Area has been evaluated through a desktop assessment. This assessment considered the presence and availability of suitable forage and shelter habitat, as well as the likelihood of species occurrence, and is detailed in Section 7 of the PD Report.

Given the highly vagile nature of the Grey-headed Flying-fox (*Pteropus poliocephalus*), together with the presence of known camps and important foraging resources both within the site and regionally (within a 25-km radius), including forage species critical during key life-history stages and periods of resource bottlenecking, the presence of this species within the area is assumed.

The suitability of the nominated Offset Area for the provision of habitat for Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) is discussed below in **Section 4.3.1** with regard to the EPBC Act Offset Policy Principles.

4.3.1 Suitability for Koala (*Phascolarctos cinereus*)

An assessment of Koala (*Phascolarctos cinereus*) habitat values within and surrounding the Woolshed Offset Area was undertaken to determine the site's capacity to support koala movement, foraging resources, and long-term habitat improvement. A review of relevant spatial and biological databases was conducted within a 25 km radius of the site to identify potential occurrence records and mapped habitat values for the species.

Searches of the Atlas of Living Australia (ALA) database identified 29 contemporary koala records within 5 km of the Woolshed Offset Area, including one record within the property boundary, and a total of 3,473 records within 25 km of the site. Although no koalas were directly observed during field surveys, the Spot Assessment Technique (SAT) survey recorded low levels of koala scat, primarily within eucalypt-dominated regrowth areas, remnant open forest, and open paddocks.

In addition, koala habitat mapping based on REs within 25 km of the site identified approximately 26,137 ha of remnant vegetation and 21,387 ha of regrowth vegetation suitable for the species, collectively representing 22.4% of the assessed area. A detailed assessment of the habitat suitability of the Woolshed Offset Area is provided in Sections 7.5.1 of the PD Report (28 South Environmental, 2026).

4.3.2 Suitability for Grey-headed Flying-fox (*Pteropus poliocephalus*)

To determine whether the Woolshed Offset Area is suitable to contribute to the viability of the Grey-headed Flying-fox (*Pteropus poliocephalus*), the presence of species records and known roost camps within a 25 km radius was assessed. Species occurrence data were sourced from the ALA and Queensland Wildlife Online to characterise local and sub-regional utilisation of the landscape.

A total of 477 Grey-headed Flying-fox (*Pteropus poliocephalus*) records were identified within 25 km of the Woolshed Offset Area, indicating suitable foraging habitat for the species within the local landscape.

Identified remnant and regrowth areas of the Offset Area provide important winter flowering habitat for the species (Eby and Law, 2008), including, Spotted Gum (*Corymbia citriodora* subsp. *variegata*), Pink Bloodwood (*Corymbia intermedia*), Moreton Bay Ash (*Corymbia tessellaris*), Silver-leaved Ironbark (*Eucalyptus melanophloia*) and Queensland Blue Gum (*Eucalyptus tereticornis*).

Furthermore, habitat modelling within 25 km of the Offset Area identified 11,043 ha high quality (Dominant and Co-dominant) and 33,640 ha of low-moderate quality (Sub-dominant or Associated) for the Grey-headed Flying-fox (*Pteropus poliocephalus*). A detailed assessment of the habitat suitability of the Woolshed Offset Area is provided in Sections 7.6.1 of the PD Report (28 South Environmental, 2026).

4.4 Compliance with the EPBC Offset Policy criteria

The EPBC Act Environmental Offsets Policy details a number of principles that a suitable offset will achieve. **Table 8** demonstrates how the Offset Area meets and exceeds the Policy Principles.

Table 8: Suitability of Offset Area Against the EPBC Offset Suitability Criteria

EPBC Offset Suitability Criteria	Response
1. Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter	Woolshed Offset Area is proposed in tandem with the Thagoona Offset Area. Together, the proposed management measures across these areas will deliver an upswing in vegetation quality and deliver an overall net-positive conservation outcomes that improves the viability of the MNES, including Koala (<i>Phascolarctos cinereus</i>) and Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>), across these areas. Woolshed Offset Area will increase availability of foraging resources for Koala (<i>Phascolarctos cinereus</i>) otherwise excluded on account of extensive impenetrable Lantana* (<i>Lantana camara</i>) thickets. Lantana* (<i>Lantana camara</i>) is a Transformer Weed¹³ and Weed of National Significance. Without removal of this dense thicket, ecosystem changes will result on account of smothering, of recruitment, allelopathic chemical releases by dense lantana stands which also affect the health and recruitment of native species and enhanced bush fire threats. The site has historically been subjected to logging and forest grazing and in combination with the Lantana* (<i>Lantana camara</i>) recovery has been suppressed. Active assisted regeneration focussing on weed reduction will assist in improving canopy and understorey recruitment and re-establishment of more floristically diverse and structurally appropriate understorey for the REs identified as being present within the Woolshed Offset Area: ▪ RE12.9-10.2 - containing Spotted Gum (<i>Corymbia citriodora</i> subsp <i>variegata</i>) and Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>) open forest. The understorey of this RE may be shrubby or grassy dependent on soils, aspect and fire regimes. Queensland Blue Gum (<i>Eucalyptus tereticornis</i>) is present as a subdominant canopy species becoming dominant canopy species on lower-slopes. ▪ 12.8.17 – containing a canopy with combinations of Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>), Silver-leaved Ironbark (<i>E. melanophloia</i>), Queensland Blue Gum (<i>Eucalyptus tereticornis</i>), Moreton Bay Ash (<i>Corymbia tessellaris</i>), Pink Bloodwood (<i>Corymbia intermedia</i>), and commonly containing Broad Leaved Apple (<i>Angophora subvelutina</i>) with a grassy ground layer. ▪ RE12.8.24¹⁴ – containing Spotted Gum (<i>Corymbia citriodora</i> subsp <i>variegata</i>) and Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>) open forest.

¹³ A transformer weed is an invasive plant that can change the nature of an ecosystem over a large area. These weeds can harm the habitats of native plants and animals.

¹⁴ RE12.8.24, is not identified by State Government RE mapping for the local area. However, on account of the presence of Spotted Gum (*Corymbia citriodora* subsp *variegata*) and Narrow Leaved Red Ironbark (*Eucalyptus crebra*) on Land zone 8 this is the best fit.

EPBC Offset Suitability Criteria	Response
	Both REs contain KHTs and important winter and spring flowering forage species for Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>). Targeted infill planting will occur within disturbed parts of the Offset Area and where floristically and structurally, understorey recovery has been impaired. Both REs are already reach Regulated remnant (Category B) status, however an upswing in the quality of habitat and tangible reduction in the Transformer Weed Lantana* (<i>Lantana camara</i>) resulting in a conservation outcome that arrests further ecosystem decline and improves habitat access (the quality and availability of food and shelter) and quality of Koala (<i>Phascolarctos cinereus</i>) habitat, reduction in predators and an upswing in the recruitment of canopy species. Indicators such as improvements in the diversity and abundance and coverage of ground covers, grasses shrubs and trees indicate an 'unlocking' of the site from the effects of Lantana* (<i>Lantana camara</i>), and by default improved penetration and movement opportunity for Koala (<i>Phascolarctos cinereus</i>). An upswing of '2' is expected over 20 years (time to acquittal of the matter). The total offset area will be 88.63 ha. See Attachment 3 and Section 4.2.3. When considered in the context of the Woolshed Offset Area directly combining with adjoining Ipswich City Council Conservation Estate (975 ha) and offset lands under future ownership by Cherish (284 ha) to the south, the total area of land actively managed to habitat protection will be 1,350 ha. Furthermore, it will enhance consolidation of a regionally significant area of important foraging habitat and landscape connections within a recognised Regional and Local Biodiversity Corridor. Bailey's Cyprus Pine (<i>Callitris baileyana</i>), a Near Threatened species in Queensland (with reference to the Nature Conservation (Plants) Regulation 2020 (Qld)) is present within the Woolshed Offset Area. IUCN Red List of Threatened Species notes that across its known range, populations are highly fragmented with ongoing threats being clearing for agriculture and smothering by Lantana* (https://www.iucnredlist.org/species/34072/2842980 accessed 25 September 2024) The Offset will be maintained in perpetuity as habitat protected by Covenant (or another mechanism suitable to achieve enduring protection e.g. dedication to conservation estate). Dedication of the Woolshed Offset Area under Covenant will remove access to landholder vegetation management rights under Planning Regulation 2017 (Qld) conferred under the Rural designation of the Woolshed Offset Area. <u>Suitability for Koala (<i>Phascolarctos cinereus</i>)</u> Youngentob et al. (2021) identified locally important food trees for Koala (<i>Phascolarctos cinereus</i>) by geography. Four (4) tree species recognised as important food trees for Koala in south-east Queensland are present within the Offset Area; Spotted Gum (<i>Corymbia citriodora</i> subsp <i>variegata</i>), Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>), Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>) and Queensland Blue Gum (<i>Eucalyptus tereticornis</i>). These species will also be included in the planting palette for revegetation across the Offset Area. No targeted Koala (<i>Phascolarctos cinereus</i>) assessments to determine presence through direct observation have been undertaken. Indirect evidence of presence was observed scat surveys undertaken concurrent to the BioCondition assessments (17 July 2024). It is clear that Koala (<i>Phascolarctos cinereus</i>) would benefit significantly from the increase in habitat quality and quantity over the Offset Area, particularly considering the wider linkages it would provide for Koala (<i>Phascolarctos cinereus</i>), providing significant corridors for individual home ranges and the ability for uninterrupted dispersal (particularly younger males moving to new ranges attempting to avoid older established males).

EPBC Offset Suitability Criteria	Response
	<u>Suitability for Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)</u> Important winter flowering species (with high productivity and reliability scores) in the blossom diet of Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) (Eby and Law 2008) that occur within the Woolshed Offset Area include five species; Spotted Gum (<i>Corymbia citriodora</i> subsp. <i>variegata</i>), Pink Bloodwood (<i>Corymbia intermedia</i>), Moreton Bay Ash (<i>Corymbia tessellaris</i>), Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>) and Queensland Blue Gum (<i>Eucalyptus tereticornis</i>). Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>) can also be added to the list of winter flowering species on account that its winter flowering is noted by Stanley and Ross (2002). All three REs represent high quality winter flowering resource; Spotted Gum is a dominant canopy species within RE12.9-10.2 (AU1) and 12.8.24 (AU3), Queensland Blue Gum is an associated species within RE12.9-10.2 (AU1) and a codominant species within RE12.8.17 (AU2) and 12.8.24 (AU3), and Pink Bloodwood, Moreton Bay Ash and Silver-leaved Ironbark are all co-dominant species within RE12.8.17 (AU2) and ecotones with 12.8.24 (AU3). <u>Averting the Loss of ecosystem values with the offset and impacts upon MNES</u> The National Recovery Plan for Koala (DAWE 2022) identifies that habitat degradation is of significant concern for Koala (<i>Phascolarctos cinereus</i>). It notes a number of threats driving habitat degradation including timber harvesting, agriculture, fire and fire management, climate change, and invasion by weeds synergistically increasing impacts of disturbance. Habitat degradation reduces the availability or increases the mortality of food and shelter trees, reduces the nutrient value and water content of food trees, and changes the configuration and relative abundance of habitat trees. These changes impact Koala (<i>Phascolarctos cinereus</i>) by making it more difficult for them to access food and shelter resources, increasing stress levels and disease, and leading to reduced breeding success, increased mortality and predation. It also leads to habitat loss as native vegetation is slowly changed to a composition and structure that no longer resembles the original state (Lindenmayer and Fischer 2006) and reduces availability and quality of resources for species and can drive population declines over the long term (extinction debt, Tilman et al. 1994). Superimposed on these threats is the presence of Lantana* (<i>Lantana camara</i>) and Climbing Asparagus Fern* (<i>Asparagus africanus</i>) which, as transformer weeds in combination with past timber harvesting, local clearing are driving ecosystem change and reducing the quality and availability of Koala (<i>Phascolarctos cinereus</i>) forage and shelter habitat and impairing recruitment of all component species of the ecosystem, but especially canopy species leading to collapse in value as Koala habitat. Many of the species which constitute Koala (<i>Phascolarctos cinereus</i>) habitat at the Offset Area; Spotted Gum (<i>Corymbia citriodora</i> subsp. <i>variegata</i>), Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>)¹⁵, Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>), Pink Bloodwood (<i>Corymbia intermedia</i>), Moreton Bay Ash (<i>Corymbia tessellaris</i>) and Queensland Blue Gum (<i>Eucalyptus tereticornis</i>) are also key blossom forage species for Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>), representing habitat critical to their survival as they are important winter and spring flowering species forming a significant component of their diet during resource bottlenecks and critical periods in the reproductive cycle of the species (Commonwealth of Australia 2021, p.15). Implementing the offset will arrest this habitat degradation. <u>Quarantining as of right exemptions to clear vegetation under the Planning Regulation 2017 and VM Act</u>

¹⁵ *Eucalyptus crebra* is referenced by the Grey-headed Flying-fox *National Recover plan* (Commonwealth of Australia 2021), as an important winter flowering species but not by Eby and Law (2008), despite it being a known winter flowering species in SEQ

EPBC Offset Suitability Criteria	Response
	There are however a number of vegetation management exemptions for rural lands which although would not exacerbate loss would result in diminished quality and availability of habitat for both matters. These relate to existing vegetation management rights affording clearing exemptions under the <i>Vegetation Management Act 1999</i> (Qld), including for farm forestry, clearing along property lines and single lot clearing exemptions for dwellings and other essential management. These are outlined: ▪ Despite the current State mapping designations applied to the site, existing rights¹⁶ allow a continuation of the site's current understorey maintenance. Further, there are exemptions under the Planning Regulation 2017 allowing for other clearing to be undertake. ▪ Regarding Koala (<i>Phascolarctos cinereus</i>) habitat areas, clearing for exempted development, which includes: ○ essential management, allowing for clearing: ○ that is necessary to maintain infrastructure, including infrastructure already present on the Site (fences) or which could foreseeably be established (e.g., stockyards). A clearing width of 10 m is commonly applied to this infrastructure¹⁷ ○ by the owner of the land to source construction timber to maintain any land of the owner i.e., the timber can be harvested from the site for use on other properties owned by landowner. This exemption allows for significant harvesting of valuable middle-aged trees¹⁸ up to a point of the threshold for remnant vegetation cover (>50% of the benchmarked canopy cover of the relevant RE)¹⁹. ○ to establish a necessary fire management line which identifies the permissible clearing width necessary to establish a fire management line of 10 m. ○ routine management, which allows for clearing to: ○ source construction timber for establishing necessary built infrastructure on any land of the owner. ▪ Regarding areas identified as Regulated Vegetation, the following exempt clearing work can be undertaken²⁰: ○ Exempt clearing work on land generally: ○ clearing for establishing a necessary fence, firebreak, road or vehicular track and the clearing cannot reasonably be avoided or minimised. The scope of this exemption is limited by the more restrictive koala provisions in the Planning Regulation 2017 ○ Exempt clearing work on freehold and Indigenous land: ○ clearing to establish a necessary fire management line up to 10 m wide ○ necessary for maintaining existing infrastructure, including infrastructure already present on the Site (fences) or which could foreseeably be established (e.g., stockyards).

¹⁶ Grazing on rural zoned land is accepted development

¹⁷ Due to the vegetation characteristics, dry sclerophyll forest, almost all tree species encountered, and almost all trees were KHT species.

¹⁸ ~400mm DBH trees that are progressing towards providing future hollows. While veteran trees (providing hollows now) are not targeted for this purpose, they will, in time, fail. Without middle-aged trees coming through to replace them, there is a foreseeable lack of future available hollows.

¹⁹ It is noted that past clearing identified by BioCondition Assessments (discarded crowns and limbs, stumps), appears to be as a result of this exemption.

²⁰ Based on the DNRMMRRD document - The List of exempt clearing work under the Vegetation Management Framework, A guide to Schedule 21 of the Planning Regulation 2017.

EPBC Offset Suitability Criteria	Response
2. Suitable offsets must be built around direct offsets but may include other compensatory measures	The Woolshed Offset Area can accommodate up to 88.63 ha of direct offset for Koala (<i>Phascolarctos cinereus</i>) and Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) with the express aim of achieving an increase in the quality and cover of habitat for these species with a 20-year time to ecological benefit. The Offset Area will, however, have tangible ecological benefits to other species including the State listed Bailey's Cyprus Pine (<i>Callitris baileyana</i>). This 88.63 ha of offset is being delivered in conjunction with the 32.57 ha of Thagoona Offset. Combined, these Direct Offsets will have beneficial outcomes to other MNES. The Offset will result in the consolidation of protected habitat and ecological corridor of the State and Local strategic importance; Little Liverpool Range Ecological Corridor. In and, in combination with habitat under protected estate management (owned by Ipswich City Council) and future proposed offsets (Cherish) which adjoin Council protected estate, it will substantially increase the extent of protected habitat. In combination with habitat under protected estate management (owned by ICC) and adjoining and proposed offset areas managed by Cherish, the Offset Areas will substantially increase the extent of protected habitat. This integrated approach ensures that the offsets are built around direct offset measures while also delivering broader compensatory outcomes at a landscape scale, consistent with the EPBC Act Environmental Offsets Policy.
3. Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter	Both Offset Areas are in proportion to the level of statutory protection that applies to the protected matter, as the offset assessment guide requires that the appropriate conservation status or extinction risk be applied in determining offset requirements. The combined Offset Areas have been designed and assessed in accordance with these requirements, ensuring that the scale and protection mechanism applied are commensurate with the significance of the MNES being offset. Both Offset Areas will be subjected to a VDEC under the <i>Vegetation Management Act 1999</i> (Qld) to register each site as a declared area for high nature conservation value with a Regulated Category A listing. This will remain in place until the conservation outcome prescribed by the OMP is achieved. Long-term perpetual outcomes will be achieved through registration of a Statutory Environmental Covenant under the <i>Land Title Act 1994</i> (Qld) or <i>Land Act 1994</i> (Qld), ensuring protection in perpetuity across both Offset Areas. Alternatively, designation of the Offset Areas as conservation estate through amalgamation into Ipswich City Council's Mount Grandchester Conservation Estate will be sought where feasible. Covenants afford the same level of protection as National Parks in Queensland and provide NEPA with a high level of confidence that the Offset Areas will be protected for the duration of the impacts associated with the proposed action. In this context, the statutory protection mechanisms applied to the Offset Areas are directly aligned with the conservation significance of the MNES and are therefore proportionate to the level of statutory protection required.
4. Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter	The Woolshed Offset Area (88.63 ha), along with the Thagoona Offset Area (32.57 ha) will be subject to ecological restoration and enhancement works aimed at improving ecological resilience and habitat quality for MNES. The Woolshed Offset Area includes remnant and regrowth vegetation associated with REs (RE 12.9-10.2, RE 12.8.17 and RE 12.8.24), which are recognised as important habitat resources for Koala (<i>Phascolarctos cinereus</i>) and Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>). The area will be subject to ecological restoration and enhancement works aimed at improving ecological resilience and habitat quality for MNES. Lantana establishment and historic logging to three REs (REs 12.9-10.2, 12.8.17 and

EPBC Offset Suitability Criteria	Response
	12.8.24). Both are significant resource for Koala (<i>Phascolarctos cinereus</i>) and Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>). When considered together, both Offset Areas provide a scale of offset that is proportionate to, and exceeds, the residual impacts of the Proposed Action. The combined area and associated uplift in habitat quality ensure that the offsets deliver a commensurate conservation outcome, consistent with the EPBC Act Environmental Offsets Policy, through both the extent of habitat secured and the magnitude of ecological improvement achieved over the offset period.
5. Suitable offsets must effectively account for and manage the risks of the offset not succeeding	The Proponent has entered into a 'heads-of-agreement' with Cherish the Environment to acquire Lot 236 on CH 312334 (88.63 ha) as offset for residual impacts arising from the Double Jump Road Residential Development. All works will be actively managed by a dedicated, experienced, proven and reputable offset provider (Cherish the Environment). The Offset Area will be subject to a detailed a management program to govern and guide success parameters, which Cherish has had input into. Only contractors with an established track record for establishing and managing offsets for similar periods of time to establish an offset (20 years) will be considered. The level of protection this Offset Area will be afforded on top of this intensive management will ensure that the Offset Area is managed and retained as a significant area of conservation in perpetuity. The direct offset will be delivered under the framework of an OMP. The documents sets a framework of actions including implementation, management, risk evaluation and management, monitoring, reporting, review and corrective actions. It clearly identifies: ▪ The environmental offset required to be delivered by the Proponent as a consequence of anticipated residual significant impacts of the Proposed Action. ▪ The nature of the conservation gain, including completion criteria, to be achieved over the nominated offset period for relevant MNES on the proposed Offset Area. ▪ Land management actions required over the offset period to support progress towards achieving the completion criteria. ▪ A monitoring program required to measure progress towards achieving the completion criteria, including corrective actions. ▪ Adaptive management, including corrective actions, and reporting requirements for the duration of the offset period. This OMP contains SMART principles and outlines a number of triggers and corrective actions which are to be implemented in instances of non-compliance or the lack of success toward the gradual achievement of the completion criteria identified during annual monitoring, as reported in the Annual Compliance Reports, and major milestone monitoring events (every 5 years). Supporting Invertebrate Pest Management Plan (IPMP) (See Action 1) and Biosecurity Management Plan (BMP) (See Action 2) will ensure risks associated with pest and weeds at the Offset Area are controlled from the outset of Offset delivery.
6. Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs	The Proponent will also, prior to expiry of the VDEC, enter into a Conservation Covenant under the <i>Land Title Act 1994</i> (Qld) or <i>Land Act 1994</i> (Qld) over the Offset Areas or seek another mechanism to protect the Offset (e.g. incorporation into ICC's conservation estate). VDECs afford protection of the offset until the ecological benefit prescribed by the management is achieved (i.e. they 'time off'). Beyond this, the offset is transferred to Regulated Category B vegetation, to which all management

EPBC Offset Suitability Criteria	Response
	exemptions and accepted clearing provisions under State Regulations would apply. To ensure the Offset is preserved in perpetuity for ecological benefit, a Covenant is necessary. VDECs whilst current and Covenants afford the same protection level as National Park in Queensland and provide NEPA with a higher level of confidence that the offset will be protected for the duration of the impacts associated with the proposed action. The Offset Area will protect large area of land that provides some value to MNES, on account of past clearing of the Offset Area and the locality more broadly. Despite the continued growth of the South East Queensland region the Offset Area is considered at low risk of threat from urban development; the locality in which the Offset Area is outside of the South East Queensland urban footprint and is part of the Rural Landscape. The Offset Area will be managed under an intensive works program and be subject to consistent and constant monitoring through transparent, reliable and trusted BioCondition and tertiary Site monitoring assessments. It is important to note that the site owner Cherish has purchased the Site, formerly managed as cattle grazing property (and permitted under the agricultural planning designation of the locality) with the intent of establishing offsets. Without the offset, as the property is rural land, cattle grazing can occur and vegetation management provisions under accepted guidelines allow for certain types of clearing, specific to creation of development footprints on single blocks, creation of asset protection area and farm forestry. Implementation of an offset over the land, and designation of a VDEC over it, will restrict access to some of these clearing exemptions. The success of the Offset is not dependent upon the implementation of other proposed offsets to the south, but rather is rather, complimentary to these and Ipswich City Council conservation estate immediately adjoining to the south. The Offset Area will be managed under an intensive works program implemented with reference to the OMP and will be subject to consistent and constant monitoring through transparent, reliable and trusted bio-condition and tertiary site monitoring assessments. The OMP identifies the nature of the conservation gain, including completion criteria, to be achieved over the nominated offset period for relevant MNES on the proposed Offset Area. It has undertaken a risk assessment specifically focussed on identifying and managing risks which would threaten the offset's conservation gain; the management of these threats e.g. fire management, vertebrate pest management, dealing with the consequence of stochastic threats, and arresting ecosystem decline caused by the transformant weed Lantana, and is focussed on returning the site to a healthy functioning ecosystem within 20 years with an ecological benefit over 20 years. The management measures required to achieve the stated conservation gain (reinstatement of former open forest habitat) are over and above what is required to maintain the site as a pastoral landscape.
7. Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable	The Offset Area is effective in that it is mapped as it is mapped as proximally close (has canopy connectivity with) a State and Regionally significant area of vegetation containing important biodiversity corridors and therefore is efficient in contributing, at scale, the realization of regional landscape ecological outcomes. Advanced restoration works and regrowth existing on the Offset Area will mean that the offset is timely in relation to the residual impacts of a Proposed Action. Beyond the regrowth areas being protected by the Offset Area, a component of the offset will result in a significant up-swing in habitat availability for MNES as these areas will be transitioning from completely cleared paddocks to remnant vegetation over the period they will be protected. By using the NEPA impact and offset calculators, the offset is transparent, scientifically robust and reasonable.

EPBC Offset Suitability Criteria	Response
	Combined with the Thagoona Offset Area, it ensures that ecological restoration outcomes can be achieved in a timely manner relative to the residual impacts of the Proposed Action. The use of established assessment frameworks, including the NEPA impact and offset calculators and the MHQA methodology, ensures that the offset is transparent, scientifically robust and reasonable. The approach adopted provides a clear, repeatable and evidence-based method for quantifying impacts and demonstrating that the Woolshed Offset Area will deliver appropriate and proportionate conservation outcomes.
8. Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced	This OMP provides clarity around the environmental objectives proposed, risks and risk management in achieving these goals and corrective actions identified should works not meet their envisaged target. This can be achieved through a) intensive ecological restoration works (i.e. assisted regeneration through weed (especially Lantana) eradication and infill planting); b) Annual monitoring of the following (years 1-20 until 2046) for the following: ▪ Vertebrate pests ▪ WoNS and regulated weeds ▪ MNES presence monitoring ▪ Bushfire Fuel Loads ▪ Vegetation (BioCondition and Rehabilitation success) monitoring. The OMP will be the responsibility of, managed and delivered by experts in offset delivery to ensure works meet this policy item and regulators will be informed of ongoing progress in relation to the approved OMP. The offset provider (and rehabilitation contractors as retained) will be responsible for the development and completion of compliance reporting. This reporting will clearly outline how reporting requirements defined in the OMP such as the qualifications and experience of monitoring and reporting staff have been met. It will be the contractor's responsibility to ensure that reporting is sent to NEPA, published on the Project's website and maintained in a safe, secure file for auditing purposes. the Proponent will ultimately remain responsible for the approval, regardless of the proposed delivery mechanism.

5. Offset Area Design

The Offset Area totals 88.63 ha, of which 87.17 ha is categorised as remnant vegetation and 1.46 ha of regrowth. The offset management area has been further categorised into two distinct Management Units (**MUs**) for the purposes of management and improvement monitoring. This categorisation is based on existing habitat condition and desired environmental offset principles. The three MUs are broadly aligned with vegetation assessment units within the Offset Area, as identified in **Table 7** and shown in **Figure 3**.

The MUs are as follows:

- **MU1** = 61.35 ha, representative of **AU1**
- **MU2** = 20.63 ha, representative of **AU2**
- **MU3** = 6.65 ha, representative of **AU3**.

Section 4 of this OMP provides a brief description of the MUs and outlines core objectives sought within each MU as part of the overall offset outcome.

The designation of the offset management area into MUs is specifically linked to Action Tables in **Section 6** of this OMP allowing itemised tasks to reference specific geographical areas within the Offset Area. Refer to **Figure 3** for the designation and spatial extent of the AUs. See **Figure 5** for Site logistic details (access, firebreaks, water points).

5.1 Management Unit 1

5.1.1 Existing Condition

Management Unit 1 (**MU1**) total 61.35 ha of the Offset Area. It is comprised of consists of 59.89 ha of Remnant (Category B) RE 12.9-10.2 and minor components being 0.92 ha High Value Regrowth (Category C) RE 12.3.3 and 0.54 ha of regrowth vegetation which meets HVR (Category C) status RE 12.9-10.7.

This MU currently provides the foundations for functional habitat for Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) with opportunity for improvement. Further, RE12.9-10.2 provides suitable habitat for Koala (*Phascolarctos cinereus*). Koala (*Phascolarctos cinereus*) utilisation was observed.

5.1.2 Management Approach

Improvement of MU1 will occur through assisted natural regeneration, which will take advantage of the emerging natural resilience and functionality of the existing communities, while promoting the continued regeneration of native vegetation through:

- The removal of exotic woody weed species
- The removal of livestock and culling of feral animals
- The use of controlled burns in accordance with Regional Ecosystem Description fire management guidelines
- Selective supplementary and infill planting, as required to ensure the species mosaic and strata of the target vegetation communities are being achieved.

The focus within MU1 will be to undertake targeted pest plant treatment and removal to encourage the natural recruitment of native species from the natural seed bank.

Supplementary and infill planting will occur within MU1 if monitoring of natural regeneration of endemic canopy and shrub species demonstrates that it is falling short of adopted performance criteria.

5.1.3 Offset Objectives

The primary offset objective for MU1 is to increase the establishment of native vegetation and improve the quality of the existing vegetation over the offset period. Further, the intent is to ensure sustainable vegetation communities that represent mapped communities for AU1 (**Figure 3**) are established and enhanced to provide the community with a high amount of resilience to persist indefinitely. This is to be achieved through assisted natural regeneration.

Details on specific management actions for MU1 are located in **Section 6** of this OMP via the Woolshed Offset Rehabilitation Management Plan (**Attachment 4**).

5.2 Management Unit 2

5.2.1 Existing Condition

Management Unit 2 (**MU2**) total 20.63 ha or 23.3% of the proposed Offset Area. This AU consists of Remnant RE12.8.17 occurring elevated (210-340 m AHD) and steeper, eastern portions of the Offset Area. The aspect is predominantly northerly to north-easterly at the eastern end of the Assessment Unit.

This MU occurs on fertile, chocolate brown and black clay soils with dense, impenetrable thickets of Lantana* (*Lantana camara*). Resultantly, access into the area has not been possible and BioCondition assessment has not been undertaken. Field data collection informing the structure and floristics was collected from one Tertiary and three Quaternary field survey sites at vantage points along internal site access trails being cleared of overgrowing Lantana by Cherish. Inspection of historical aerial photography from 1944 reveals that this MU was extensively thinned and logged until recently, and the vegetation present, although mapped as remnant, is young, and it is likely that the remnant status is only just achieved.

This MU currently provides habitat for Grey-headed Flying-fox (*Pteropus poliocephalus*). On account of significant Lantana* (*Lantana camara*) infestation within MU3, which comprises ~100% of the understory, availability of foraging shelter habitat for Koala (*Phascolarctos cinereus*) is significantly impaired. This MU has substantial opportunity for successional / ecosystem improvement owing to its heavily weed-infested condition.

5.2.2 Management Approach

Improvement of MU2 will occur through assisted natural regeneration, which will take advantage of the emerging native community, while promoting the continued regeneration of native vegetation (particularly understory and groundcover layers) through:

- Cessation of logging practices
- The removal of exotic woody weed species
- The removal of livestock and culling of feral animals
- The use of controlled burns in accordance with Regional Ecosystem Description fire management guidelines
- Selective supplementary and infill planting, as required to ensure the species mosaic and strata of the target vegetation communities are being achieved.

The primary focus within MU2 will be to undertake targeted pest plant treatment and removal to encourage the natural recruitment of native species from the natural seed bank.

Supplementary and infill planting will occur within MU2 if monitoring of natural regeneration of endemic canopy and shrub species demonstrates that it is falling short of adopted performance criteria (see **Attachment 4**).

5.2.3 Offset Objectives

The primary offset objective for MU2 is to increase the establishment of native vegetation and improve the quality of the existing vegetation over the offset period. Further, the intent is to ensure sustainable vegetation communities that represent mapped communities for AU2 (**Figure 3**) are established and enhanced to provide the community with a high amount of resilience to persist indefinitely. This is to be achieved through assisted natural regeneration.

Details on specific management actions for MU2 are located in **Section 6.7** of this OMP, as well as **Attachment 4 (RMP)**.

5.3 Management Unit 3

5.3.1 Existing Condition

Management Unit 3 (**MU3**) totals 6.65 ha or 7.5% of the proposed Offset Area. This AU consists of Remnant RE12.8.24 occurring elevated (340-360 m AHD) and steeper, eastern portions of the Offset Area. The aspect is predominantly northerly.

This MU occurs on fertile, chocolate brown and black clay soils with dense, impenetrable thickets of Lantana* (*Lantana camara*) a WoNS proliferating. Access to the AU for the purpose of assessing BioCondition was achieved by traversing an internal fire break crated by Cherish and projecting transects off this feature where space permitted. One standard BioCondition plot of 100x50m (AU3 Transect 1) and one smaller BioCondition plot of 50x20m (AU3 Transect 2) were deployed, the latter on account of much reduced available area.

Transects were established along the edge of the Lantana thicket with the plot projected into the AU ie. the tape measure formed the southern boundary of the plot. Rather than the centreline. Data informing the structure and floristics was supplemented with data collected from one Tertiary and one Quaternary field survey sites also from vantage points along internal site access trails being cleared of overgrowing Lantana by Cherish. This MU currently provides the early foundations for functional habitat for Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) with substantial opportunity for improvement owing to its heavily weed-infested condition.

This MU currently provides habitat for Grey-headed Flying-fox (*Pteropus poliocephalus*). On account of significant Lantana* (*Lantana camara*) infestation within MU3, which comprises ~100% of the understory, availability of foraging shelter habitat for Koala (*Phascolarctos cinereus*) is significantly impaired. This MU has substantial opportunity for successional / ecosystem improvement owing to its heavily weed-infested condition.

5.3.2 Management Approach

Improvement of MU3 will occur through assisted natural regeneration, which will take advantage of the emerging native community, while promoting the continued regeneration of native vegetation (particularly understory and groundcover layers) through:

- Cessation of logging practices
- The removal of exotic woody weed species (dense understorey of the transformer weed Lantana* (*Lantana camara*) and canopy incursions by Climbing Asparagus Fern* (*Asparagus africanus*)
- The removal of livestock and culling of feral animals
- The use of controlled burns in accordance with Regional Ecosystem Description fire management guidelines

- Selective supplementary and infill planting, as required to ensure the species mosaic and strata of the target vegetation communities are being achieved.

The primary focus within MU3 will be to undertake targeted pest plant treatment and removal to encourage the natural recruitment of native species from the natural seed bank by ecological burns.

Supplementary and infill planting will occur within MU3 if monitoring of natural regeneration of endemic canopy and shrub species demonstrates that it is falling short of adopted performance criteria (see **Attachment 4**).

5.3.3 Offset Objectives

The primary offset objective for MU3 is to increase the establishment of native vegetation and improve the quality of the existing vegetation over the offset period. Further, the intent is to ensure sustainable vegetation communities that represent mapped communities for AU3 are established and enhanced to provide the community with a high amount of resilience to persist indefinitely. This is to be achieved through assisted natural regeneration.

Details on specific management actions for MU3 are located in **Section 6.7** of this OMP, as well as **Attachment 4**.

6. Offset Management Actions

There are seven categories of management actions that are considered as necessary and appropriate for achieving the stated offset objectives. The primary purpose of these management actions is to either reduce or remove an existing threat or improve or create new habitat opportunities. In some instances, there is an overlap in the measurable outcomes of different management actions.

Some actions apply specifically to Koala (*Phascolarctos cinereus*) and others are designed to improve habitat and outcomes for Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*). Some actions are limited to acute or specific locations; others apply to the entire Offset Area.

Performance indicators that are referenced in this section are those that were established and documented in **Section 6** of the Preliminary Documentation Report (**PD Report**) (28 South Environmental, 2026). This includes the use of the MHQA method for Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) habitat to set benchmarks and targeted improvements within the Offset Area.

Actions to be completed in accordance with this OMP are covered by plans, as follows:

- **Action 1:** Integrated vertebrate pest management plan
- **Action 2:** Biosecurity management plan
- **Action 3:** Fencing, access and signage plan
- **Action 4:** Fire management plan
- **Action 5:** Native seed collection and propagation plan
- **Action 6:** Koala movement plan
- **Action 7:** Revegetation plan.

6.1 Action 1: Integrated Vertebrate Pest Management Plan

As acknowledged in **Section 4.2.2**, various pest invertebrate species have been confirmed as utilising the Offset Area. The management plan presented in **Table 9** provides actions and measures to limit the detrimental effects of these confirmed invertebrate pest species. An Integrated Vertebrate Pest Management Plan for the Woolshed Offset Area has been developed and is attached in **Attachment 5**.

Table 9: Management Plan for Action 1

Action Description: What are the tasks proposed?	▪ Reduce the occurrence of vertebrate pest species through implementation of targeted, species-specific management and an audit program. ○ Reductions will contribute habitat quality increase throughout the offset by reducing threats for ground traversing fauna.
Action Location(s): Where on site is the action proposed?	Integrated Vertebrate Pest Management is to occur across all MUs.
Action Timing: When and how will the action / task be implemented, started, completed?	<u>Prior to commencement of the action -</u> Implement the Integrated Vertebrate Pest Management Plan (IVPMP) (Attachment 5), which specifies: ▪ Target species (i.e. those confirmed or suspected of occurring on site based on baseline survey data) ▪ Survey data, including mapping, generated from the baseline survey.

	Management techniques that will be implemented to exclude or otherwise control vertebrate pest species, agreed in consultation with adjoining landowners, Regional Pest Management Group representative and ICC. Management techniques to be tailored for: ▪ Years 1-10 (intensive management effort); and ▪ Years 11-20 (moderate management effort, subject to performance criteria being met) ▪ Monitoring methods that will be implemented across future years of offset delivery. An on-site recording protocol for incidental observations of pest management species by the Offset Provider and neighbouring landholders. Performance criteria for the management of pest species. Corrective action procedure to be followed in the event that monitoring indicates that the adopted management techniques are not achieving the established performance criteria. Year 1 – Establishment of wildlife-friendly safe movement fencing²¹ around the perimeter of the Offset Area where required (Action 3, Section 6.3) and removal of remnants of fauna movement inhibiting fencing. Years 1 – 10 – Implement intensive pest management techniques, supplementary to fencing. Techniques may include shooting, baiting, trapping, fumigation of dens/warrens. Years 11 – 20 – Implement moderate effort pest management techniques, subject to performance criteria being met. Years 1 – 10 – Undertake annual monitoring as part of the IVPMP. Data and mapping to be included in the relevant Annual Compliance Report. Years 11 – 20 – Undertake monitoring every second year as part of the IVPMP. Data and mapping to be included in the relevant Annual Compliance Report. Include a data comparison between each year's pest census data and the baseline (Year 0) dataset. Data to be reported in the relevant year's Annual Compliance Report with tracking assessed against the performance criteria. Each year's Annual Compliance Report is to include proposed adaptive amendments to the IVPMP for future years.
Responsibility: Who will complete the action and who will provide the funding?	The Offset Provider will establish, resource and fund the pest management components of the Annual Compliance Report. The following tasks will require specific expertise or appointed contractors to complete: ▪ Repeat surveys to be completed by a senior tertiary trained ecologist, zoologists or environmental scientist with a minimum of 5 years industry field experience. ▪ Use of 1080 or sodium fluoroacetate poisons is regulated under the Health (Drugs and Poisons) Regulations 1996. Deployment and use of this control method, if adopted, is to be via a registered contractor holding relevant permits and demonstrated experience. ▪ Hunting / shooting, if adopted as a control technique, are to occur in accordance with all relevant Queensland Government permits and regulations. ▪ All participants in the pest species recording program (Offset Provider staff, neighbouring landholders etc.) are to be educated in the data collection and recording procedures.

²¹ Post and four strand wire fence; top and bottom wires straight gauge, middle two strands are barbed wire; cattle are present on properties to north, south and east. Barbed wire strands are necessary to prevent incursions by cattle.

	The Offset Provider is responsible for preparing and issuing Annual Compliance Reports to the Proponent within contracted timeframes.
Measured & Monitored By: How will the action be measured, how will the outcome of the action be measured, by what method and timing?	The effectiveness of pest management measures that are implemented will be measured and monitored as follows: ▪ Years 1 – 20 –pest surveys to measure progress towards completion criteria. ▪ Baseline (year 0) assessment (Attachment 1) forms the basis for ongoing monitoring. However, as areas within MU2 and MU3 are released from Lantana, new camera trap locations will be necessary. Deployment of camera traps must be 1 trap per 5 ha of habitat for each MU. Ultimate trap site numbers: MU1 - 13, MU2 – 6, MU 3 – 2. ▪ Cumulative 10% reduction in wild dog observation (by Year 10) recorded during annual pest surveys. The findings from pest survey will be documented in that year's Annual Compliance Report.
Risks & Adaptive Management: What's the procedure for correcting or amending the action if the proposed outcomes are not being achieved?	Implement the IVPMP which includes intensive implementation methods and data collection survey events for monitoring successful reduction of pest management impacts. The repeat survey points are designed to deliver data on outcomes being achieved. If the surveys do not demonstrate the targeted effectiveness the implementation strategy will be adjusted to: ▪ Adopt new management techniques. ▪ Increase successful techniques and reduce less successful management methods. ▪ Increase intensity of implementation program. ▪ Change the timing or locality of proposed target treatment locations or events. ▪ Allow the Management Plan to assimilate into any new broader threat abatement programs. The IVPMP uses baseline data to build a calendar of activities based around varying control methods, seasons and species. The threat abatement actions and outcomes within any calendar year will be reported on within the Annual Compliance Report and will provide a number of lead indicators towards a reduction in occurrence and impacts. Major survey and review periods are set to ensure the program achieves long term reduction and does not respond to specific stochastic events such as a fluctuation in pest populations. If Koala (<i>Phascolarctos cinereus</i>) mortality is observed (such monitoring should occur incidentally through the day-to-day delivery of the offset – consequently, this is not aligned with any formal monitoring activity described in Section 6.8) at the Offset Area: ▪ An additional baited camera trap round will be deployed ▪ Supplementary animal management (shooting or baiting) will be implemented. ▪ Increased intensity of the management (control) program and reassess after 6 months. ▪ Change the timing or locality of proposed target treatment locations or events. While events such as fire, drought, grazing by livestock, browsing by feral herbivores, vandalism through uncontrolled access are rare and can be managed by the contractor: ▪ within six months of the event, restoration works are to replace losses and reporting within the ACR (Offset) is required

- within six months of rectification evidence of impacts and rectification measures are to be reported in the following ACR (Offset).

6.2 Action 2: Biosecurity Management Plan

The management plan presented in **Table 10** provides actions and measures to limit the detrimental effects of potential confirmed pest plant species. A Biosecurity Management Plan for the Woolshed Offset Area has been developed and is attached in **Attachment 6**.

Table 10: Management Plan for Action 2

Action Description: What are the tasks proposed?	▪ Removal and control of all major weed infestations (WoNS and restricted weeds) from within the Offset Area using a variety of mechanical and herbicide methods. ▪ Ongoing maintenance rotations to retain extents of weed infestations within the Offset Area at or below the reduced extent achieved through weed management actions. ▪ Prevent the further spread or establishing of new weed outbreaks within the Offset Area. ▪ Prevent the introduction of diseases from personnel or use of plant and equipment.
Action Location(s): Where on site is the action proposed?	Management of non-native weeds is to occur across all MUs.
Action Timing: When and how will the action / task be implemented, started, completed?	Years 1 – 20 Implement Biosecurity Management Plan in Year 1 (Attachment 6). Undertake annual (every second year after Year 10) weed surveys and weed management control activities within the Offset Area, in accordance with the Biosecurity Management Plan. Activities conducted in the reporting period to be included in the relevant Annual Compliance Report. Include a data comparison between each year's weed survey data and the baseline (Year 0) dataset. Data to be reported in the relevant year's Annual Compliance Report with performance assessed against the completion criteria. Each year's Annual Compliance Report is to include (as required) proposed adaptive amendments to the Biosecurity Management Plan for future years.
Responsibility: Who will complete the action and who will provide the funding?	The Offset Provider will establish, resource and fund all weed management components of the OMP. The following tasks will require specific expertise or appointed contractors to complete: ▪ Baseline and repeat surveys to be completed by a senior tertiary trained ecologist, or environmental scientist with a minimum of 5 years industry field experience. ▪ Use of any herbicides to be undertaken by a licensed contractor or strictly in accordance with the <i>Agricultural Chemicals Distribution Control Act 1996</i> and or in accordance with manufactures recommendations or label instructions. ▪ Preparing and issuing Annual Compliance Reports to the Proponent and NEPA within contracted timeframes.
Measured & Monitored By: How will the action be measured, how will the outcome of the action be measured, by what method and timing?	The effectiveness of weed management measures that are implemented will be measured and monitored as follows: ▪ Year 0 – baseline weed survey ▪ Years 1 to 10 – annual detailed weed surveys (monitoring) to measure progress towards completion criteria

- Years 11 to 19 - weed surveys every second year to measure progress towards completion criteria
- Year 20 – final weed survey to measure final achievement with completion criteria at the end of the offset period.

The findings from each of these weed surveys will be documented in that year's Annual Compliance Report.

By Year 15, there will be an observed 95% reduction in WoNS and Restricted Matters in comparison to baseline weed assessment results (**Attachment 2**).

After Year 15 target is achieved, there ongoing maintenance and monitoring will be undertaken to demonstrate sustained fulfilment of this 95% reduction before there cessation of the offset period.

- The offset will be self-sustaining (see **Section 6.8.1.1.1**).

Performance Outcomes and Targets

The overarching performance outcome for Lantana removal is achievement of a 95% reduction in 95% reduction in WoNS and Restricted Matters compared with Baseline Conditions. The effectiveness of removal, removal is assessed by:

- Weed assessment to identify and map the extent of WoNS and Category 3 weeds in Accordance with the Biosecurity Management Plan (**Attachment 6**), employing the methodology employed for the baseline weed assessment (**Attachment 1**) at years 1-10, 11, 13, 15, 17,19.
- BioCondition and MHQA assessment to chart the trajectory of habitat upswing at years 1, 3, 5, 7, 9, 10, 11, 13, 15, 17 ,19, measured along the 100m shrub cover intercept.
- BioCondition and MHQA assessment to demonstrate Habitat Quality Gains i.e. Performance Completion Criteria for Koala at years 5, 10, 15, 20, measured along the 100m shrub cover intercept.

Targets are:

- Weed assessment to identify and map the extent of WoNS and Category 3 weeds in Accordance with the Biosecurity Management Plan (**Attachment 6**), employing the methodology employed for the baseline weed assessment (**Attachment 1**) at years 1-10, 11, 13, 15, 17,19:
 - Year 1-2: on average a <20% reduction in Lantana* coverage
 - Year 3: on average a >20% reduction in Lantana* coverage
 - Year 5-8: on average a 20-49% reduction in Lantana* coverage
 - Year 9-11: on average a 50-79% reduction in Lantana* coverage
 - Year 12-13: on average a 80-90% reduction in Lantana* coverage
 - Year 15: on average a 95% reduction in Lantana coverage
 - Year 17: on average a 95% reduction in Lantana coverage
 - Year 19: on average a >95% reduction in Lantana coverage.
- BioCondition and MHQA assessment to chart the trajectory of habitat upswing at years 1, 3, 5, 7, 9, 10, 11, 13, 15, 17 ,19:
 - Year 1: on average a <20% reduction in Lantana* coverage
 - Year 3: on average a >20% reduction in Lantana* coverage
 - Year 5: on average a 20-49% reduction in Lantana* coverage
 - Year 7: on average a 20-49% reduction in Lantana* coverage
 - Year 9: on average a 50-89% reduction in Lantana* coverage
 - Year 11: on average a 50-89% reduction in Lantana* coverage
 - Year 13: on average a 80-90% reduction in Lantana* coverage
 - Year 15: on average a 95% reduction in Lantana coverage
 - Year 19: on average a >95% reduction in Lantana coverage.

	▪ BioCondition and MHQA assessment to demonstrate Habitat Quality Gains i.e. Performance Completion Criteria for Koala at years 5, 10, 15, 20: ○ Year 5: on average a 20-49% reduction in Lantana* coverage ○ Year 10: on average a 50-89% reduction in Lantana* coverage ○ Year 15: on average a 95% reduction in Lantana coverage ○ Year 20: on average a >95% reduction in Lantana coverage.
Risks & Adaptive Management: What's the procedure for correcting or amending the action if the proposed outcomes are not being achieved?	If surveys demonstrate that the Offset Area is not trending towards achieving the completion criteria, the following corrective actions will be implemented: ▪ Adopt new management techniques ▪ Increase successful techniques and reduce less successful management methods ▪ Increase intensity of implementation program ▪ Change the timing or locality of proposed target treatment locations or events. ▪ Where weed re-establishment is detected and mapped by weed monitoring occurs, revise weed action planning for the following year to facilitate additional treatment (fire, mechanical, chemical, dependent upon the on-ground situation e.g. extent of the outbreak, condition of revegetation / new natural recruitment and removal works are to be instigated: ○ within three months of detection, noting that treatment during non-growth periods may be ineffective and are best targeted during growth periods for greater effectiveness treat all WoNs and Category 3 (Restricted) <i>Biosecurity Act 2014</i> weeds with methods to avoid impacts to restoration works (mechanically or chemically dependent on circumstances). ○ within 3 months of detection undertake an investigation of the potential source point of seeding. ○ within six months of detection undertake additional treatment and removal works are to be followed up during the next potential growth period to avoid regeneration and potential seeding events.

6.3 Action 3: Fencing, Access and Signage Plan

The management plan presented in **Table 11** provides actions and measures to manage access, signage and fencing.

Table 11: Management Pan for Action 3

Action Description: What are the tasks proposed?	Prevention / control of unauthorised access and trespass through the Offset Area.
Action Location(s): Where on site is the action proposed?	The Offset Area will be fenced, utilising a wildlife-friendly fence design, consistent with the Koala-Sensitive Design Guidelines (DES, 2022). Fencing will be established based on Figure 5 .
Action Timing: When and how will the action / task be implemented, started, completed?	<u>Year 1:</u> ▪ Remove all internal fences and rubbish. ▪ Removal of barbed wire from the top and bottom strands and replaced with straight gauge (white wire). ▪ Establish wildlife-friendly fencing at the Offset Area. New fencing will be established with the Top and Bottom strands being plain wire. Fencing locations are proposed within Figure 5. Fencing will consist of: ○ Southern boundary with Lot 214 on CH312073 will have fencing removed. - This property is a part of the ICC conservation estate, there is no need for this boundary to fenced. ○ Southern boundary with Lot 13 on CH312069 is barbed wire fence that will have top and bottom strands fitted with straight gauge wire. This fencing is required due to this neighboring property being used for rural purposes. ○ Northern and eastern boundary with Lot 129 on CH311261, Lot 2 on RP22846 and Lot 68 on 7CH311261/unnamed road parcel, do not currently have fencing established. If this becomes necessary in the future, fencing will be wildlife-friendly. ○ See detail in Figure 5. ▪ Access gates, padlocks and signage to be installed where Offset Area fencing crosses tracks and entry points to the site (Figure 5). ▪ Provide notification to all adjoining landholders of the purpose, management principles and offset objectives outcomes for the Offset Area. <u>Remaining Actions:</u> No new access tracks through the Offset Area unless to support offset outcomes. ▪ No new tracks are currently proposed.
Responsibility: Who will complete the action and who will provide the funding?	The Offset Provider is responsible for funding and undertaking all actions relating to access and trespass prevention. The Offset Provider is responsible for preparing and issuing Annual Compliance Reports to the Proponent and NEPA within contracted timeframes.
Measured & Monitored By: How will the action be measured, how will the outcome of the action be measured, by what method and timing?	▪ A copy of the notification letter provided to adjoining landholders to be provided with the Year 1 Annual Compliance Report. ▪ Evidence (photos) of signage on gates and fencing to be provided with the Year 1 Annual Compliance Report. ▪ The integrity, effectiveness and suitability of wildlife-friendly fencing around the perimeter of the Offset Area will be monitored:

	▪ As a component of annual surveys conducted for pests (Action 1); and ▪ Following natural hazard events (e.g. large storms, bushfire etc.). ▪ The security and signage of gates will be monitored opportunistically through the course of day-to-day management of the Offset Area and following natural hazard events. As a minimum, each access point into the Offset Area will be inspected every three months. ▪ Similarly, the condition of access tracks will be monitored opportunistically through the course of day-to-day management of the Offset Area and following natural hazard events. As a minimum, each access track will be inspected every three months.
Risks & Adaptive Management: What is the procedure for correcting or amending the action if the proposed outcomes are not being achieved?	If pest surveys identify an increased presence of pest species in the Offset Area, the merits of additional or alternative fencing arrangements will be assessed to provide improved deterrence. Similarly, if evidence of recurring trespass is identified during regular Offset Area management activities and surveys, the merits of additional trespass deterrents (e.g. additional signage, security cameras etc.) will be assessed. Defective or ineffective fencing will be rectified/modified as necessary, within 30 business days of issues being identified. Signage will be replaced if found to be missing, faded or otherwise illegible within 30 business days of issues being identified. Defective access tracks will be rectified as necessary, within 30 business days of issues being identified. ▪ While events such as fire, drought, grazing by livestock, browsing by herbivores, vandalism through uncontrolled access are rare and can be managed by the contractor: ○ within six months of the event, restoration works to replace losses and reporting within the ACR (Offset) is required ○ within six months of rectification evidence of impacts and rectification measures are to be reported in the following ACR (Offset).

VISITORS

A BIOSECURITY MANAGEMENT PLAN APPLIES TO THIS PLACE

**This is a management area for the Biosecurity Management Plan that applies to this place.
It is an offence for a person entering, present at, or leaving a management area to fail to comply with the measures stated in the Biosecurity Management Plan for the area unless the person has a reasonable excuse.**

FARM CHECK-IN



Scanning and completing the Farm Check-In is a condition of the Biosecurity Management Plan.

All visitors must scan the QR code and complete the form prior to entering this property.

Use the email address on this sign to send a copy to the property owner.

You must contact us or visit our office before entering the property to obtain information about the Biosecurity Management Plan and your biosecurity obligations under the *Biosecurity Act 2014*.

Vehicles, people and equipment can carry diseases, weed seeds and pests.

Phone / UHF channel: _____

Email: _____

Inset 3: Example signage – ‘Biosecurity Management Plan’

Biodiversity Offset Area

Protected by Voluntary Declaration under
the *Vegetation Management Act 1999*

No Unauthorised Entry

Trespassers will be prosecuted
In case of emergency, contact + 61 XXX XXX XXX

Inset 4: Example signage – ‘No Unauthorised Entry’

6.4 Action 4: Fire Management Plan

The management plan presented in **Table 12** provides actions and measures to limit the detrimental effects of wildfire, and the use of low intensity mosaic burning as the primary means of managing accumulated pasture grass biomass and promote germination and ecosystem health within the Woolshed Offset Area.

Table 12: Management Plan for Action 4

Action Description: What are the tasks proposed?	Manage created bushland habitat within the Offset Area to prevent and / or minimise the impact of high intensity wildfires. This will be achieved through: ▪ Maintaining firebreak on the inside of the Offset Area perimeter fence line (Figure 5). ▪ 30,000L water tanks will be established at locations illustrated in Figure 5. These tanks will be established upon a mown asset protection zone that will be maintained for 20m around the tank, with a 2m gravel section separating the infrastructure from the edge of mown grass to ensure that tanks are not damaged during burns and/or wildfire. ▪ Periodical and controlled low intensity burns occurring in a mosaic configuration through the Offset Area. ▪ Maintenance of existing fire breaks in support of habitat improvement, expansion and revegetation areas (consider new tracks and breaks in replanting programs). ▪ Establishment of safety and emergency response protocols for wildfire events. If any damage is sustained, an inventory is to be included in the reporting information. ▪ Undertaking of cool burns to as a weed management activity. ▪ As the Fire Management Plan will be used to control weeds, fuel load control will be prioritised upon the intensity of Lantana* (<i>Lantana camara</i>) and priority for weed control, not fuel loads. Nonetheless, these intense infestations represent areas of the offset with the highest fuel load.
Action Location(s): Where on site is the action proposed?	Vegetation across the whole Offset Area is able to support the establishment and spread of wildfire.
Action Timing: When and how will the action / task be implemented, started, completed?	<u>Years 1-20</u> Implement the Offset Area Fire Management Plan (Attachment 7). The Key Performance Indicators of management success are: ▪ Fuel load management activities are implemented in accordance with the Fire Management Plan. ○ This occurs concurrently through weed control measures described under the plan. ▪ Vehicle tracks are well-maintained (i.e., no scouring, free of fallen timber, slashed on a 6-month cycle, and 'boggy' areas are filled with road base) to ensure they are trafficable at all times. ▪ Management is to be reported annually.
Responsibility: Who will complete the action and who will provide the funding?	Implementation of the Fire Management Plan (Attachment 7), specifically back burns, is to occur under relevant permits and instruction from the Rural Fire Service. The Offset Provider is responsible for preparing and issuing Annual Compliance Reports to the Proponent and NEPA within contracted timeframes.

Measured & Monitored By:

How will the action be measured, how will the outcome of the action be measured, by what method and timing?

Measures:

- Revegetation plantings or wildlife infrastructure (such as koala retreat poles) are not burnt.
- No reduction (temporary or permanent) in the available foraging and food trees for Koala (*Phascolarctos cinereus*) during the offset period as a result of wildfire.
- All Fire Management Plan activities that are conducted (tracks, burns, fuel load reduction, etc) are to be documented within the relevant Annual Compliance Report.
- No established trees, including trees containing greater glider hollows are to be burnt.
- Mosaic burning techniques to be implemented under the approval and supervision of the local fire service.
- No reduction (temporary or permanent) in the available foraging and food trees for the species during the offset period as a result of wildfire. Biomass and grass height to be maintained low around fauna infrastructure, particularly when fire index is considered to be at moderate to high levels/seasonally
- All Fire Management Plan activities that are conducted (tracks, burns, fuel load reduction, etc) are to be documented within the relevant Offset Area reporting.
- The Fire Management Plan contributes to the 95% reduction of WoNS and Restricted Matters compared to baseline weed assessment by Year 15.

Monitoring:

1. The integrity and effectiveness of firebreaks will be monitored:
 - a. Opportunistically, through the course of traversing the site for day-to-day management;
 - b. As a component of annual surveys conducted for pests (Action 1); and
 - c. Following natural hazard events (e.g. large storms, bushfire etc.).
2. Fuel load assessments to be conducted twice annually at the conclusion of the wet season and again at the onset of the wet season utilising the methods described within **section 6.8.4**. The results of monitoring will prompt the following triggers:
 - a. Low–Moderate fuel load**
 - Continue routine annual monitoring.
 - b. High fuel load**
 - Review fuel accumulation trends and assess whether management is warranted in conjunction with habitat condition and seasonal outlook.
 - c. Very High fuel load**
 - Assess the need for fuel reduction measures (e.g. ecological burning, targeted weed management), considering ecological objectives and prevailing fire risk.
 - d. Extreme fuel load**
 - Implement fuel reduction measures where appropriate and consistent with ecological requirements. Repeat fuel hazard monitoring following management to assess effectiveness.

Fuel load calculations shall be determined utilising the (Hines F., 2010). Note that at the Woolshed Offset, fuel load principally is derived from Lantana* (*Lantana camara*), which contributes significantly to overall fuel loading and which dominates the Surface, Near Surface and Elevated

	Fuels. meaning the control of Lantana* (<i>Lantana camara</i>), at least early in the offset (Year 1-10) vicariously entails the control of overall fuel loads. 3. The stored volume of supplementary water storages is to be checked opportunistically, but at least every three months. 4. Progress towards the 95% reduction of WoNS and Restricted Matters by Year 15 will be monitored through weed monitoring described within Attachment 6, Section 6 (Action 2, BMP).
Risks & Adaptive Management: What's the procedure for correcting or amending the action if the proposed outcomes are not being achieved?	Fire is a natural occurrence within open Eucalypt woodland and within time bushland will recover from even major events. Regardless, if a major wildfire event occurs within the Offset Area during the offset period the following adaptive management actions will occur: ▪ A post wildfire audit of the damage and cause of the wildfire (where it commenced, direction and area it moved through, which MUs sustained the greatest damage and why, recommendations on actions which could be incorporated to avoid or minimise any future events). ▪ An Offset Area Recovery Plan would be prepared scheduling actions to expedite the recovery and reinstatement of values destroyed by fire. ▪ The Offset Area Fire Management Plan would be revised to adopt recommendations and strategies from the post wildfire event audit. Additional maintenance and adaptive management measures are as follows: ▪ Firebreaks are to be maintained unobstructed for a minimum width of 2 m. Vegetation encroachment or other obstructions to firebreaks are to be cleared within one week of the issue being identified. ▪ Supplementary water storages are to be refilled within a fortnight of stored volumes dropping below 75% of capacity. ▪ If the engaged qualified bushfire consultant determines that fuel loading (as determined from annual monitoring) warrants a hazard reduction burn, a burn will be conducted in accordance with the endorsed Offset Area Fire Management Plan. If it is observed, that it is unlikely that a 95% reduction of WoNS and Restricted Matters will be achieved by Year 15, weed management procedure is to be reconsidered in line with the Section 6 of BMP (Attachment 6, Section 6) (i.e. intensification of management activities, revaluation of control strategy). ▪ While events such as fire, drought, grazing by livestock, browsing by herbivores, vandalism through uncontrolled access are rare and can be managed by the contractor: ○ within six months of the event, restoration works are to replace losses and reporting within the ACR (Offset) is required ○ within six months of rectification evidence of impacts and rectification measures are to be reported in the following ACR (Offset).

6.5 Action 5: Native Seed Collection and Propagation Plan

The management plan presented in **Table 13** provides actions and measures to guide seed collection from the site and propagation.

Table 13: Management Plan for Action 5

Action Description: What are the tasks proposed?	Sourcing, collecting and storing of local seed provenance from vegetated portions of the site for use in the offset replanting works. The planting palettes for each RMU are specified in the Woolshed Offset Rehabilitation Management Plan in Attachment 4.
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	Youngentob et al. (2021) identified locally important food trees for Koala (<i>Phascolarctos cinereus</i>) by geography. Four (4) tree species recognised as important food trees for Koala (<i>Phascolarctos cinereus</i>) in south-east Queensland are present within the Offset Area; ▪ Spotted Gum (<i>Corymbia citriodora</i> subsp <i>variegata</i>) ▪ Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>) ▪ Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>) ▪ Queensland Blue Gum (<i>Eucalyptus tereticornis</i>). The National Recovery Plan for the Grey-headed Flying-fox ‘<i>Pteropus poliocephalus</i>’ identifies habitat critical to the survival of the species as containing native tree species that are known to be productive as foraging habitat during the final weeks of gestation, during the weeks of birth, the lactation period and conception (August to May). Eby and Law (2008) identifies a number of important winter and spring flowering species within South East Queensland and New South Wales that are both highly productive and reliable as blossom forage resource (>0.65 wt p*r) for Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) during this period of resource shortage. The following canopy species, which are present within the Offset Area and which are considered significant will form a component of infill planting as described by Attachment 4 – Woolshed Offset Rehabilitation Management Plan: ▪ Pink Bloodwood (<i>Corymbia intermedia</i>) ▪ Spotted Gum (<i>Corymbia citriodora</i> subsp <i>variegata</i>) ▪ Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>) ▪ Queensland Blue Gum (<i>Eucalyptus tereticornis</i>). Other species which are utilised by Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>) for foraging during resource shortages, but which are not especially productive / reliable (<0.65 wt p*r), but which are present on-site and will form a component of infill planting include: ▪ Moreton Bay Ash (<i>Corymbia tessellaris</i>) ▪ Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>).
Action Location(s): Where on site is the action proposed?	Seed collection programs will be conducted to align with various tree species flowering / fruiting seasons from areas of remnant vegetation and advanced regrowth within the Offset Area. Harvested native seedlings are to be germinated into tube stock in the Offset Provider’s nursery of choice for use in revegetation planting across the Offset Area (all MUs).
Action Timing: When and how will the action / task be implemented, started, completed?	<u>Year 1</u> Develop a seed collection program based on the flowering / fruiting seasons across areas of remnant vegetation and advanced regrowth within the Offset Area (collection commences when offset commences). Consult immediately adjoining landholders for permission to harvest seed from adjoining vegetated areas to maximise Year 1 collection volumes. <u>Year 2</u> Planting to commence of suitably mature stock grown from seed collected in Year 1. Direct seeding may also be used if conditions necessitate. Continue seed collection program in Year 2 until sufficient stock to complete the full replanting of the Offset Area has been germinated and propagated.
Responsibility: Who will complete the action and who will provide the funding?	The Offset Provider is responsible for: ▪ Completing the seed collection program using appropriate qualified experts to determined seed collection timeframes relative to targeted species.

	- Employing experienced and trained staff to operate and maintain the offsite nursery or engage a Nursery of their choosing to manage plant stock. - Preparing and issuing Annual Compliance Reports to the Proponent and NEPA within contracted timeframes.
Measured & Monitored By: How will the action be measured, how will the outcome of the action be measured, by what method and timing?	Minimum 50% of all replanted stock being sourced from within the region (within 25 km) measured through annual nursery stocktake providing data on: - Volume of seed collected within the annual period % of collected seed successfully germinated and propagated into tube stock - Number of plants distributed from the nursery to revegetation areas (provided as a total number and as a % proportion of total plants replanted). - Nursery stocktake statistics to be included as an appendix to the Annual Compliance Report.
Risks & Adaptive Management: What's the procedure for correcting or amending the action if the proposed outcomes are not being achieved?	Failure to achieve seed propagation from the seed collection program will result in the shortfall needing to be purchased from local native plant nurseries. The consequence of this would be additional costs associated with outsourcing this activity and the potential increase in stock mortality and need for rectification plantings. Additional minor risks, which can be managed through warranties and certifications, derive from the potential introduction of pathogens through external nursery stock and soil. Failure to achieve the minimum 50% sourcing of replanted stock from the Offset Area will be documented in the relevant Annual Compliance Report, including details on: - Percentage of plants achieved from region - Reasons for failure to achieve site seed source targets - Changes to collection program or nursery operations to rectify shortfall in subsequent annual period.

6.6 Action 6: Koala Movement Plan

The management plan presented in **Table 14** provides actions and measures to enhance the movement of Koala (*Phascolarctos cinereus*) throughout the Offset Area.

Table 14: Management Plan for Action 6

Action Description: What are the tasks proposed?	The full perimeter of the Offset Area will be fenced, utilising a wildlife-friendly fence design, consistent with the Koala-Sensitive Design Guidelines (DES, 2022). Removal and control of all major weed infestations (WoNS and restricted weeds) from within the Offset Area using a variety of mechanical and herbicide methods as per Table 10.
Action Location(s): Where on site is the action proposed?	Fencing will be established upon the property boundary and weed management over Offset Area.
Action Timing: When and how will the action / task be implemented, started, completed?	Fencing will be installed in the first year of management. Weed management ongoing over the 20 year offset period.

Responsibility: Who will complete the action and who will provide the funding?	The Offset Provider will establish, resource and fund all weed management components of the OMP.
Measured & Monitored By: How will the action be measured, how will the outcome of the action be measured, by what method and timing?	The effectiveness of weed management measures that are implemented will be measured and monitored as follows: - Year 0 – baseline weed survey - Years 1 to 19 – detailed weed surveys (monitoring) (see Section 6.2 – Action 2 (<u>annual monitoring Years 1-10, monitoring every secondary year for Years 11-20</u>)) to measure progress towards completion criteria - Year 20 – final weed survey to measure final achievement with completion criteria at the end of the offset period. The findings from each of these weed surveys will be documented in that year's Annual Compliance Report. Direct or indirect observations of Koala (<i>Phascolarctos cinereus</i>) utilisation throughout the Offset Area.
Risks & Adaptive Management: What's the procedure for correcting or amending the action if the proposed outcomes are not being achieved?	If surveys demonstrate that the Offset Area is not trending towards achieving the completion criteria, the following corrective actions will be implemented: - Adopt new management techniques - Increase successful techniques and reduce less successful management methods - Increase intensity of implementation program Change the timing or locality of proposed target treatment locations or events.

6.7 Action 7: Revegetation and Habitat Creation Plan

The management actions presented in **Table 15** should be read in conjunction with the Woolshed Offset Rehabilitation Management Plan which is included at **Attachment 4**.

Table 15: Management Plan for Action 7 - Revegetation

Action Description: What are the tasks proposed?	Broadscale weed removal of all MUs with selective planting where necessary. Actions broadly consist of: - Cessation of logging practices - The removal of exotic woody weed species - The removal of livestock and culling of feral animals - The use of controlled burns in accordance with Regional Ecosystem Description fire management guidelines - Selective supplementary and infill planting, as required to ensure the species mosaic and strata of the target vegetation communities are being achieved. The planting palettes of all MUs are specified in the Woolshed Offset Rehabilitation Management Plan in Attachment 4.
Action Location(s): Where on site is the action proposed?	Restoration efforts will occur across all MUs.
Action Timing: When and how will the action / task be implemented, started, completed?	Refer to the Woolshed Offset Rehabilitation Management Plan in Attachment 4 .

Responsibility: Who will complete the action and who will provide the funding?	The Offset Provider is responsible for: 1. Employing experienced and trained staff to undertake planting, watering and other revegetation and habitat management activities. 2. Preparing and issuing Annual Compliance Reports to the Proponent and NEPA within contracted timeframes.
Measured & Monitored By: How will the action be measured, how will the outcome of the action be measured, by what method and timing?	A census survey of Koala (<i>Phascolarctos cinereus</i>) and Grey-headed Flying-fox (<i>Pteropus polycephalus</i>) will be conducted within the Offset Area for the duration of the Offset (years 1, 3, 5, 7, 9, 10, 11, 13, 15, 17, 19 and 20). As a minimum, surveys will include Spot Assessment Technique (SAT) and spotlighting or other emerging techniques appropriate for identifying the relevant protected matters on steep sites (eg thermal drone assessments, detection dogs). Revegetation (Attachment 4) Success Criteria The <i>South-east Queensland Ecological Restoration Framework</i> (Chenoweth EPLA and Bushland Restoration Services, 2012) notes that density at which plants are spaced will be dependent on the aim of the project. However, when starting with an area devoid of native vegetation cover, the plantings should be established at a density that will result in rapid canopy closure so that exotic species are excluded. Experience has shown that planting trees and shrubs spaced at 1.5m centres achieves this aim. Wider tree spacings often mean there is a longer time before canopy closure and therefore a prolonged period of weed control. The same principle applies to the establishment of ground layer and open wetland vegetation where there is an absence of overstorey elements. In this instance, to achieve the closure of vegetation and reduction of weeds it is necessary to plant at much tighter centres of at least 2-5 plants/m². Higher density planting is also desirable at the edges of revegetation areas to reduce edge effects. Successful Natural Regeneration parameters within the rehabilitation areas must reflect the following as a minimum or higher: ▪ An average of: ○ 1 native plant per 1m² across the ground stratum of the MU; ○ 1 native plant per 5 m² across the shrub stratum of the MU; ○ 1 native plant per 10 m² across the sub-canopy stratum of the MU; ○ 1 native plant per 10 m² across the canopy stratum of the MU; or ▪ <u>Will be assessed</u> through annualised reporting procedures to track progress in achieving interim habitat quality gains (see Section 6.8.3). ▪ The acceptable target for rehabilitation within all Management Units is 90% success rate of all planted tubestock following a comprehensive planting, monitoring and maintenance during the rehabilitation stage ▪ <u>Will be assessed</u> through annualised reporting of habitat quality gains, though internal monitoring/reporting defined in the Works/monitoring Checklist can assist in tracking success. This will assist in achieving compliance: ▪ 95% overall reduction in area compared with the baseline extent of WoNS and weeds listed under <i>the Biosecurity Act 2014</i> (Qld) (Attachment 2). ○ <u>Will be assessed</u> through annualised reporting procedures to track progress in weed reduction against baseline data (see section 6.8.1) ▪ Achieving interim habitat quality gains (see Section 6.8.3). Habitat quality interim performance targets and completion criteria are set out in Section 6.8 of this OMP. Offset progress should be on track with these targets at each Year 5, 10, 15 and 20 milestone.

Risks & Adaptive Management:

What's the procedure for correcting or amending the action if the proposed outcomes are not being achieved?

Ecological restoration identified within the RMP, in addition to specific risk management actions outlined by the articulated Offset Management Actions in Section 6 of this OMP, will enhance natural regeneration of canopy and understorey and / or direct infill planting with canopy species comprising forage and shelter habitat for Koala and Grey-headed Flying-fox.

Revegetated areas will be specifically managed for a period of 5 years from planting to success criteria in Risks & Adaptive Management, below. Post 5 years the revegetation will be considered to be established and will be more broadly managed under requirements of the OMP.

A Works/Monitoring Checklist is set out on page 5 of **Attachment 4**.

1. This requires the following information be collected at 3 month, 6 month and 12 month intervals based on rehabilitation progress:
2. Survival and condition of planted vegetation, including an estimate of the number of dead or declining plants;
3. Number and species of replacement plants installed since the previous monitoring event;
4. Estimated percentage weed cover within each ANR area and management unit;
5. Extent and density of natural regeneration within each ANR area and management unit;
6. Photographic records from established permanent photo monitoring points;
7. Evidence of weed treatment effectiveness and any follow-up actions undertaken;
8. General observations regarding vegetation health, site condition and restoration trajectory; and
9. Recommendations for corrective actions or adaptive management measures where required.

This monitoring is to assist in the scrutiny of day-to-day works carried out within this Action, with surveying associated with annualised monitoring (habitat quality gains, weed assessments – see **Section 6.8**) to demonstrate progress within annual reports.

If Koala (*Phascolarctos cinereus*) or Grey-headed Flying-fox (*Pteropus poliocephalus*) are observed utilising the Offset Area, census data will be analysed for year-on-year trends using a statistical method that is suitable for the size of data set at hand. The need for causation analysis will be triggered if the number of individuals occurring within the Offset Area is assessed as a) declining by a statistically significant margin over the course of one year; or b) declining consistently over three consecutive years, regardless of statistical significance.

If causation analysis identifies that the reduction in specimen records is attributable to factors that are controllable within the Offset Area, appropriate corrective actions will be implemented to rectify the issues (refer adaptive management actions for Actions 1-5).

Specific success criteria (see above) and corrective actions are provided within **Attachment 4**. Corrective Actions and timeframes include:

- If retained trees show signs of ill health (i.e. dead or poor health):
 1. An arborist is to be engaged to identify likely causes and to recommend mitigation measures to improve regeneration conditions.
 2. Cherish will engage a suitably qualified professional to identify the likely cause of health decline and apply recommended mitigation measure/s to improve growing conditions (as recommended by the suitably qualified professional).
 3. Remove ill or dead plantings, within six months of detection and undertake any remediation works and re-establishment planting.
- Where plant failure of >10% of the planted stock occurs during the establishment period:

1. Supplementary planting will be undertaken within six months or the next appropriate planting period (whichever comes first) of detection.
2. Should the planting fail again, within one month of detection, Cherish is to engage a suitably qualified professional to identify the likely cause of plant failure.
3. Apply recommended mitigation measure/s to improve growing conditions (as recommended by the suitably qualified professional).
- Where weed re-establishment occurs, additional treatment and removal works are to be instigated:
 1. Within three months of detection, noting that treatment during non-growth periods may be ineffective and are best targeted during growth periods for greater effectiveness treat all WoNs and Category 3 (Restricted) Biosecurity Act 2014 weeds with methods to avoid impacts to restoration works (mechanically or chemically dependent on circumstances).
 2. Within 3 months of detection undertake an investigation of the potential source point of seeding.
 3. Within six months of detection undertake additional treatment and removal works are to be followed up during the next potential growth period to avoid regeneration and potential seeding events.
- If evidence of excessive spraying exists or if off-target damage is evident, further restoration will be required to the satisfaction of the Approval Authority.
- Where planted specimens within the establishment and monitoring period (i.e. 48 months) fail to strike:
 1. Supplementary planting will be undertaken within six months or the next appropriate planting period (whichever comes first) of detection.
 2. Should the planting fail again, within one month of detection, Cherish is to engage a suitably qualified professional to identify the likely cause of plant failure.
 3. Apply recommended mitigation measure/s to improve growing conditions
- Where growth rates are not as expected (following BioCondition / MHQA assessment at years 1, 3, 5, 7, 9, 10, 11, 13, 15, 17, 19):
 1. within three months of detection engage a suitably qualified professional to review the plantings and advise on methods to increase growth rates through other interventions.
 2. within three months of detection undertake soil testing to determine what rate of soil ameliorants or fertilizers may be required to improve the chemical balance of the soils for improved plant growth.
 3. within 12 months of detection revise management plan for rehabilitation revise management actions for the offset.
 4. within 24 months of detection if the corrective actions have not amended the slowing Discuss with the Department to negotiate changes to timeframes to meet the completion criteria.
 5. Within 12 months of discussing growth rates with the Department Revise the OMP and submit to Minister for approval.
- Where growth rates are not as expected (following establishment monitoring Year 0 – Year 5 post planting):
 1. within three months of detection engage a suitably qualified professional to review the plantings and advise on methods to increase growth rates through other interventions.
 2. within three months of detection undertake soil testing to determine what rate of soil ameliorants or fertilizers may be required to improve the chemical balance of the soils for improved plant growth.
 3. within 12 months of detection revise management plan for rehabilitation revise management actions for the offset.

	4. within 24 months of detection if the corrective actions have not amended the slowing Discuss with the Department to negotiate changes to timeframes to meet the completion criteria. 5. within 12 months of discussing growth rates with the Department Revise the OMP and submit to Minister for approval. ▪ While events such as fire, drought, grazing by livestock, browsing by herbivores, vandalism through uncontrolled access are rare and can be managed by the contractor: 1. within six months of the event, restoration works are to replace losses and reporting within the ACR (Offset) is required 2. within six months of rectification evidence of impacts and rectification measures are to be reported in the following ACR (Offset).
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6.8 Summary Monitoring Schedule

Table 16 presents the 20 year monitoring schedule for the delivery of the offset at the Offset Area.

Table 16: Summary of Monitoring Schedule Over the 20 year Offset Monitoring Period

Year	Monitoring / Survey						Report	Responsibility
	General site inspection	Pest (Action 1)	Weed (Action 2)	Vegetation community (Action 6)	Koala and Grey-headed Flying-fox ^ (Action 6)	Fuel Load Assessment		
0	✓ B	✓ B	✓ B	✓P, T	✓B	✓B	OMP	Offset Provider and Auditor (suitably qualified ecological professional)
1	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)
2	✓	✓	✓	-	-	✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)
3	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report Independent third-party audit	Offset Provider and Auditor (suitably qualified ecological professional)
4	✓	✓	✓			✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)
5	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report documented Year 5 Offset Milestone Report	Offset Provider and Auditor (suitably qualified ecological professional)
6	✓	✓	✓	-	-	✓	Annual Compliance Report Independent third-party audit	Offset Provider and Auditor (suitably qualified ecological professional)
7	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)
8	✓	✓	✓			✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)

Year	Monitoring / Survey						Report	Responsibility
	General site inspection	Pest (Action 1)	Weed (Action 2)	Vegetation community (Action 6)	Koala and Grey-headed Flying-fox ^ (Action 6)	Fuel Load Assessment		
9	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report Independent third-party audit	Offset Provider and Auditor (suitably qualified ecological professional)
10	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report documented Year 10 Offset Milestone Report	Offset Provider and Auditor (suitably qualified ecological professional)
11	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)
12	✓	-	-	-	-	✓	Annual Compliance Report Independent third-party audit	Offset Provider and Auditor (suitably qualified ecological professional)
13	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)
14	✓	-	-	-	-	✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)
15	✓	✓	✓	✓P, T	✓	✓	Independent third-party audit Annual Compliance Report documented Year 15 Offset Milestone Report	Offset Provider and Auditor (suitably qualified ecological professional)
16	✓	-	-	-	-	✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)
17	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)

Year	Monitoring / Survey						Report	Responsibility
	General site inspection	Pest (Action 1)	Weed (Action 2)	Vegetation community (Action 6)	Koala and Grey-headed Flying-fox ^ (Action 6)	Fuel Load Assessment		
18	✓	-	-	-	-	✓	Annual Compliance Report Independent third-party audit	Offset Provider and Auditor (suitably qualified ecological professional)
19	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report	Offset Provider and Auditor (suitably qualified ecological professional)
20	✓	✓	✓	✓P, T	✓	✓	Annual Compliance Report documented Year 20 Offset Milestone Report	Offset Provider and Auditor (suitably qualified ecological professional)

Notes:

B = Baseline, P = Primary sites, T = Tertiary sites

^ = If offset species are detected on site, monitoring will be conducted at annual intervals from that point onwards for the balance of the offset period.

6.8.1 Weed Monitoring

Monitoring will be undertaken using methodologies consistent with those applied during the baseline assessment to ensure that results are directly comparable and capable of demonstrating temporal changes in weed richness, abundance and spatial extent across the Offset Area relative to the baseline assessment completed in January 2025.

Monitoring results will be directly compared against the baseline results to evaluate the effectiveness of management actions, identify emerging infestations, and quantify changes in the extent and density of WoNS and restricted matters within the Offset Area.

Monitoring surveys will be undertaken by suitably qualified botanists during seasonally appropriate conditions to facilitate accurate species identification through the presence of diagnostic flowering and fruiting structures where available.

Field assessment will utilise the same informed random meander assessment technique following Cropper (1993)²² to ensure consistency with the baseline survey and enable direct comparison of monitoring results. During surveys, weed species encountered within the Offset Area will be spatially recorded using a GPS and assigned abundance categories consistent with the baseline assessment. Adoption of the same methodology will provide a repeatable assessment framework for evaluating changes in weed population dynamics and maintaining an inventory of invasive species present within the Offset Area. Monitoring meanders will, where practicable, follow similar traverses to those undertaken during the baseline assessment.

Where dense infestations limit site access, the edges of infestations will be mapped using GPS points and/or polygons. Existing access tracks, fire trails and other traversable corridors will be utilised to assess the extent and condition of infestations within these areas. Field observations, post-processing of spatial data and remote sensing analysis within the project GIS will be used to refine infestation boundaries and update abundance mapping. Comparison of mapped polygons with baseline mapping will be undertaken to identify increases, decreases or stability in infestation extent.

During monitoring surveys, infestations of Lantana (*Lantana camara*) will be mapped and categorised using the same abundance classes applied during the baseline assessment:

- **Low** – fewer than 10 stems within a patch of Lantana (*Lantana camara*), with a sparse distribution;
- **Moderate** – more than 10 stems of Lantana (*Lantana camara*) with a patchy and disconnected distribution; and
- **High** – large continuous patches, often forming an impenetrable wall of vegetation.

Monitoring results will be compared against baseline abundance categories and mapped extents to determine changes in infestation density and distribution.

Other WoNS species occurring within the Offset Area, including velvet tree pear (*Opuntia tomentosa*) and fireweed (*Senecio madagascariensis*), will be recorded when encountered and assigned to the following abundance classes:

- **Low** – 0–5 stems;
- **Moderate** – 5–20 stems; and
- **High** – 20 or more stems.

²² The random meander technique described by Cropper, 1993 (Cropper SC 1993, Management of Endangered Plants, CSIRO Publications Victoria). It is noted that although the technique was derived for identifying threatened plants in the field across a range of habitat types, the underlying assessment approach is useful for weed assessments.

These species will continue to be recorded as point locations within the mapping area, unless infestations have expanded sufficiently to warrant polygon mapping. Monitoring data will be compared with baseline records to determine changes in abundance, occupancy and distribution.

Where Category 3 restricted matters under the Biosecurity Act are observed during monitoring, a data point will be collected documenting species identity and infestation density. Density assessments will be assigned using the same criteria applied during the baseline survey:

- **Low** – 0–5 stems;
- **Moderate** – 5–20 stems; and
- **High** – 20 or more stems.

Comparisons with baseline records will be undertaken to determine whether infestations have increased, decreased, remained stable, or been eradicated.

Where infestations of Lantana* (*Lantana camara*) are too dense to traverse safely, existing tracks and accessible corridors will be used to survey infestation boundaries. Consistent with the baseline assessment approach, infestations will be assumed to extend to observable boundaries where direct access is not possible. Any changes in the extent of these infestations will be assessed through comparison with baseline mapping and supporting GIS analysis.

6.8.1.1 Performance Criteria

These methods will be utilised to assess progression towards achieving a final 95% reduction in WoNS and Restricted Matters across the Offset Area by Year 15 in comparison to baseline weed monitoring results.

It is envisaged that through the concurrent implementation of this BMP and the Fire Management Plan supporting **Action 4 (Section 6.4)** (also see **Attachment 7**) will achieve a 95% reduction in target weeds in comparison to baseline results because:

- Intensive (during initial years) and follow-up control will ensure that:
 - Lantana* (*Lantana camara*) will cease the production of seeds; and
 - In-situ seed bank of Lantana* (*Lantana camara*) will be largely exhausted by Year 10-12, and rehabilitation will close up understorey with native groundcovers.

As such, through the monitoring described above, progress towards achieving a 95% reduction in weed abundance (i.e. observed reduction in low, medium and high abundance classes (see **Attachment 2**)) across the Offset Area.

It is consequently envisaged that management through Years 16-20 will consist primarily of monitoring, and on-going maintenance to ensure the desired 95% reduction in WoNs and Restricted Matters is achieved and maintained through to Year 20 and beyond.

6.8.1.1.1 Self-sustaining

Through weed control (see **Attachment 6** BMP and **Attachment 7** Fire Management Plan), recruitment of seed into the seed bank will cease through the routine control of mature Lantana* (*Lantana camara*). For Lantana* (*Lantana camara*), reinvasion is strongly dependent on the persistence of favourable establishment conditions, particularly elevated ground-level light associated with canopy gaps and disturbance. Research undertaken in Australian dry eucalypt forests demonstrates that Lantana* (*Lantana camara*) is a light-demanding species, requiring high light availability for germination, while flowering and recruitment are substantially reduced under shaded conditions (Duggin & Gentle, 1997; Day, Wiley, Playford, & Zalucki, 2003). Consequently, as rehabilitation promotes canopy growth over time, conditions for Lantana* (*Lantana camara*) to propagate will diminish. This will consequently reduce the opportunity for Lantana* (*Lantana camara*) to mature, flower and supplement the Site's seed bank.

This would then require control of the weed until supply of this existing seed bank is exhausted.

Following implementation of intensive initial control and ongoing follow-up treatments, the in-situ Lantana* (*Lantana camara*) seed bank is expected to be entirely depleted within 10–12 years (Vivian-Smith & Panetta, 2009) of the commencement of weed control. This timeframe reflects the combined effect of preventing new seed inputs through the control of mature plants while allowing existing seeds within the soil profile to progressively germinate, decay or lose viability over time. As management suppresses flowering and seed production, the seed bank becomes a finite and declining resource with limited opportunity for replenishment. Concurrent rehabilitation and natural regeneration of native vegetation will further accelerate this process by increasing canopy and understorey cover, reducing ground-level light availability and limiting the conditions required for successful Lantana* (*Lantana camara*) germination and establishment.

Consequently, by Years 10–12, the residual seed bank is expected to be largely exhausted, with only isolated recruitment events occurring, thereby substantially reducing the long-term risk of reinfestation and supporting achievement of a self-sustaining management outcome.

Vivian-Smith & Panetta (2009) studied the duration in which Lantana* (*Lantana camara*) seed will remain viable whilst laying dormant in soil through South-east Queensland. The study was undertaken via the collection of Lantana* (*Lantana camara*) seed from across south-east Queensland and subjecting them to differing lab-based growth conditions, simulating natural environments, including natural rainfall and regular irrigation, and were either left on the soil surface or buried at a depth of 2 cm. Studies were conducted for differing growth periods ranging from 6 months to 36 months (6, 12, 24, 36). Seedling emergence and survival was monitored over these periods by periodically retrieving seeds from the soil and testing whether they remained viable. The observed decline in seed viability through time was then used to develop a decay model that projected long-term seed-bank persistence beyond the duration of the experiment.

This study and subsequent modelling assessment identified that Lantana* (*Lantana camara*) seed is persistent, though exhaustible over time when seed is not reproduced by mature plants. This study identified that seed will become non-viable anywhere between 3 years and 11 years.

Based on Vivian-Smith & Panetta (2009), the control of Lantana* (*Lantana camara*) and ultimate rehabilitation of the Offset Area can become self-sustaining within 10-12 years, as intensive and follow up weed control activities will:

- Stop mature specimens from producing seed through weed control (mechanical / chemical / fire) resulting in impaired ability to produce seed / plant destruction
- Expansion of native canopy both extent and recruitment shading the understory and impairing recruitment
- Knock back germinated seed stored within soil through follow up control (see **Attachment 6, Section 6** and **Attachment 7, Section 3**) if and when germination occurs, and
- Implementation of rehabilitation via Action 7 (**Attachment 4**) will increase ground/shrub layer competition with planting native vegetation.

Consequently, by Year 15, there is high confidence that 95% of WoNS and Restricted Matters in comparison to baseline weed assessments will be removed from the Offset Area, especially as Lantana* (*Lantana camara*) seed bank supply will be exhausted, with no potential to reestablish.

Years 16-20 will consist of 5 years of monitoring and maintenance, to ensure the 95% reduction can be maintained. Once handed over in Year 20, the Offset Area will be handed over to ICC for inclusion in the City's Conservation Estate. See **Attachment 8** for correspondence from ICC committing to take carriage and include the Offset Area within the estate). This is significant as ICC is bound to a high level of biosecurity obligation. The consequence of this, is that:

- The Offset Area will form part of the broader Mt Grandchester Conservation estate.
 - This will be subject to the ICC Enviroplan, that establishes planning, funding and undertaking of a number of ecological programs, including the Koala Conservation and Habitat Management Plan. Enviroplan is a

well-funded initiative undertaken by ICC, that will ensure the sustained maintenance of the Offset beyond Year 20 (ICC, 2026).

- Further, the inclusion of this property within the Mt Grandchester Conservation estate will consequently cause its inclusion within the Grandchester Area of Regional Koala Significance (**ARKS**).
 - The ARKS is currently the focus of substantial investment and on-ground habitat restoration under the Australian Government's Protecting Koalas Program, delivered locally by Healthy Land & Water (DCCEEW, 2025; HLW, 2022).
 - The Grandchester ARKS has benefited from targeted habitat enhancement works including weed control, assisted natural regeneration, strategic revegetation, fire management, grazing management and ongoing habitat condition assessments. These activities are designed to improve landscape-scale koala habitat quality and connectivity across both public and private land.
- The inclusion of the Offset Area within the wider Grandchester ARKS will allow it to benefit from the cumulative conservation gains being achieved across the broader landscape. Healthy Land & Water has reported measurable habitat improvements after only four years of program delivery (HLW, 2022). Given that the Offset Area will be protected and managed as part of the conservation estate for at least 20 years prior to handover, and indefinitely thereafter, there is a high degree of confidence that habitat condition improvements can be maintained and enhanced over the long term.

Accordingly, the Offset Area will not exist as an isolated restoration site at the completion of the offset period. Rather, it will become part of a larger, actively managed conservation landscape that is subject to continuing conservation investment, monitoring and adaptive management, thereby providing confidence that the ecological gains achieved during the offset period will persist in perpetuity.

Through the proposed management activities through Years 1-20 and its inclusion within the ICC conservation estate, there is great confidence that the gains achieved via this offset will be self-sustained beyond Year 20 handover.

6.8.2 Pest Monitoring

The Offset Area will be monitored for vertebrate pest animal activity to respond to *Management Action 1—integrated vertebrate pest management* (Section 4.2).

Vertebrate pest monitoring will be undertaken to inform species composition, species' habitat preference, and rate of activity throughout the Offset Area. Monitoring activities will be reported as a Memorandum and attached to the Annual Compliance Report.

The following survey approach has been employed to inform the *Baseline Vertebrate Pest Assessment Memorandum (Attachment 1)* and will be repeated in general accordance with the monitoring schedule in **Table 16**. Spatial location data concerning the placement of each camera trap is provided in the Memorandum to allow for the accurate repetition of survey and subsequent comparative platform for species' activity index.

6.8.2.1 Camera Trap Survey

Each vertebrate pest fauna camera survey will consist of 15 independent camera traps deployed for 10 survey nights. This will yield a total of 150 camera trap survey nights. Camera placement should capture the heterogeneity of habitat within the site to adequately survey each Assessment Unit. The inclusion of 15 cameras at the Woolshed Offset will allow for up to five cameras in each Assessment Unit. Within each Assessment Unit, camera placement should be selected in-situ to target areas with greater probability of vertebrate pest fauna movement. In-situ habitat features selected for may include formed pathways through vegetation, watercourse and drainage lines, fence lines, access tracks, and potential shelter sites. The primary approach to camera distribution and placement is to (i) determine which habitat types vertebrate pest fauna are utilising, and (ii) within each habitat type, target habitat characteristics to yield the greatest probability of detection.

Each camera trap will be baited with a mixture of oats, sardines, peanut paste, vanilla essence and honey. Camera programming should be set to 24-hour operation, high sensitivity, three images per trigger, and a 1 second delay.

Camera trap data will be analysed to record each encounter with a target vertebrate pest fauna species. A single encounter (or trigger) is defined as the series of photographs programmed to result from motion detection. For example a trail camera set to record 3 photographs in quick succession following being triggered, would record a single activity index score for a triggering species, irrespective of whether the animal was recorded in one (1) or all of the images (i.e. one encounter). A number of triggered sequences would be recorded even if it was obvious the same animal triggered the event.

The rate of encounter does not inform population dynamics in terms of population measures of abundance or density, nor is the data statistically robust. Instead, the results demonstrate a rate of species-specific *activity* which allows for a comparative platform between monitoring events. The resulting rate of activity can be compared between monitoring events under the following methodology assumptions:

- i) The rate of species-specific activity, represented by the rate of encounter, will change in response to species population density;
- ii) Where animal management has been undertaken, it is expected that this will be reflected in reduced species activity across the Offset Area, and
- iii) Where animal management is insufficient, this will be reflected in relatively unchanged or increased activity scores.

The rate of vertebrate pest fauna activity will be used as the measurable and comparable index to inform management actions and success between monitoring years. For the purposes of incorporation into the assessment of species-specific habitat assessment, an activity index scoring framework is further defined below.

The detectability of fauna species using remote cameras is influenced by differences in behaviour, activity patterns and habitat use. Feral Cat, Wild Dog, and European Red Fox are relatively cryptic and may have lower detection rates because they can move through a site cautiously, use established pathways, and may intentionally pass outside the camera's detection zone without triggering the sensor. In contrast, diurnal herbivorous species such as Deer and Feral Pig often spend extended periods foraging and moving through open areas, resulting in repeated movement within the camera's field of view and consequently this results in a greater number of camera triggers.

Therefore, the number of independent camera detections should be interpreted as a measure of relative activity and detectability, rather than a direct measure of abundance, with behavioural differences among species potentially resulting in substantially different detection rates for similar levels of site use. For this reason, the activity index table applies a unique scale to these distinct groups of common vertebrate pest fauna: Feral Cat, Wild Dog, and European Red Fox; and, Feral Deer species, Feral Pig, European Hare, and European Rabbit.

The activity index scale is divided into six categories, each representing a range of activity expressed as a percentage of the benchmark score. The activity index benchmark for carnivorous species is derived from the total number of survey trap nights (150), i.e. a site which yields a detection on each camera and each survey night would attain a high score. For omnivorous and herbivorous species, the benchmark is set at twice the total number of survey trap nights (300), recognising that these species generally generate more frequent camera detections due to their movement and foraging behaviour. The activity index will be scaled into an activity categorisation, as detailed in **Table 17** below.

This approach to activity scoring incorporates the complete dataset of encounters between camera traps and vertebrate pest fauna. The number of encounters is theoretically unlimited, being constrained only by the duration of the survey period and the capacity of the monitoring equipment. To account for this, the activity scoring scale adopts a smaller and more conservative range, comparable to established approaches such as the Catling activity index (Catling, Burt, & Kooyman, 1997). Importantly, the use of encounter rate retains the underlying variation in activity between locations and species, allowing monitoring results to identify meaningful patterns that can inform targeted management actions and outcomes beyond that of incorporation into habitat quality assessment. The approach also allows a high activity score to be achieved at an individual camera location where activity is concentrated, which may be particularly relevant where a site represents a focal area of pest animal activity, such as a potential Wild Dog denning site.

Table 17: Vertebrate Pest Fauna Activity Index – Scoring Scale

Scaled score	Percentage	Activity Index	
		Predators (Wild dog, Feral Cat, and European Fox ²³)	Herbivores (Pig, Deer, Hare) ²⁴
Absent	0%	0	0
Very low	1-10%	1 - 15	1 - 30
Low	11-25%	16 - 38	31 - 75
Medium	26-50%	39 - 75	76 – 150
High	51-75%	76 - 113	151 - 225
Very high	≥76%	≥114	≥226

Survey timing, conditions, method, data analysis, and results reporting style will be adopted from the *Baseline Vertebrate Pest Assessment Memorandum (Attachment 1)*. The Memorandum contained in **Attachment 1** will be updated following each monitoring event to form and guide pest management efforts. The Memorandum will be submitted to the proponent and relevant contractors as necessary.

It is most important for repeatability and relativity between sampling events that the same number of trail cameras are deployed for the same period of time, and the same locations for each sampling event. Details are these are contained in the baseline vertebrate pest assessment (**Attachment 1**). Seasonal variability in sampling may be exercised; however, it is recommended that sapling occurs during the period of presumed greatest activity; March to May for wild dogs, March to April and November to December for deer, June to July for Red Fox.

6.8.2.2 *Opportunistic observation*

Both direct and indirect (tracks, scats, and other traces) observations of vertebrate pest fauna will be captured throughout all Offset Area site visits. This may include the following events:

- Targeted fauna survey – spotlight survey
- Baits taken
- Pests destroyed via shooting events
- Vegetation survey
- Site inspections.

Observations of vertebrate pest fauna will be compiled and reported in the Annual Compliance Report and may inform adaptive management processes.

²³A high score is equal to an average of one trigger per camera per night (150 triggers)

²⁴A high score is equal to an average of two triggers per camera per night (300 triggers)

6.8.3 Habitat Quality and Vegetation Condition

6.8.3.1 Habitat quality for Offset Matters

The Offset Area will be monitored for vegetation condition and accumulation of habitat quality as it relates to the target offset matters subject to this OMP, Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*). Monitoring activities will respond to *Management Action 6 – Ecological Restoration and Matter Habitat Creation*.

Habitat quality for each Matter will be assessed in general accordance with the *Guide to Determining Terrestrial Habitat Quality: A Toolkit for Assessing Land-based Offsets, Version 1.2* (DEHP 2017), and the *BioCondition Assessment Manual – A condition assessment framework for terrestrial biodiversity in Queensland v2.2* (Eyre *et al.*, 2015). The Guide to determining terrestrial habitat quality provides a consistent and repeatable methodology for evaluating habitat quality under the Queensland Environmental Offsets framework and sets out a structured, step-by-step process for assessing land-based Offset Areas. This methodology has been adopted and tailored to assess the suitability and quality of the Offset Area in relation to the offset matters.

The MHQA method which has been designed and applied to assess both the proposed action and the Offset which will acquit approved impacts to MNES are subject to the single approved MHQA methodology. The MHQA methodology is described for offset matters in the Preliminary Documentation report, to which this OMP is attached.

BioCondition/Habitat quality survey plots have been established across the Offset Area, and are allocated across the three assessment units. The spatial location of each the 0, 50, and 100 metre points on each transect line is provided in **Attachment 4** to ensure the accurate repetition of survey throughout the life of the offset. BioCondition data is provided in **Attachment 5**.

The monitoring schedule is intended to measure vegetation condition and progression biennially, with the exception of interim performance target years. This concept is embedded in the adaptive management framework which underpins this OMP. BioCondition survey and subsequent habitat quality analysis is therefore scheduled to be undertaken at years baseline (results of which are reported in the PD Report), odd numbered years (1,3,5,7,9, 11, 13, 15, 17, 19) and completion performance target years (5,10,15,20). The complete monitoring schedule is illustrated on **Table 16**.

Habitat quality survey will ideally take place towards the conclusion of the wet season (between February and April) when biomass and floristic diversity is greatest, and the accurate identification of flora is most probable due to the availability of reproductive material such as flowers and seed.

Vegetation condition data (BioCondition results) and subsequent habitat quality analysis will be detailed in the Annual Compliance Monitoring Report for the same year the survey is undertaken. Reports prepared from year 3 and subsequent years will include summary data from all previous years, and these will be presented to allow trend analysis of each of the measured attributes and will be used to assess progress towards achieving the interim performance targets and completion criteria.

6.8.3.1.1 Habitat Quality Gains

The key interim performance targets and completion criteria to be achieved through the delivery of the OMP (**PD Report, Appendix 12**) include increases in habitat quality scores for offset matters Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*). Habitat quality scores are calculated by assessing a range of indicators and ecological attributes that measure the overall viability of the offset and its capacity to support given MNES. The modified habitat quality assessment method applied to achieve overall habitat quality scores for Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) have been adopted from Saunders Havill Group (SHG).

The management actions described within this OMP will ultimately lead to the general progression of vegetation condition and subsequent habitat quality. The success of management actions are therefore reflected in habitat quality scoring gains. Interim (years 5, 10, 15) and completion (year 20) habitat quality scores are predicted as a surrogate overall indicator of management success, and the overall progression towards the conservation outcomes of the Offset Site.

Interim performance targets have been detailed for each MNES across years 5, 10, 15 and 20. This was achieved through the detailed analysis of baseline condition scoring, the habitat quality scoring methodology, and the establishment of ecologically feasible outcomes within a 20-year management period. **Table 18** and **Table 19** presents the start (baseline) and future (completion criteria) habitat quality scores for each MNES and Offset Site. The start quality score for each MNES was determined as part of baseline surveys and were calculated generally in accordance with the MHQA, replicating the method used to quantify the habitat quality score for those MNES within the Impact Area. All future habitat quality scores will also be determined following the same method. The complete MHQA workings for each interim performance year (5, 10 and 15) as well as completion year 20 are provided in **PD Report, Appendix 15**.

Table 18: Woolshed - Habitat Quality Interim Performance Targets and Completion Criteria

MNES	Baseline Year 0		Interim performance target Year 5		Interim performance target Year 10		Interim performance target Year 15		Completion criteria Year 20	
	Raw	Rounded	Raw	Rounded	Raw	Rounded	Raw	Rounded	Raw	Rounded
Koala (<i>Phascolarctos cinereus</i>)	6.28	6	6.36	6	7.00	7	7.59	8	7.85	8
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	5.45	5	5.77	6	5.85	6	5.90	6	6.61	7

An estimated upswing of 1.16 points is achieved for Grey-headed Flying-fox (*Pteropus poliocephalus*), and an upswing of 1.57 points is achieved for Koala (*Phascolarctos cinereus*). The year-20 completion criteria score has been determined to be an achievable upswing, meanwhile remaining a conservative but informed estimate to maintain confidence of completion.

The progression of scored BioCondition metrics and species-specific ecological indicators are demonstrated at each independent Habitat Quality assessment site. This progression of score upswing is predicted for each offset matter for each years 0, 5, 10, 15, and 20. The resulting averaged habitat quality score for each AU is demonstrated and summarised in **Table 19** below. This breakdown supports the framework of adaptive management whereby specific habitat attributes which are not improving, will be identifiable through this process, and subsequently management actions can be adapted accordingly.

Table 19: Woolshed - Summary of Habitat Quality Gains Across AUs

Matter	Monitoring year	AU1	AU2	AU3	Average MHQA score	Weighted final score
Koala	Baseline	7.16	4.38	4.11	5.22	6.28
	Year 5	7.16	4.66	4.36	6.35	6.36
	Year 10	7.43	6.07	5.96	7.06	7.00
	Year 15	7.71	7.44	7.08	7.41	7.59
	Year 20	8.03	7.53	7.23	7.60	7.85
GHFF	Baseline	6.03	4.15	4.07	4.75	5.45
	Year 5	6.28	4.63	4.51	5.14	5.77

Matter	Monitoring year	AU1	AU2	AU3	Average MHQA score	Weighted final score
	Year 10	6.30	4.83	4.88	5.34	5.85
	Year 15	6.34	4.92	4.95	5.40	5.90
	Year 20	6.59	6.99	5.68	6.42	6.61

As the gains associated with this offset are closely tied with the establishment of native understory and reinstatement of species mobility, success of the offset will be tracked on achieving specific interim quality goals associated with the reinstatement of species mobility within the offset. This is present below in **Table 21**. Note, this is a metric only of relevance to Koala (*Phascolarctos cinereus*), given that Grey-headed Flying-fox (*Pteropus poliocephalus*) is not a ground traversing species.

6.8.3.2 Targeted fauna survey

Fauna survey effort targeting offset matters Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*) will take place in accordance with the monitoring schedule in **Table 20**. Targeted fauna survey effort will take place concurrently with vegetation and habitat quality assessment. This is to inform matter habitat utilisation of the Offset Area, as well as individual assessment units and management units. Recommended minimum survey effort is detailed in **Table 20** below.

Table 20: Recommended MNES survey method and effort

MNES	Recommended survey methods	Recommended survey effort
Koala (<i>Phascolarctos cinereus</i>)	Survey timing is not specified for this species. A review of Koala habitat assessment criteria and methods (Youngentob, K.N. et al., 2021): - Strip transects - Spotlighting - Koala (<i>Phascolarctos cinereus</i>) detection dogs - Mark-resight/mark-recapture - Thermal detection drones - Radio tracking - Camera traps - Faecal pellet (scat) surveys - Call playback. (DAWE 2022; DSEWPC 2011; Eyre et al. 2022)	Minimum recommended effort: 3-4 nights of consecutive spotlight survey - SAT (scat survey) survey at BioCondition site (see below) 7-14 nights of remote acoustic recording 14 nights of remote camera survey - Optional complimentary effort: - Thermal detection drone survey - Koala detection dog survey
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	<i>Survey guidelines for Australia's threatened bats: Guidelines for detecting bats listed as threatened under the Environmental Protection and Biodiversity Conservation Act 1999</i> - Desktop review of known camps within the broader landscape - Surveys of vegetation communities and plants - Daytime field surveys for camps - Nighttime surveys: transects separated by 100 m (DCCEEW 2001, DCCEEW 2010; DSEWPC 2011; Eyre et al. 2022)	Minimum recommended effort: - Opportunistic diurnal survey for the detection of GHFF camps 3-4 nights of nocturnal survey for the opportunistic detection of foraging GHFF

6.8.3.2.1 Spot Assessment Technique (SAT)

The SAT methodology will be undertaken generally in accordance with the standardised protocol outlined by Phillips and Callaghan (2011) and referenced in the EPBC Act referral guidelines for the Endangered Koala (*Phascolarctos cinereus*). At each SAT location, up to 30 trees will be sequentially assessed for evidence of Koala (*Phascolarctos cinereus*) activity, with sampling preferentially targeting trees greater than 100 mm DBH which are identified as LIKT's by Youngentob *et al.* (Youngentob, 2021). The base of each tree will systematically searched within a 1 m radius for a minimum of two minutes to ensure consistency across all plots.

6.8.3.3 General fauna biodiversity survey

General fauna biodiversity survey will be included as a component of habitat quality and vegetation condition monitoring and reporting. Fauna biodiversity will be summarised and reported as a general species inventory for each monitoring event, and cumulatively over the lifetime of the OMP.

The fauna biodiversity of the Offset Area is expected to generally increase over time with the establishment and restoration of habitat and ecological condition comparable to that of remnant condition. Fauna biodiversity will therefore be reflected through a comprehensive native species list collected across the annual suite of site-based surveys as per the Monitoring schedule (**Table 20**).

Native fauna species inventories will be compared between Offset management years and inform the overall functionality of the Offset Area. Data and results will be reported through the Annual Compliance Monitoring Report.

6.8.4 Fuel Hazard Monitoring

Fuel hazard monitoring will be undertaken in accordance with the Overall Fuel Hazard Assessment Guide (Hines *et al.* 2010). The methodology provides a rapid, standardised approach for assessing the structure and arrangement of combustible vegetation that influences bushfire behaviour and allows fuel hazard to be monitored consistently over time.

Permanent fuel hazard monitoring sites will be established throughout the offset area and co-located with habitat quality monitoring sites. A baseline assessment will be completed during Year 1 following the wet season (April), with subsequent assessments undertaken annually at the same locations and during the same seasonal period to minimise variability associated with climatic conditions.

At each monitoring site, fuel hazard will be visually assessed within each of the four fuel strata defined by Hines *et al.* (2010):

- Surface fuels – comprising leaf litter, bark, twigs and fine woody debris on the ground;
- Near-surface fuels – including grasses, herbs and low shrubs immediately above the litter layer;
- Elevated fuels – consisting of shrubs, suspended dead material and vegetation extending above the near-surface layer but below the canopy; and

Bark fuels – assessing the quantity, type and continuity of bark retained on standing trees.

Each fuel stratum will be assigned a hazard rating using the assessment criteria provided in the *Overall Fuel Hazard Assessment Guide*, considering attributes such as fuel quantity, continuity, cover, height and arrangement. Hazard ratings for each fuel stratum (surface, near-surface, elevated and bark fuels) will be assigned by comparing field observations with the descriptive criteria and photographic standards presented in Table 8.1 and associated guidance within the Guide. Individual hazard ratings will then be combined in accordance with the guide to derive an overall fuel hazard rating for each monitoring site, classified as **Low, Moderate, High, Very High or Extreme** (Hines *et al.* 2010).

Fuel hazard monitoring results will be compared with previous assessments to identify changes in fuel accumulation and vegetation structure over time. Monitoring outcomes will be considered alongside habitat quality assessments to evaluate whether active fuel management is required to maintain ecological values while reducing bushfire risk. Where fuel hazard ratings indicate excessive fuel accumulation, management actions such as ecological burning or targeted weed control may be implemented in accordance with the Offset Management Plan. Following the completion of any fuel management activities, monitoring will continue using the same methodology to evaluate the effectiveness of management actions and inform adaptive management.

7. Risk Assessment and Management Measures

A limited number of risks associated with climate change, pest control and large-scale rehabilitation are evaluated for the Offset Area. Risks are generally described and assessed against the likelihood and consequence model outlined in the Commonwealth Government's Environmental Management Plan Guidelines (Department of Environment, 2014). The following risk factors are considered in more detail in this OMP:

- Wildfire
- Flooding
- Drought
- Climate-induced shifting habitat range
- Planting stock failure
- Pest management
- Weed invasion / expansion.

7.1 Likelihood, Consequence and Risk Ratings

Each environmental risk is given a rating in terms of likelihood and consequence using the criteria in **Table 21** and **Table 22**, respectively. These ratings are then combined to derive risk scores, as shown in **Table 23**.

Table 21: Description of Likelihood Definitions

Likelihood rating	Likelihood definition
Highly likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the project
Possible	Might occur during the life of the project
Unlikely	Could occur but considered unlikely or doubtful
Rare	May occur in exceptional circumstances

Table 22: Description of Consequence Definitions

Consequence rating	Consequence definition
Minor	Minor incident of environmental damage that can be reversed
Moderate	Isolated but substantial instances of environmental damage that could be reversed with intensive efforts
High	Substantial instances of environmental damage that could be reversed with intensive efforts
Major	Major loss of environmental amenity and real danger of continuing
Critical	Severe widespread loss of environmental amenity and irrecoverable environmental damage

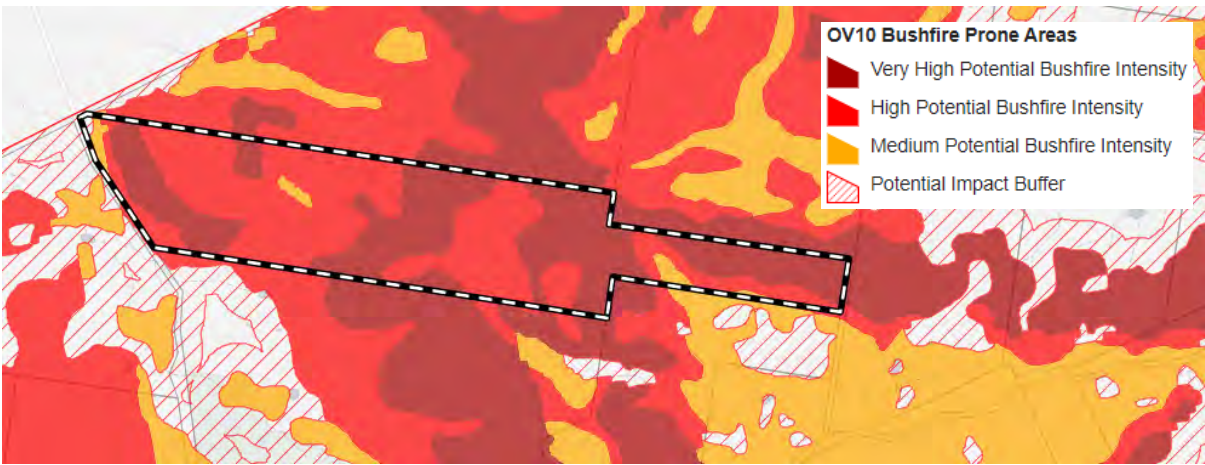
Table 23: Risk Ratings Matrix

Likelihood	Consequence				
	Minor	Moderate	High	Major	Critical
Highly Likely	Medium	High	High	Severe	Severe
Likely	Low	Medium	High	High	Severe
Possible	Low	Medium	Medium	High	Severe
Unlikely	Low	Low	Medium	High	High
Rare	Low	Low	Low	Medium	High

7.2 Wildfire

Woody vegetation within the Offset Area is recognised by ICC’s Draft Ipswich Plan 2024 via the Bushfire Prone Areas Overlay for its bushfire potential. Woody vegetation across Lot 236 on CH312334 is mapped predominantly as ‘High’ to ‘Very High’ potential bushfire intensity, with minor elements of ‘Medium’ potential (**Inset 5**).

As the majority of the Offset Area contains canopy trees, the majority of the Site is able to support wildfires. As the MUs become better established through the offset period, vegetation across the whole Offset Area will be further able to support the establishment and spread of wildfire.



Inset 5. Wildfire Risk Mapping

Source: ICC Draft Ipswich Plan 2024 Bushfire Prone Areas Overlay Mapping (ICC, 2024)

The overall assessment of wildfire risks is that their occurrence is **likely** within the offset period and consequences of such an event would be **moderate**. Without intervention and management wildfire is evaluated as a **medium** risk to this offset. The management actions that are proposed to be implemented to reduce this initial risk rating are presented in **Table 12**. With the implementation of all relevant management actions, the consequence of wildfire risk is expected to be reduced to **minor**, reducing the risk rating to **low** (**Table 24**).

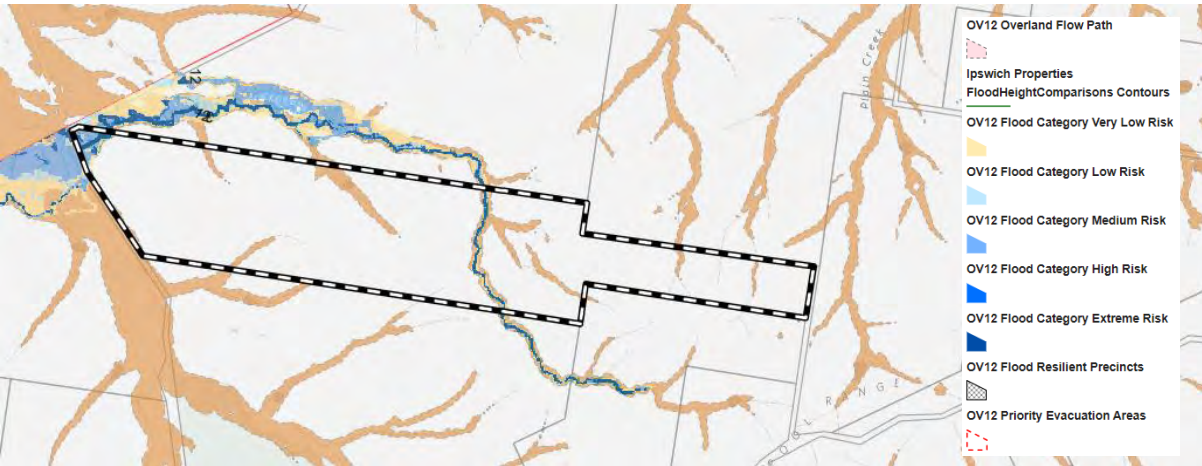
Table 24: Wildfire Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Likely	Moderate	Medium

Mitigation status	Likelihood	Consequence	Risk Rating
Post-mitigation	Possible	Minor	Low

7.3 Flooding

ICC’s Flood Risk and Overland Flow Overlay mapping (**Inset 6**) identifies very low risk elements to an extreme flood risk associated with a tributary to Woolshed Creek. These elements are predominantly limited to the northwestern most extent of the Site and within the tributary itself, central to the Site, which flows in a south to north direction.



Inset 6. Flood Risk Mapping

Source: ICC Draft Ipswich Plan 2024 Flood Risk and Overland Flow Overlay Mapping (ICC, 2024)

Whilst the elements of flood hazard mapped across the Offset Area are limited, it is likely that rainfall events that result in flooding of the tributary may impact the northwestern corner of the Site.

The objective for the Offset Area is to restore habitat with vegetation communities resembling pre-clear condition. By doing so, vegetation communities will be established and/ or enhanced that are locally adapted and resilient to naturally-occurring flood events. While limited in extent, rather than be an impediment to offset success, natural flood events will provide simulation of hydrological regimes that the target vegetation communities are adapted to tolerating.

The overall assessment of flooding risks is that their occurrence is **highly likely** within the offset period and consequences of such an event would be **minor**. Without intervention and management flooding is evaluated as a **medium** risk to this offset (**Table 25**). Due to the likely beneficial nature to offset success of occasional natural flooding across, targeted management actions for minimise the impacts of flooding are limited to:

- Include stabilisation matting, tree stakes, etc for plantings within higher risk zones of erosion from rising flood waters
- Undertake damage assessments after flood events that effect the Offset Area. Include findings of the damage assessment in the Annual Compliance Report.
- Consider taking out insurance for planting stock located within flood risk area to cover the cost of replacement works should a damaging rain / flood event occur.

With the implementation of all relevant management actions, the risk rating remains medium as the consequence is unable to be reduced further, even with mitigation (**Table 25**).

Table 25: Flooding Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Unlikely	Minor	Low
Post-mitigation	Unlikely	Minor	Low

7.4 Drought

The Queensland Government's Drought Duration Report (Queensland Government, 2024) identifies the ICC LGA as being drought free for 37-48 months and as being in a declared drought status for 20-30% of time since 1964.

The Bureau of Meteorology's climate statistics for the Tallegalla Alert (040503) meteorology station (closest to the Offset Area with relevant data) report mean annual rainfall as 871.7 mm since recording data in 2020 (Bureau of Meteorology, 2024). The Climate Change Adaptation Strategies for the Koala (*Phascolarctos cinereus*) prepared by Christine Adams-Hosking concluded that the highest probability of Koala (*Phascolarctos cinereus*) presence occurred at a mean annual rainfall of 700 mm (Adams-Hosking, 2011). Therefore, even with the potential for increased drought occurrence in future years, the Offset Area experiences a baseline average rainfall that, if reduced, would shift closer to the optimal range to support Koala (*Phascolarctos cinereus*).

It is understood that two surface dams are present within the Offset Area and these would be relied upon to irrigate plant stock. Analysis of productivity and water quality will be undertaken by the Offset Provider to identify the suitability of the quantity and quality of water.

Periods of prolonged drought, if they were to occur, would place stress on revegetation, particularly juvenile plantings. However, the majority of the vegetation present is mature, established vegetation. However, some understorey planting or seeding is likely necessary. On this basis, the overall assessment of drought risks is that their occurrence is **likely** within the offset period and consequences of such an event would be **high**. Without intervention and management drought is evaluated as a **high** risk to this offset (**Table 26**). The management actions that are proposed to be implemented to reduce this initial risk rating are as follows:

- Ensure offset design includes Offset Area and connection to higher moisture content soils associated with alluvial and riparian areas of the Offset Area.
- Maintain dams and waterbodies within the Offset Area for use in offset rehabilitation works and as water sources for native animals.
- Implement temporary, supplementary watering programs whilst plantings are juvenile if prolonged drought conditions occur.

With the implementation of all relevant management actions, the consequence of drought risk is expected to be reduced to **moderate**, but the risk rating remains **medium** (**Table 26**).

Table 26: Drought Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Likely	High	High
Post-mitigation	Likely	Moderate	Medium

7.5 Climate-induced Shifting Habitat Range

A number of contemporary case studies and research papers have investigated the combined weather characteristics of climate change on the current and future distribution of suitable Koala (*Phascolarctos cinereus*) habitat into the future. Koala (*Phascolarctos cinereus*) are considered to be at risk of these factors because of their

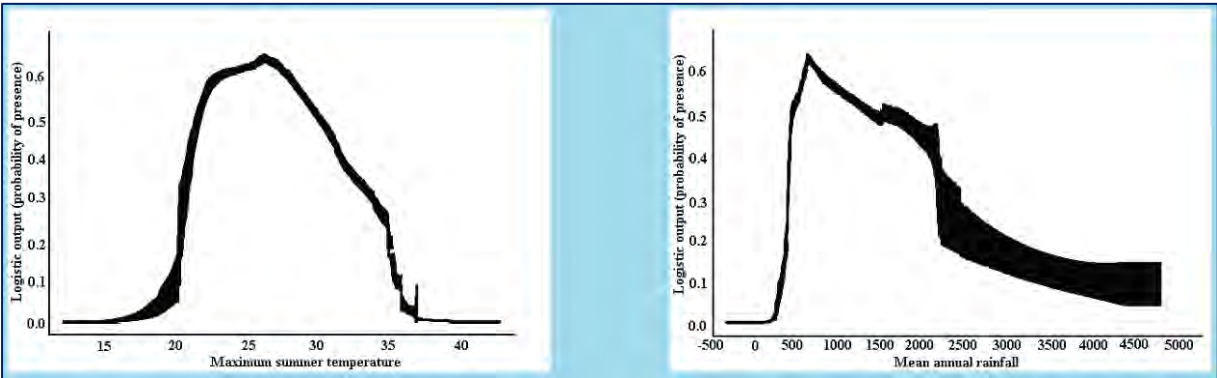
low tolerance to adapt to environmental changes combined with the number of existing non-climate related threats already well documented.

Grey-headed Flying-fox (*Pteropus poliocephalus*) are also considered to be affected by climate change; however, most studies relate to the increased temperatures at the camp and roosting sites, with less material available on their foraging range. The proposed offset provides foraging habitat and therefore the effects of climate change on roosting sites are not directly relevant to the Offset Area.

The Climate Change Adaptation Strategies for the Koala (Adams-Hosking, 2011) applied climate change distribution models for the Koala (*Phascolarctos cinereus*) and five of its essential eucalypt food trees to a conservation prioritisation framework ('Zonation'), to determine which Queensland local government areas were the highest priority for Koala (*Phascolarctos cinereus*) conservation and adaptation. The study included 2011 population distribution and future predicted Koala (*Phascolarctos cinereus*) habitat distribution in 2070 showing a substantial migration eastward. The study further concludes that:

"The highest probability of koala presence occurred at a mean maximum summer temperature of approximately 27°C and a mean annual rainfall of approximately 700 mm"

The study's conclusions on the probability of Koala (*Phascolarctos cinereus*) occurrence across temperature ranges are shown in **Inset 7**.



Inset 7. Koala Probability of Occurrence across Temperature and Rainfall Ranges (Adams-Hosking, 2011)

As previously stated, the average annual rainfall for the area is 871.7 mm since recording data in 2020 (Tallegalla Alert (040503)) meteorology station (closest to the Offset Area with relevant data). Additionally, the monthly mean maximum temperature for the region (University of Queensland Gatton meteorology station (040082)) is 27.0 degrees Celsius (Bureau of Meteorology, 2024). Therefore, climatic conditions remain within an acceptable range for the species. The land is also located within the current and 2070 koala habitat distribution maps based on the A1F1 climate change scenario as presented in Climate Change Adaptation Strategies for the Koala (Adams-Hosking, 2011).

At the site scale the offset design will directly connect to the northern most extent of the Mount Grandchester Conservation Estate, further continuing the extent of this conservation area. The Site will conserve existing range and foothill habitat.

The overall assessment of climate-induced habitat shift risks is that the likelihood of occurrence is **unlikely** within the offset period but the consequences of such an event would be **moderate**. Without intervention and management this risk is evaluated as **low** risk to this offset (**Table 27**). The management actions that are proposed to be implemented to reduce this initial risk rating are presented in **Attachment 4** (Woolshed Offset Rehabilitation Management Plan). With the implementation of all relevant management actions, the consequence of climate-induced habitat shift risk is expected to be reduced to **minor**, though the risk rating remains **low** (**Table 27**).

Table 27: Climate-induced Habitat Shift Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Unlikely	Moderate	Low
Post-mitigation	Unlikely	Minor	Low

7.6 Planting Stock Failure

Owing to other restorative measures such as weed removal, livestock removal, and use of controlled burns, significant broadscale replanting should not be required for the management of the Offset Area. Infill planting is expected to occur in MU1 and MU2 on an as required basis. However, the risk remains for planted stock to fail due to:

- Poor soil quality or incompatible match of soils to replanted vegetation types
- Weather related impacts – frost / prolonged dry periods, excessive heat or cool periods
- Poor quality planting stock or the sourcing of planting stock from a different geographic region.
- Lack of appropriate planting area preparation – weed removal / pasture seed removal / cultivation, etc.

The majority of these challenges are expected to be managed through the use of experienced bushland regeneration experts and contractors. Failure of planting stock will principally be a financial impact as the Offset Area will not achieve committed condition improvement and habitat expansion targets without rectification of planting works.

An important component of the offset proposal is the collection of native seeds from within the Offset Area and immediate surrounds, followed by propagation and use in revegetation.

The overall assessment of planting failure risks is that the occurrence is **possible** within the offset period and consequences of such an event would be **moderate**. Without intervention and management planting failure is evaluated as a **medium** risk to this offset (**Table 28**). The management actions that are proposed to be implemented to reduce this initial risk rating are presented in **Table 13**. With the implementation of all relevant management actions, the likelihood of planting failure risk is expected to be reduced to **unlikely**, reducing the risk rating to **low** (**Table 28**).

Table 28: Planting Failure Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Possible	Moderate	Medium
Post-mitigation	Unlikely	Minor	Low

7.7 Pest Occurrence

The following vertebrate pest species are known to utilise the Offset Area, based on in-person survey observations or desktop database inquiries, pose a risk to offset species or rehabilitation success (**Table 6**):

- Wild dogs
- Feral Cat
- European Red Fox

- Rabbits and Hares
- Deer
- Wild Pig.

7.7.1 Wild Dog

Wild dog predation is a significant cause of Koala (*Phascolarctos cinereus*) mortality. A study by Hawthorne L. Beyer *et al.* over the 2013-2017 period in Moreton Bay Regional Council involved the capture of 503 koalas, which were fitted with telemetry devices (Beyer, 2018). Of the 144 Koala (*Phascolarctos cinereus*) deaths confirmed as predation, wild dogs accounted for 81.3 per cent and domestic dogs 4.2 per cent plus a further 38 deaths were suspected but unconfirmed predation events due to wild dogs.

Researchers concluded the Koala (*Phascolarctos cinereus*) population could have approached local extinction within a decade without the control of wild dogs and disease. They stated a single male dog eluding capture until the end of the study was thought to be responsible for 75 Koala (*Phascolarctos cinereus*) deaths.

ICC has a Biosecurity Plan outlining procedures in pest management including declared pests such as wild dogs. No formal culling/baiting/bounty program is identified within the ICC LGA.

The overall assessment of wild dog risks is that the occurrence is **highly likely** within the offset period and consequences of such an event would be **high**. Without intervention and management wild dogs are evaluated as a **high** risk to this offset (**Table 29**). The management actions that are proposed to be implemented to reduce this initial risk rating are presented in **Table 9**. With the implementation of all relevant management actions, the likelihood of wild dog risk is expected to be reduced to **possible**, reducing the risk rating to **medium** (**Table 29**).

Table 29: Wild Dog Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Highly likely	High	High
Post-mitigation	Possible	High	Medium

7.7.2 Feral Cats

Feral cats are carnivorous and require little free water, being able to obtain moisture from their prey. They require large amounts of fresh protein, and prey upon small mammals, birds, reptiles, amphibians, insects and fish, though rabbits are their main food source (Mitchell B. &., Monitoring Techniques for Vertebrate Pests: Feral Cats, 2007). Feral cats impact on other animal populations through direct predation and competition for prey. Importantly, they may also spread the disease toxoplasmosis. The toxoplasma protozoan reproduces only in the intestines of the cat.

Toxoplasmosis is particularly harmful to marsupials, causing abortion and birth defects, along with blindness and paralysis. Feral cats need to consume large amounts of protein, and rabbits are not always in sufficient abundance to satisfy their appetite; therefore, native fauna is often on the menu (Mitchell B. &., Monitoring Techniques for Vertebrate Pests: Feral Cats, 2007). However, neither Koala (*Phascolarctos cinereus*) nor Grey-headed Flying-fox (*Pteropus poliocephalus*) were identified as being native vertebrates susceptible to predation from feral cats in *Overview of the Impacts of Feral Cats on Australian Native Fauna* (Dickman, C, 1996).

The overall assessment of feral cat risks is that the occurrence is **highly likely** within the offset period and consequences of such an event would be **minor**. Without intervention and management feral cats are evaluated as a **Medium** risk to this offset (**Table 30**). The management actions that are proposed to be implemented to reduce this initial risk rating are presented in **Table 9**. With the implementation of all relevant management actions, the likelihood of feral cat is expected to be reduced to **possible**, which keeps the risk rating at **Low** (**Table 30**).

Table 30: Feral Cat Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Highly likely	Minor	Medium
Post-mitigation	Possible	Minor	Low

7.7.3 European Red Fox

European Red Fox is an opportunistic predator and scavenger, being primarily carnivorous. In grazing areas, the primary diet of foxes consists of sheep (either as carrion or young lambs), rabbits and house mice. However, foxes will readily take small and medium-sized native animals, particularly mammals in the 'critical weight range' of 0.35-5.50 kg (Mitchell B. &., Monitoring Techniques for Vertebrate Pests: Foxes, 2007).

There have been relatively few studies with adequate replication undertaken to demonstrate the impact of fox predation on the populations of native mammals. However, preliminary research and anecdotal data indicates that native species most susceptible to predation by foxes are those species that are ground-dwelling, e.g. bettongs, wallabies, bandicoots etc (Gentle, M., 2006).

The overall assessment of fox risks is that the occurrence is **highly likely** within the offset period and consequences of such an event would be **moderate**. Without intervention and management foxes are evaluated as a **High** risk to this offset (**Table 31**). The management actions that are proposed to be implemented to reduce this initial risk rating are presented in **Table 9**. With the implementation of all relevant management actions, the likelihood of foxes is expected to be reduced to **unlikely**, which reduces the risk rating to **Low** (**Table 31**).

Table 31: European Fox Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Highly likely	Moderate	High
Post-mitigation	Unlikely	Moderate	Low

7.7.4 Rabbits and Hares

The rabbits and hares are considered to be some of Australia's most damaging vertebrate pests and have adverse effects on pastoral and crop industries, as well as native fauna and flora. Additional impacts include land and vegetation degradation where the loss of vegetation exposes the soil to the erosive forces of wind and rain (Mitchell B. &., Monitoring Techniques for Vertebrate Pests: Rabbits, 2007).

Grazing, browsing and ringbarking of native flora have caused declines in native species and facilitated the invasion of exotic species. Rabbits are commonly believed to cause damage only when they occur in higher numbers, but in areas of low productivity, densities as low as 1 rabbit/ha can prevent native plant regeneration (Mitchell B. &., Monitoring Techniques for Vertebrate Pests: Rabbits, 2007).

Whilst the occurrence of rabbits and hares would not be a direct threat to Koala (*Phascolarctos cinereus*) or Grey-headed Flying-fox (*Pteropus poliocephalus*), their tendency to graze on and ringbark native vegetation could have a detrimental effect on the ability to achieve successful landform stabilisation, propagation and revegetation within the Offset Area.

The overall assessment of rabbits and hares is that the occurrence is **highly likely** within the offset period and consequences of such an event would be **moderate**. Without intervention and management, rabbits and hares are evaluated as a **High** risk to this offset (**Table 32**). The management actions that are proposed to be implemented to reduce this initial risk rating are presented in **Table 9**. With the implementation of all relevant management

actions, the likelihood of rabbits and hares is expected to be reduced to **possible** and the consequence reduced to **minor**, which reduces the risk rating to **Low** (Table 32).

Table 32: Rabbit Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Highly likely	Moderate	High
Post-mitigation	Possible	Minor	Low

7.7.5 Feral Deer

Feral deer are opportunistic and highly adaptable feeders that both graze and browse. Feral deer have been reported to cause damage to a wide variety of agricultural crops, pastures and forestry plantations through competition with cattle and other livestock for pasture. Other impacts on rural enterprises include damage to fences, spreading of weeds, fouling of water holes and overgrazing causing erosion (and the subsequent degradation of water quality in creek and river systems) (DAF, 2022).

Whilst the occurrence of deer would not be a direct threat to Koala (*Phascolarctos cinereus*) or Grey-headed Flying-fox (*Pteropus poliocephalus*), their tendency to graze on and ringbark native vegetation could have a detrimental effect on the ability to achieve successful landform stabilisation, propagation and revegetation within the Offset Area.

The overall assessment of feral deer is that the occurrence is **highly likely** within the offset period and consequences of such an event would be **moderate**. Without intervention and management feral deer are evaluated as a **High** risk to this offset (Table 33). The management actions that are proposed to be implemented to reduce this initial risk rating are presented in Table 9. With the implementation of all relevant management actions, the likelihood of deer is expected to be reduced to **likely** and consequences of occurrence reduced to **minor**, which reduces the risk rating to **Low** (Table 33).

Table 33: Feral Deer Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Highly likely	Moderate	High
Post-mitigation	Likely	Minor	Low

7.7.6 Feral Pigs

Feral pigs disturb natural environments through rooting up soils, grasslands and forest litter and by consuming a range of native plants (Pavlov, 1991). Fences and water sources can be damaged, and dams and waterholes fouled through wallowing and defecation (Mitchell B. &, 2007).

Whilst the occurrence of feral pigs would not be a direct threat to Koala (*Phascolarctos cinereus*) or Grey-headed Flying-fox (*Pteropus poliocephalus*), their tendency to uproot soils and consume native vegetation could have a detrimental effect on the ability to achieve successful landform stabilisation, propagation and revegetation within the Offset Area.

The overall assessment of feral pigs is that the occurrence is **possible** within the offset period and consequences of such an event would be **high**. Without intervention and management pigs are evaluated as a **Medium** risk to this offset (Table 34). The management actions that are proposed to be implemented to reduce this initial risk rating are presented in Table 9. With the implementation of all relevant management actions, the likelihood of pigs

is expected to be reduced to **unlikely** and the consequence reduced to **moderate**, which reduces the risk rating to **Low** (Table 34).

Table 34: Feral Pig Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Possible	High	High
Post-mitigation	Unlikely	Moderate	Low

7.8 Weed Invasion and Spread

Weed infestations suppress and inhibit the natural regeneration of regrowth vegetation on-site, which in-turn directly limits the growth rates and regeneration of primary and secondary Koala (*Phascolarctos cinereus*) tree species and foraging species for Grey-headed Flying-fox (*Pteropus poliocephalus*). Although baseline data is limited to the survey events undertaken for the Preliminary Documentation Report, it is known that highly invasive and spreading nature of some non-native weed species, coupled with the in-active management in areas, would be resulting in a progressive increase as local climatic events align with optimal germination and seeding periods.

In extreme instances, dense weed infestations can form a barrier to terrestrial species, which would include limiting the koala's ability to access areas containing an over-canopy of food trees.

The overall assessment of weed infestation risks is that the occurrence is **highly likely** within the offset period and consequences of such an event would be **moderate**. Without intervention and management weeds are evaluated as a **High** risk to this offset (Table 35). The management actions that are proposed to be implemented to reduce this initial risk rating are presented in Table 10. With the implementation of all relevant management actions, the likelihood of weed infestation risk is expected to be reduced to **unlikely**, reducing the risk rating to **Low** (Table 35).

Table 35: Weed Infestation Risk Assessment

Mitigation status	Likelihood	Consequence	Risk Rating
Pre-mitigation	Highly likely	Moderate	High
Post-mitigation	Unlikely	Moderate	Low

8. Corrective Actions

Table 36 outlines a number of triggers and corrective actions which are to be implemented in instances of non-compliance or the lack of success toward the gradual achievement of the completion criteria identified during annual monitoring, as reported in the Annual Compliance Reports, and major milestone monitoring events (every 5 years).

Table 36: Triggers, Corrective Actions and Timeframes

Triggers	Corrective Actions	Timeframes
Trees and plantings showing signs of ill health, decline or death.	The Offset Provider will engage a suitably qualified professional to identify the likely cause of health decline.	Engage the suitably qualified professional within three months of detection.
	Apply recommended mitigation measure/s to improve growing conditions (as recommended by the suitably qualified professional).	Implement recommended mitigation measures within six months of detection.
	Remove ill or dead plantings, undertake any remediation works and re-establishment planting.	Remove ill or dead plantings and undertake remediation works within six months of detection.
Weed re-establishment	Immediately treat all WoNs with delicate methods to avoid impacts to restoration works (mechanically or chemically dependent on circumstances).	Within three months of detection, noting that treatment during non-growth periods may be ineffective and are best targeted during growth periods for greater effectiveness.
	Undertake an investigation of the potential source point of seeding.	Within three months of detection.
	Additional treatment and removal works are to be followed up during the next potential growth period to avoid any regeneration and potential seeding events.	Within six months of initial detection.
Plant failure (>10% of stock) during the establishment period	Supplementary planting will be undertaken.	Within six months or the next appropriate planting period (whichever comes first) of detection.
	Should the planting fail again, the Offset Provider is to engage a suitably qualified professional to identify the likely cause of plant failure.	Within month of detection.
	Apply recommended mitigation measure/s to improve growing conditions (as recommended by the suitably qualified professional).	Apply in alignment with the recommendations made by the suitably qualified professional.
Coarse woody debris is failing to become present naturally	The selective removal of limbs, shrubs, or trees (particularly from the shrub layer where forming dense thickets).	At the 5, 10 year monitoring events.
	Install coarse woody debris and other habitat features, prioritising open areas, to accelerate habitat creation. This may include importation of felled native timber from known impact	At the 5, 10 year monitoring events.

Triggers	Corrective Actions	Timeframes
	areas where it would ordinarily be mulched and sent to landfill.	
Growth rates not as expected	Engage a suitably qualified professional to review the plantings and advise on methods to increase growth rates through other interventions.	Within three months of detection.
	Undertake soil testing to determine what rate of soil ameliorants or fertilizers may be required to improve the chemical balance of the soils for improved plant growth.	Within three months of detection.
	Revise management actions for offset.	Within 12 months of detection.
	Revise OMP and submit to Minister for the Environment for approval.	Within 24 months of detection if the corrective actions have not amended the slowing growth rates.
Stochastic or nuisance events	While such events (e.g. fire, flood, drought, vandalism etc) are rare and can be managed by the Offset Provider, where events take place, restoration works are to replace losses and reporting to the NEPA is required.	Notification and evidence provided to NEPA within one month.
	Evidence of impacts and rectification measures are to be issued to the NEPA within three months.	Within six months of rectification.
Ongoing presence of pest fauna (e.g. wild dogs)	Where recurrent pest animal species are detected, reengagement with the surrounding landholders and Ipswich City Council to re-deploy management measures.	Within one month of continued presence identification.
	Should recurrent pest fauna be observed going forward, revised management measures to include more site-specific measures including targeted baiting and/or trapping.	As required. Targeted management techniques to be implemented within one month of pest animal recurrence being detected.
Monitoring and reporting illustrates that Actions described within Section 6.7 are unlikely to be successful at the end of the 10 year management timeframe and other corrective actions are failing to progress the achievement of Revegetation Actions.	Engage a suitably qualified professional to review the plantings and advise on methods to increase growth rates through other interventions.	Within three months of detection.
	Undertake soil testing to determine what rate of soil ameliorants or fertilizers may be required to improve the chemical balance of the soils for improved plant growth.	Within 12 months, or two complete growth seasons of detection (whichever is sooner) if corrective actions have not amended the slowing growth rates.
	Revise the management actions for the offset.	Within 12 months, or two complete growth seasons of detection (whichever is sooner) if corrective actions have not amended the slowing growth rates.

Triggers	Corrective Actions	Timeframes
Interim performance target Habitat Quality scores are not being achieved	- Investigate factors contributing to reduced habitat quality outcomes - Implement additional restoration and land management measures where required - Review monitoring data and adapt management practices accordingly	- Undertake management adaptations within the next management year. - if failure to meet performance targets continues through to the following years' monitoring event (2 years later), further investigation will be undertaken.

9. Adaptive Management

This OMP adopts a number of ‘adaptive management’ procedures both as a governing principle and within specific management actions (**Section 6**).

Most management actions incorporate detailed baseline survey and data collection to be periodically repeated through the offset period and utilised for iterative changes to management implementation, particularly for stochastic habitat risks and threats. The primary purpose of adaptive management procedures is to allow on-ground monitoring and experiences on the most effective measures to feed into amendments to the OMP which focus on best return in habitat outcomes for Grey-headed Flying-fox (*Pteropus poliocephalus*) and Koala (*Phascolarctos cinereus*). The structured decision-making process that is a by-product of adaptive management is shown in **Inset 8**.



Inset 8. Adaptive management process

10. Ecological Benefit Measures

Ecological performance targets have been detailed for each MNES across interim performance target years (5,10,15) and completion year (20). The extent of ecological gain has been determined and demonstrated through the repetition of the MHQA method for each offset matter at each performance monitoring year. The prediction of score progression was achieved through the detailed analysis of baseline condition scoring, the habitat quality scoring methodology, and the establishment of ecologically feasible outcomes within a 20-year management period.

The predicted progression of all ecological attributes and their respective ecological indicators are summarised in **Attachment 9** for each Assessment Unit and Protected Matter. The summary tables (**Attachment 9**) demonstrate the progression of indicator scores at the Assessment Unit scale, whereas the predicted progression of raw value data (i.e. field data) is detailed within the MHQA spreadsheet analysis on the survey site scale (i.e. BioCondition site) (**Attachment 10 and 11**). **Table 37** and **Table 38** below detail the progression of scaled attribute scores, i.e. the sum and scoring of respective ecological indicators. Assessment Unit MHQA scores, at each the ecological attribute and indicator level, will function as the ecological gain performance criteria of this OMP. The successful progression of ecological restoration will therefore be interpreted against these scoring milestones.

The relationship between ecological performance criteria and their respective management objectives, monitoring activities, and survey timing/frequency are detailed in **Table 39** below. Performance criteria are summarised for both Koala and Grey-headed Flying-fox across each milestone year (year 5, 10, 15, and 20).

Table 37: Performance Criteria for Koala per Assessment Unit

Score Attribute	Attribute indicator	Year 0			Year 5			Year 10			Year 15			Year 20		
		AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3
Site Condition	BioCondition	65.33	36.25	25.25	65.33	40.25	28.25	66.83	50.25	44.75	71	58.5	51.75	73.33	61.5	56.75
	Quality and availability of food and foraging habitat	10	5	5	5	5	5	10	5	5	10	10	5	10	10	5
	Quality and availability of shelter	6.67	3	5	10	3	5	6.67	3	5	10	5	5	10	5	5
Site Context	Size of patch	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Connectedness	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Context	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	Ecological Corridors	6	6	6	6	6	6	5	5	5	6	6	6	6	6	6
	Role of site location to species overall population in the state	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Threats to the species	5	7	7	5	7	7	10.33	15	15	10.33	15	15	15	15	15
	Species mobility capacity	10	4	4	10	7	7	10	10	10	10	10	10	10	10	10
		2.3	0.9	0.9	2.3	0.9	0.9	2.3	1.4	1.4	2.3	2.3	2.3	2.3	2.3	2.3
Species Stocking Rate	Species Stocking Rate	2.3	0.9	0.9	2.3	0.9	0.9	2.3	1.4	1.4	2.3	2.3	2.3	2.3	2.3	2.3
Habitat Quality Score		6.28			6.36			7.00			7.59			7.85		

Table 38: Performance Criteria for Grey-headed Flying-fox per Assessment Unit

Score Attribute	Attribute indicator	Year 0			Year 5			Year 10			Year 15			Year 20		
		AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3
Quality and availability of food and foraging habitat + Quality and availability of shelter	Site Condition	16.33	9.06	6.31	16.33	10.06	7.06	16.71	12.56	11.19	17.75	14.63	12.94	18.33	15.38	14.19
	Habitat index	32	22.25	23	32	27	27	32	29.50	32	32	29.50	32	37.67	43	34
	Total score	48.33	31.31	29.31	48.33	37.06	34.06	48.71	42.06	43.19	49.75	44.13	44.94	56.00	58.38	48.19
Site Context	Size of patch	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Connectedness	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Context	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Ecological Corridors	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Role of site location to species overall population in the state	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Threats to the species	5	5	5	10	10	10	10	10	10	10	10	10	10	10	10

Score Attribute	Attribute indicator	Year 0			Year 5			Year 10			Year 15			Year 20		
		AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3	AU1	AU2	AU3
Species Stocking Rate	Species Stocking Rate	6	2	2	6	2	2	6	2	2	6	2	2	6	7	4
Weighted Habitat Quality Score		4.18	0.97	0.31	4.35	1.08	0.34	4.36	1.12	0.37	4.39	1.14	0.37	4.56	1.63	0.43
Habitat Quality Score		5.45			5.77			5.85			5.90			6.61		

Table 39: Summary of Monitoring Triggers and Performance Outcomes

Management Objective	Monitoring Activity	Frequency	Performance Outcome				
			Years 1-5	Years 6-10	Years 11-15	Years 16-19	Year 20 - Completion Year
Management Action 2 - Biosecurity Management	Weed Survey and eradication	Weed survey will take place every year between Years 1-10 and every second year between Years 11-20. Weed survey to be used to program weed eradication efforts for the following year to target areas where weed effort is falling behind schedule.	Two specific targets are in effect: <i>Biosecurity Act 2014</i> (Category 3 weeds) and Weeds of National Significance (WoNS) with a completion target of 95% reduction in the mapped area of <i>Lantana camara</i> by year 15. Between years 1-5, a 35% reduction in area will be achieved. Other weed cover throughout the Offset Area is expected to be on average less than <25% non-native plant cover within BioCondition plots.	Between years 6-10, <i>Lantana camara</i> cover will be reduced by 65% of Baseline. BioCondition plots are expected to reflect a score of <15% non-native plant cover.	Between years 11-15, <i>Lantana camara</i> cover will be reduced by >95% of Baseline. BioCondition plots are expected to reflect a score of <15% non-native plant cover.	Between years 16-19, <i>Lantana camara</i> cover will be maintained at 95% of Baseline. BioCondition plots are expected to reflect a score of <10% non-native plant cover.	At completion year-20, weed cover through the Offset Area is expected to be on average less than <10%. BioCondition plots are expected to reflect a score of <10% non-native plant cover.
Management Action 3– Fencing, Access, and Signage Management	Biannual comprehensive site checks	Rapid Offset Area inspections at revegetation sites will take place biannually (post-wet season, and dry season).	Observations of damage, general upkeep, and hazards will be reported and rectified between management years. The Annual Compliance Report will identify where Offset Area general upkeep is not upheld to the standard subject to this OMP.				
Management Action 5 – Native seed collection and propagation			Years 1-5 site inspections will focus on the success of planted tube stock. Where threatening processes are determined to occur, such as foraging pressure, climate conditions, and resource competition with weeds, corrective actions will be triggered. Sites of tube stock death will be reported and rectified to ensure management years 1-5 establish anticipated tree growth.	Years 6-10 site inspections will continue to focus on the successful establishment of planted tube stock. Site inspections will ensure that revegetation sites remain free of threatening processes which may impede the establishment of tube stock as trees.	Following year 10, planted tube stock should be established as young trees and shrubs. Site inspections will focus on the survival rate of planting sites, and continue to ensure sites are free of threatening process such as weed incursion/competition and grazing pressure from both native and exotic mammals.	Following year 16, planted tube stock should be established as young-maturing trees and shrubs. Site inspections will focus on the survival rate of planting sites, and continue to ensure sites are free of threatening process such as weed incursion/competition and grazing pressure from both native and exotic mammals.	Year 20 inspections will assess the survival and success of restoration efforts.
Management Action 6– Ecological Restoration and Matter Habitat Creation			Monitoring and reporting of operational performance of revegetation success as outlined by the RMP (6 monthly, Years 1-4 post planting – RMU – planting cell dependent).	Monitoring and reporting of operational performance of revegetation success as outlined by the RMP (6 monthly, Years 1-4 post planting – RMU – planting cell dependent).			

Management Objective	Monitoring Activity	Frequency	Performance Outcome				
			Years 1-5	Years 6-10	Years 11-15	Years 16-19	Year 20 - Completion Year
Management Action 1 - Integrated Vertebrate Pest Management	Vertebrate Pest Survey - remote camera	Vertebrate pest fauna survey will take place every year between Years 1-10 and every second year between Years 11-20.	Vertebrate pest activity index scores should reflect a decreasing trajectory each survey year. Year 1-5 activity scores are expected to be more volatile during early stages of pest animal management.	Vertebrate pest activity index to have reduced for Wild Dog and Red Fox populations against baseline. Activity index scores for each species are expected to maintain a decreasing trajectory, despite true score values which may remain moderate-low between years 6-10 (values 11%-50%). Pest species European Rabbit, European Hare, Red Deer, Rusa Deer, Feral Pig, Feral Cat are expected to maintain low activity index scores (value <11%), reflecting that of baseline values and the difficulty of site-based management. Where the activity index remains consistent, increases, or exceeds the above Performance Outcomes these shall be recorded in the technical memo and the Corrective Action will be an increase in the frequency and intensity of vertebrate pest management employing those methods described in the Vertebrate Pest Management Plan (Attachment 4). Where activity indices are shown to decrease as evidenced by camera trapping, vertebrate pest management efforts will be maintained at the prior frequency and intensity. Management effort will be reduced only after three consecutive sampling periods have shown downward trends.	Vertebrate pest activity index to have reduced for Wild Dog and Red Fox populations against baseline. Activity index scores for each species are expected to maintain a decreasing trajectory, despite true score values which may remain moderate-low between years 11-15 (values 11%-50%). Pest species European Rabbit, European Hare, Red Deer, Rusa Deer, Feral Pig, Feral Cat are expected to maintain low activity index scores (value <11%), reflecting that of baseline values and the difficulty of site-based management. Where the activity index remains consistent, increases, or exceeds the above Performance Outcomes these shall be recorded in the technical memo and the Corrective Action will be an increase in the frequency and intensity of vertebrate pest management employing those methods described in the Vertebrate Pest Management Plan (Attachment 4). Where activity indices are shown to decrease as evidenced by camera trapping, vertebrate pest management efforts will be maintained at the prior frequency and intensity. Management effort will be reduced only after three consecutive sampling periods have shown downward trends.	Vertebrate pest activity index to have reduced for Wild Dog and Red Fox populations against baseline. Activity index scores for each species are expected to maintain a decreasing trajectory, despite true score values which may remain moderate-low between years 16-19, (values <11%). Pest species European Rabbit, European Hare, Red Deer, Rusa Deer, Feral Pig, Feral Cat are expected to maintain low activity index scores (value <11%), reflecting that of baseline values and the difficulty of site-based management. Where the activity index remains consistent, increases, or exceeds the above Performance Outcomes these shall be recorded in the technical memo and the Corrective Action will be an increase in the frequency and intensity of vertebrate pest management employing those methods described in the Vertebrate Pest Management Plan (Attachment 4). Where activity indices are shown to decrease as evidenced by camera trapping, vertebrate pest management efforts will be maintained at the prior frequency and intensity. Management effort will be reduced only after three consecutive sampling periods have shown downward trends.	Vertebrate pest species Wild Dog and Red Fox populations are expected to have been managed to completion and maintenance by year 20. This will be reflected in an activity index score of absent (values <11%). Pest species Wild Dog, Pest species European Rabbit, European Hare, Red Deer, Rusa Deer, Feral Pig, Feral Cat are expected to maintain low to very low activity index scores (1-10%). This reflects the impracticality to manage these species entirely on a property level scale. Species' maintenance efforts will be reflected through a decreased activity index.
	Vertebrate Pest Survey - Spotlight Survey	Spotlight survey will take place on the following years: 1-10, 11, 13, 15, 17, 19 and 20.	Survey to be undertaken at years 1-5. The discovery of any new vertebrate pest fauna (i.e. fauna which have not been identified through the remote camera survey) will trigger the requirement to repeat and adapt the remote camera survey.	Survey to be undertaken at years 6-10. The discovery of any new vertebrate pest fauna (i.e. fauna which have not been identified through the remote camera survey) will trigger the requirement to repeat and adapt the remote camera survey.	Survey to be undertaken at years 11, 13 and 15. The discovery of any new vertebrate pest fauna (i.e. fauna which have not been identified through the remote camera survey) will trigger the requirement to repeat and adapt the remote camera survey.	Survey to be undertaken at years 17 and 19. The discovery of any new vertebrate pest fauna (i.e. fauna which have not been identified through the remote camera survey) will trigger the requirement to repeat and adapt the remote camera survey.	Completion survey undertaken at year 20.
Management Action 4 - Fire Management	Fuel load monitoring	TBC by Suitably Qualified Bushfire Consultant.	Monitoring method, schedule, and performance criteria will be established and enforced through an independent suitably qualified bushfire consultant. Fuel loads will be monitored in accordance with the Bushfire Management Plan and will be maintained at a condition that is reflective of their natural structural state i.e. woodland, open woodland, or forest. At a minimum standard, annual inspections will take place (concurrently with Offset Area inspections) to assess the condition of fire breaks, trails and roads, as well as firefighting infrastructure.				
	Controlled burns for <i>Lantana camara</i> eradication						

Management Objective	Monitoring Activity	Frequency	Performance Outcome				
			Years 1-5	Years 6-10	Years 11-15	Years 16-19	Year 20 - Completion Year
	Visual inspection of fire management infrastructure		Fire management will be undertaken consistently throughout the life of the OMP to continually mitigate the potential of adverse bushfire impacts.				
	Wildfire, controlled burn extent and fuel load monitoring and mapping.						
Management Action 6 – Ecological Restoration and Matter habitat creation	Habitat quality analysis (BioCondition survey)	Habitat Quality assessment and Fauna survey will take place on the following years: 1, 3, 5, 7, 9, 10, 11, 13, 15, 17, 19 and 20.	MHQA score progression in alignment with prediction table summary attached in Table 38 (Koala) and Table 39 (Grey-headed Flying-fox). Matter Area score targets of: Koala – 6 GHFF – 5	MHQA score progression in alignment with prediction table summary in Table 38 (Koala) and Table 39 (Grey-headed Flying-fox). Matter Area score targets of: Koala – 6 GHFF – 6	MHQA score progression in alignment with prediction table summary attached in Table 38 (Koala) and Table 39 (Grey-headed Flying-fox). Matter Area score targets of: Koala – 7 GHFF – 6	MHQA score progression in alignment with prediction table summary in Table 38 (Koala) and Table 39 (Grey-headed Flying-fox).. Matter Area score targets of: Koala – 8 GHFF – 6	MHQA score progression in alignment with prediction table summary attached in Table 38 (Koala) and Table 39 (Grey-headed Flying-fox). Matter Area score targets of: Koala – 8 GHFF – 7
	Targeted Fauna Survey (Undertaken over spring and summer months when Koala is vocal and most active)		Supports MHQA analysis and the scoring of species stocking rate.				

11. Reporting

All surveys, results, management activities statuses, alterations or amendments will be recorded within each Annual Compliance Report (**ACR**). An ACR for the Offset Site (**ACR Offset**) will be completed by the Offset Provider and issued to the Proponent within 30 days of each 12 months anniversary of the documented commencement of the action. This commitment is purposely documented to ensure adequate time is provided to the Proponent to evaluate and utilise the ACR Offset in preparing the Annual Compliance Report for the Proposed Action.

11.1 Monitoring Memorandum

Periodic monitoring specified by each Offset Management Action (refer **Section 6**) shall be reported on in the form of an Action Monitoring Memo produced and submitted to the Approval Holder or Approval Holders Representative and Offset Provider (if undertaken by third party) following each monitoring event, and attached to the annual report. All reporting is to be appended with raw data, results of analysis (if undertaken), site photography and mapping. As a minimum Action Monitoring Memo's should discuss:

1. Introduction and Reporting Framework
2. Offset Site Overview and Action Addressed
3. Previous Results and Recommendations and how they have been addressed
4. Action Reporting
 - Monitoring Schedule
 - Monitoring Undertaken
 - Temporal, Seasonal and weather conditions at time of Sampling
 - Results
 - Discussion and Observations
 - Actioning Risk Triggers
 - Corrective Actions
4. Recommendations for future Monitoring Event Improvement
5. Compliance Summary
6. Conclusions.

11.2 Annual Report

The nominal table of contents for the Offset Area Annual Monitoring Report is:

1. Introduction and Reporting Framework
2. Offset Site Overview
3. Compliance Summary
4. Action Reporting
 - 4.1: Action 1: Integrated Vertebrate Pest Management
 - Monitoring undertaken

- Temporal, Seasonal and weather conditions at time of Sampling
- Results
- Discussion and Observations
- Actioning Risk Triggers
- Corrective Actions
- Recommendations for future Monitoring Event Improvement

4.2: Action 2: Biosecurity Management

- Monitoring undertaken
- Temporal, Seasonal and weather conditions at time of Sampling
- Results
- Discussion and Observations
- Actioning Risk Triggers
- Corrective Actions
- Recommendations for future Monitoring Event Improvement

4.3: Action 3: Fencing, Access and Signage

- Monitoring undertaken
- Temporal, Seasonal and weather conditions at time of Sampling
- Results
- Discussion and Observations
- Actioning Risk Triggers
- Corrective Actions
- Recommendations for future Monitoring Event Improvement

4.4: Action 4: Fire Management

- Monitoring undertaken
- Temporal, Seasonal and weather conditions at time of Sampling
- Results
- Discussion and Observations
- Actioning Risk Triggers
- Corrective Actions
- Recommendations for future Monitoring Event Improvement

4.5: Action 5: Native Seed Collection and Propagation

- Monitoring undertaken
- Temporal, Seasonal and weather conditions at time of Sampling

- Results
- Discussion and Observations
- Actioning Risk Triggers
- Corrective Actions
- Recommendations for future Monitoring Event Improvement

4.6: Action 6: Koala Movement Plan

- Monitoring undertaken
- Temporal, Seasonal and weather conditions at time of Sampling
- Results
- Discussion and Observations
- Actioning Risk Triggers
- Corrective Actions
- Recommendations for future Monitoring Event Improvement

4.6: Action 7: Ecological Restoration

- Monitoring undertaken
- Temporal, Seasonal and weather conditions at time of Sampling
- Results
- Discussion and Observations
- Actioning Risk Triggers
- Corrective Actions
- Recommendations for future Monitoring Event Improvement

5. Auditing and Review of OMP Adequacy
6. Monitoring Schedule
7. Corrective Actions Summary
8. Other Matter
9. Summary and Conclusions

All reporting is to be appended with raw data, results of analysis (if undertaken), site photography and mapping.

11.3 OMP Review

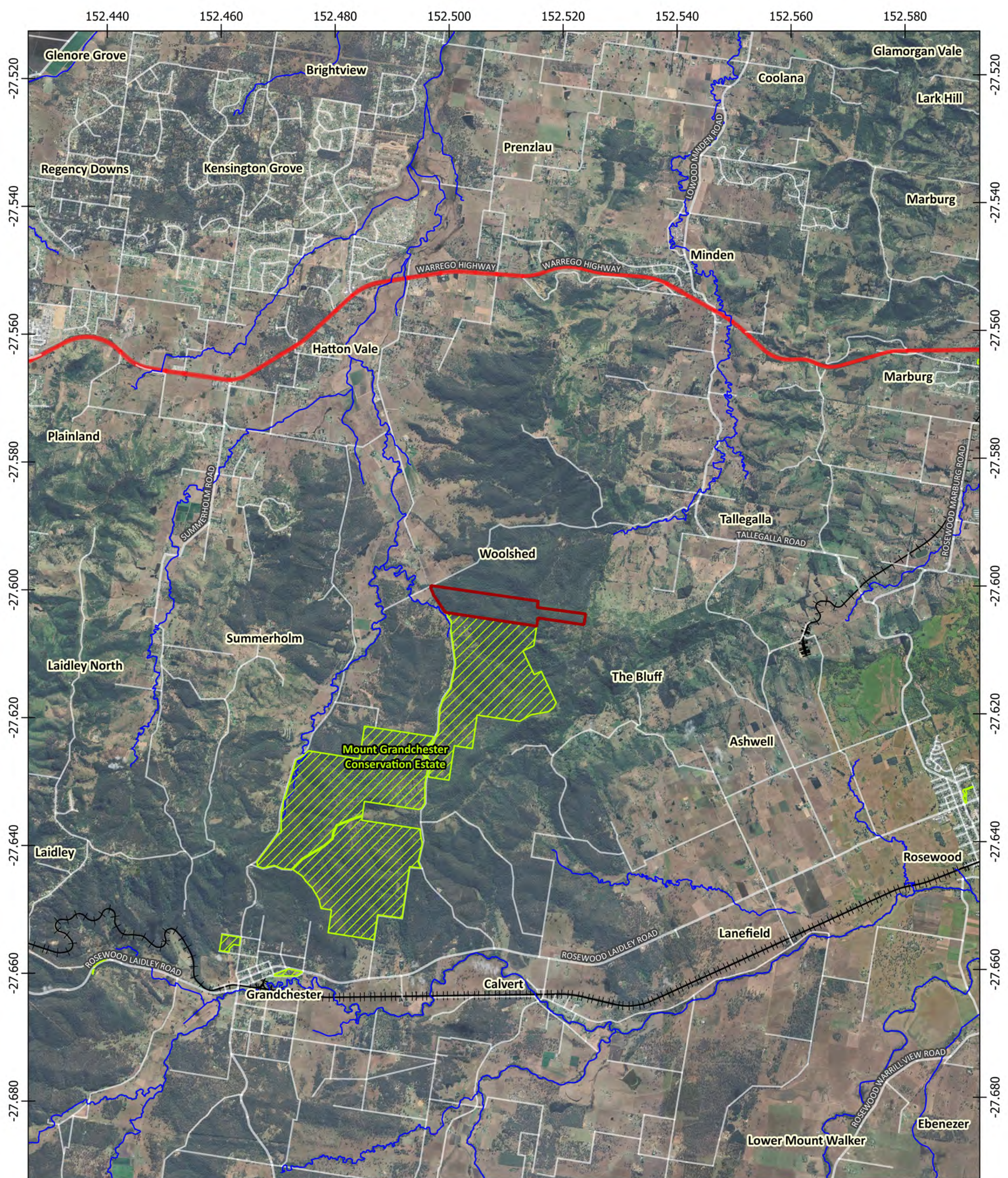
All surveys, results, management activities statuses, alterations or amendments will be recorded within an ACR Offset. Each ACR Offset will be completed by the Offset Provider and issued to the Proponent within 30 days of each 12 months anniversary of the documented commencement of the action. This commitment is purposely documented to ensure adequate time is provided to the Proponent to evaluate and utilise the ACR Offset in preparing the Project Specific ACR for the Action.

12. References

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Figures



Double Jump Road, OMP

Legend

Figure 1 - Locality of the Woolshed Offset Area

28 South Project Ref: 2019-100e

Source: C:\Users\Mitchell\Dropbox\Projects\2019\2019-100e (Sutgold - EPBC Woodbury Precincts)\Data\GIS\Woodbury EPBC Referral (GDA2020).ggz

The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

Links to data sources can be provided upon request.

28°S
ENVIRONMENTAL

-  Woolshed Offset Area Boundary
-  Road
-  Rail Network
-  Major waterway
-  Ipswich City Council Conservation Reserve

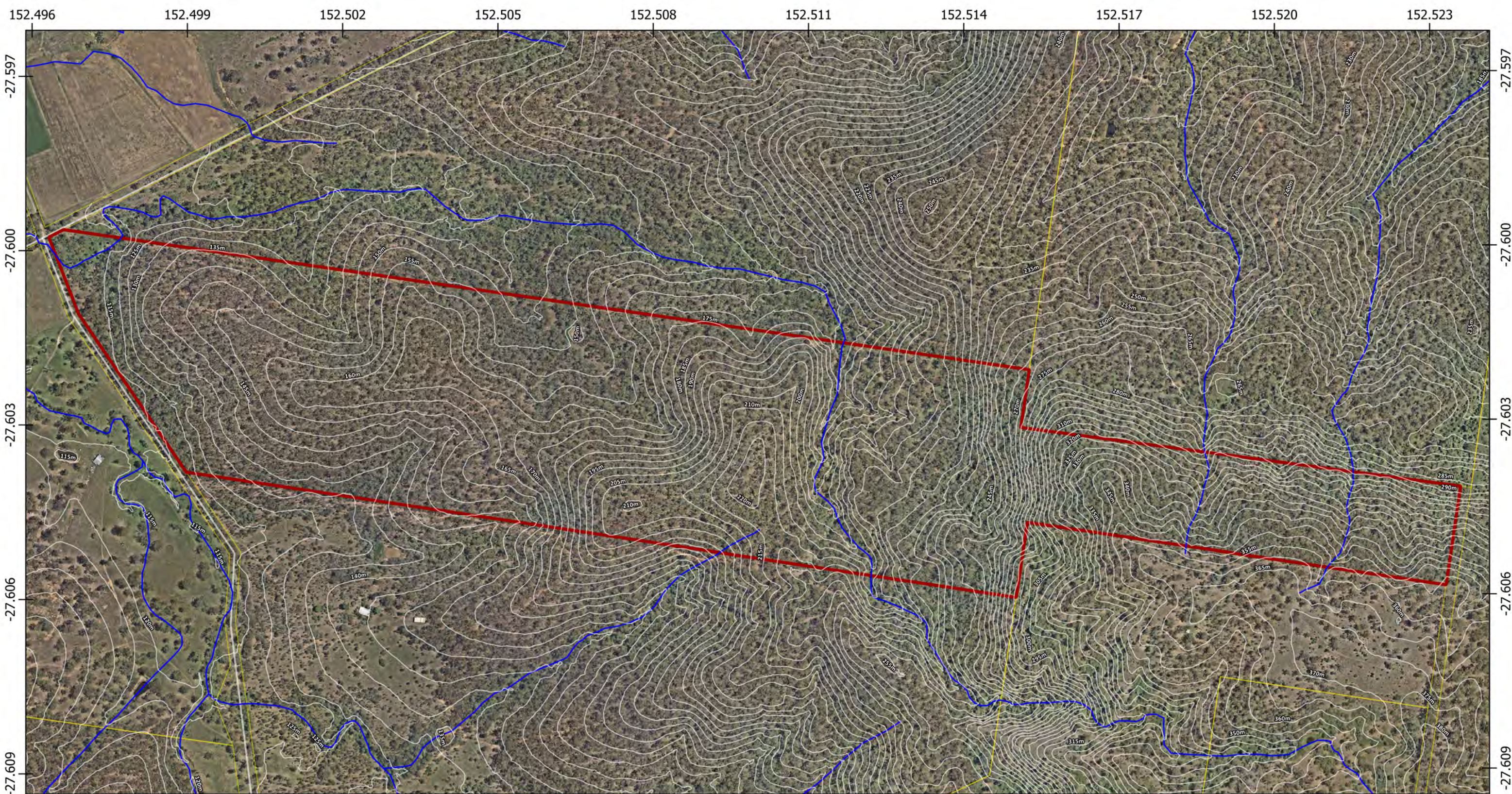
Issue Date	Dwg No.	Author
17-04-2026		MO
Approved	Revision Note	
AD		

GDA2020 MGA 56

1:60,000

0 0.5 1 1.5 2 km





Double Jump Road, OMP

Legend

Figure 2 - Topography, Elevation & Waterways of the Woolshed Offset Area

28 South Project Ref: 2019-100e

Source: C:\Users\Mitchell\Dropbox\Projects\2019\2019-100e (Sutgold - EPBC Woodbury Precincts)\Data\GIS\Woodbury EPBC Referral (GDA2020).qgz

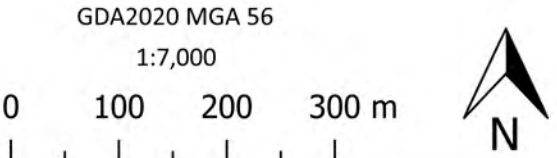
The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

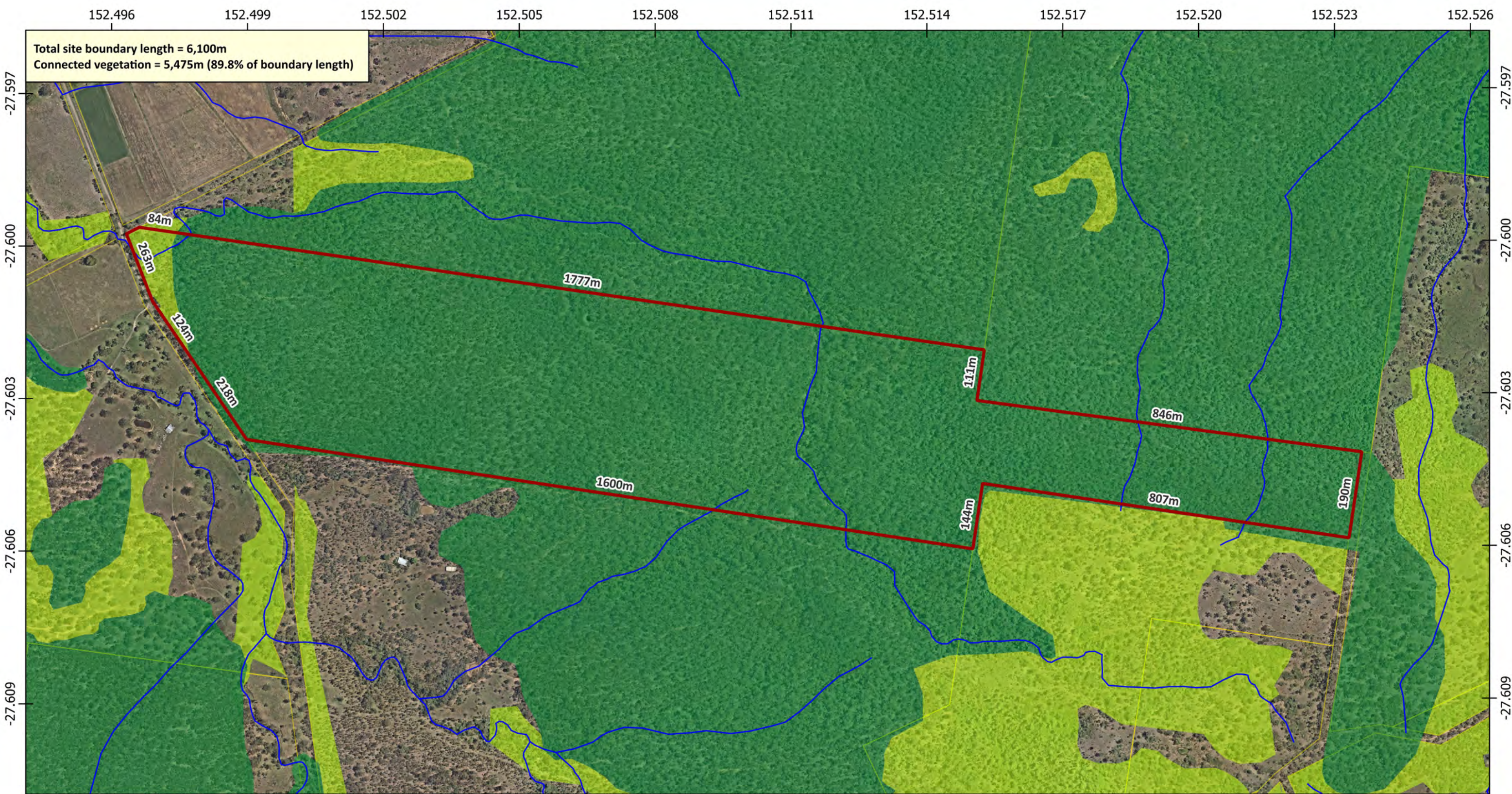
Links to data sources can be provided upon request.

28°S
ENVIRONMENTAL

- Woolshed Offset Area Boundary
- Property Boundaries
- Road
- Waterway/overland flow path
- Contour (5m)

Issue Date	Dwg No.	Author
17-04-2026		MO
Approved		Revision Note
AD		





Total site boundary length = 6,100m
Connected vegetation = 5,475m (89.8% of boundary length)

Double Jump Road, OMP

Legend

Figure 3 - Connectedness of the Woolshed Offset Area

28 South Project Ref: 2019-100e

Source: C:\Users\Mitchell\Dropbox\Projects\2019\2019-100e (Sutgold - EPBC Woodbury Precincts)\Data\GIS\Woodbury EPBC Referral (GDA2020).qgz

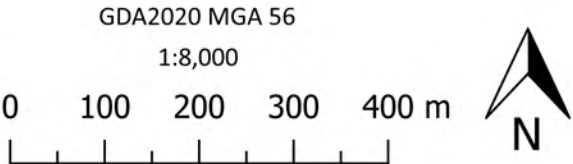
The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

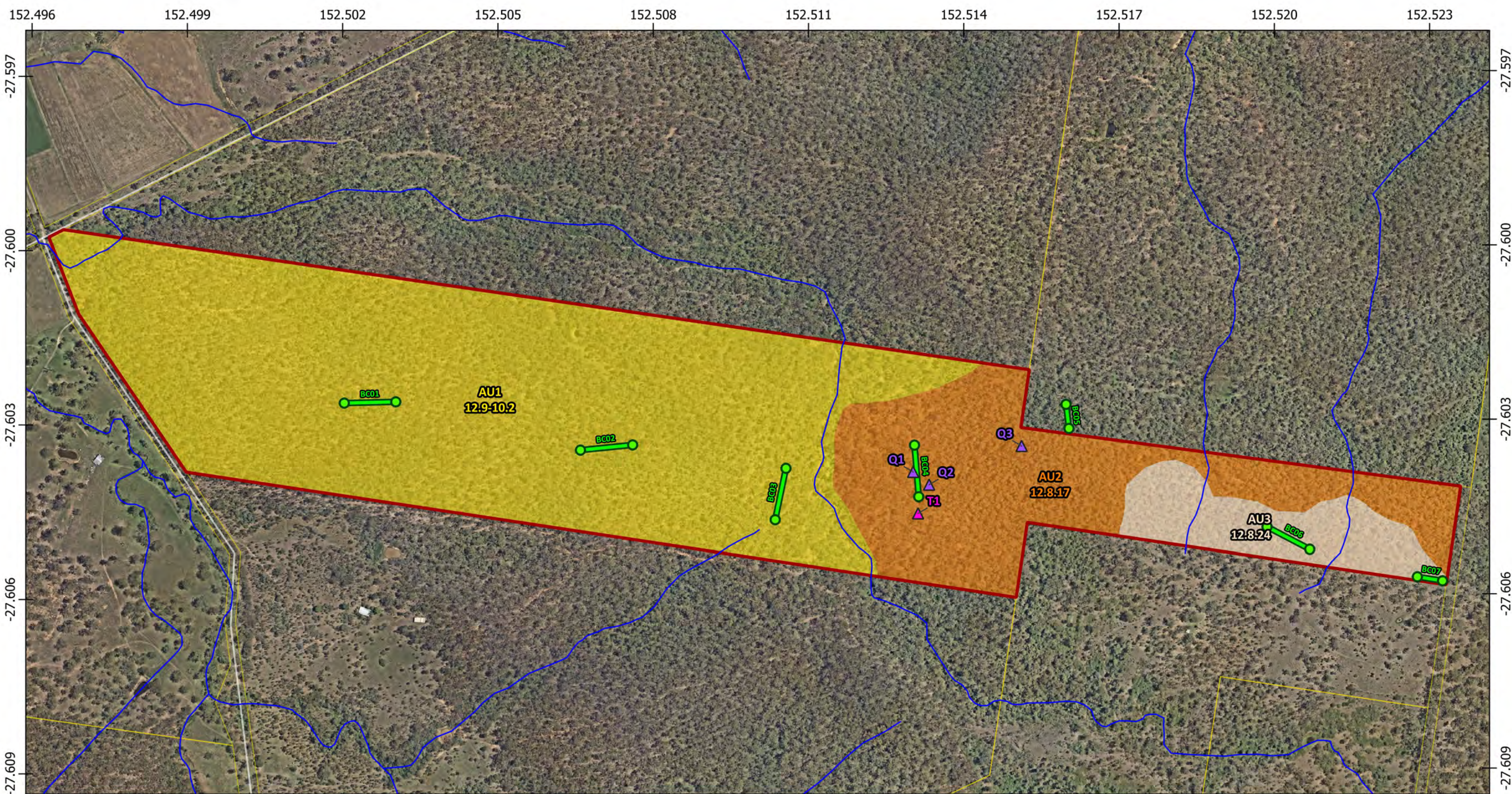


Links to data sources can be provided upon request.

- Woolshed Offset Area Boundary
- Property Boundaries
- Waterway/overland flow path
- QLD Regulated Vegetation v13
 - High Value Regrowth Vegetation
 - Remnant Vegetation

Issue Date	Dwg No.	Author
17-04-2026		MO
Approved		Revision Note
AD		





Double Jump Road, OMP

Legend

- Woolshed Offset Area Boundary
- Property Boundaries
- Road
- Waterway/overland flow path
- Biocondition Plot [7]
- Offset Area Tertiary site [1]
- Offset Area Quaternary site [3]

- Woolshed Offset Area Assessment Units
- Assessment Unit 1 (AU1) (RE 12.9-10.2) [61.35 ha]
 - Assessment Unit 2 (AU2) (RE 12.8.17) [20.63 ha]
 - Assessment Unit 3 (AU3) (RE 12.8.24) [6.65 ha]

Figure 4 - Assessment Units of the Woolshed Offset Area

28 South Project Ref: 2019-100e

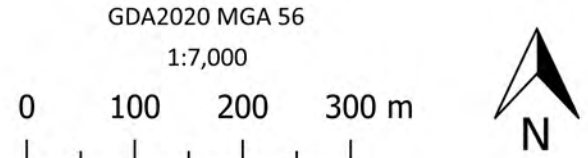
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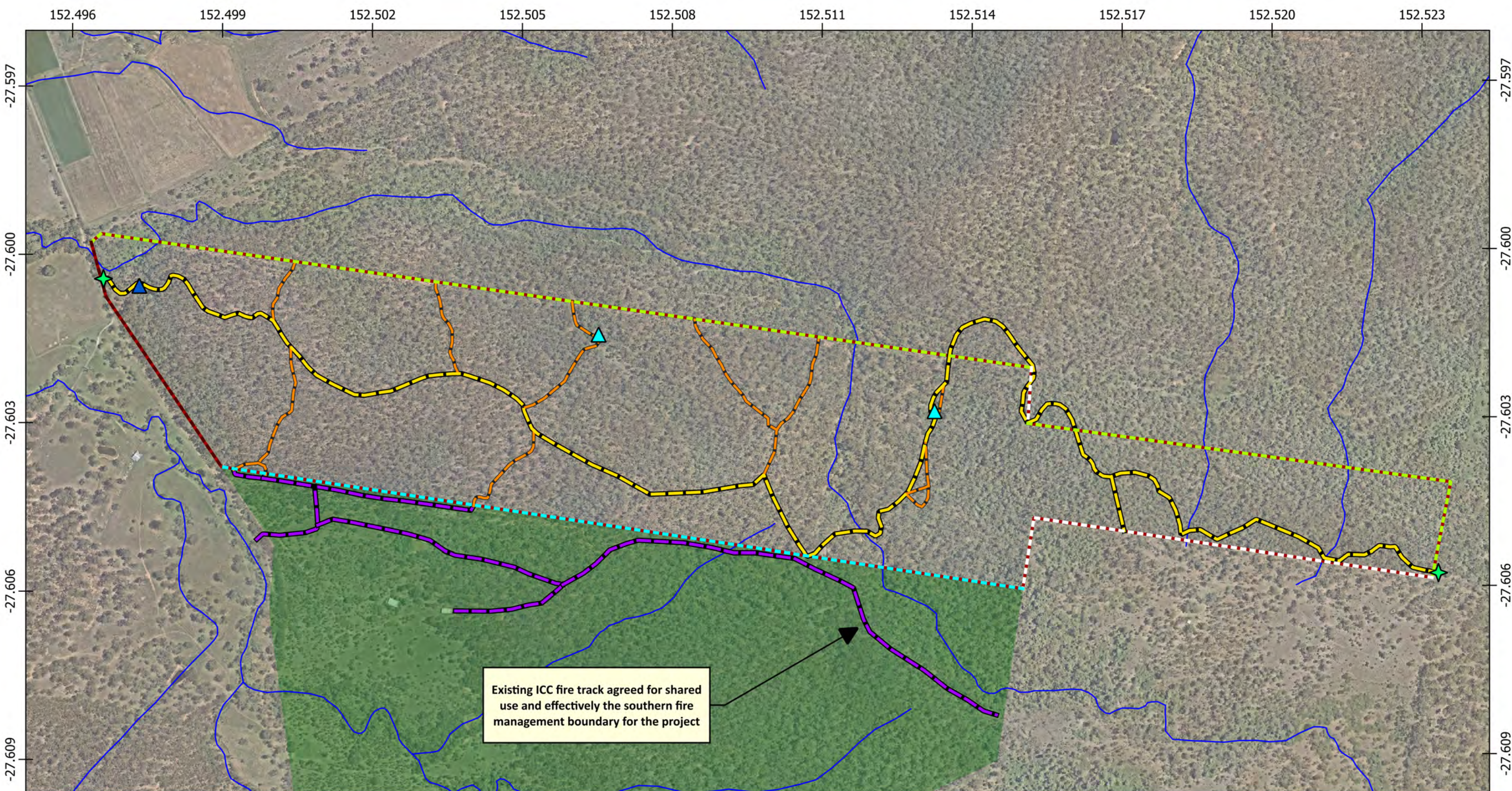
The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.



Links to data sources can be provided upon request.

Issue Date	Dwg No.	Author
17-04-2026		MO
Approved		Revision Note
AD		





Double Jump Road, OMP

Legend

- Woolshed Offset Area Boundary
- Waterway/overland flow path
- ICC Conservation Reserve
- Water Point**
 - 10,000L Tank
 - Dam
 - Access Gate

- Access Tracks and Firebreaks**
- Access Track (existing)
 - Fire Break (existing)
 - ICC access track/fire trail (existing)

- Fences**
- Four strand barbed wire fence, top and bottom barbed wire strands to be replaced with straight gauge wire under consultation with adjacent land owners
 - Dilapidated four strand barbed wire fence to be removed
 - Fence to be replace with four strand straight gauge wit high visibility top strand
 - No fence exists

Figure 5 - Access, Fencing, Firebreaks and Water Points of the Woolshed Offset Area

28 South Project Ref: 2019-100e

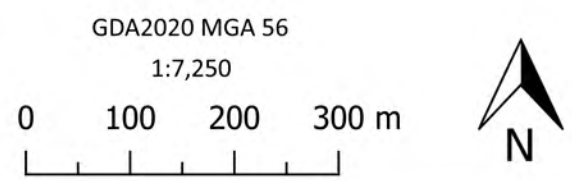
Source: C:\Users\Mitchell\Dropbox\Projects\2019\2019-100e (Sutgold - EPBC Woodbury Precincts)\Data\GIS\Woodbury EPBC Referral (GDA2020).qgz

The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.



Links to data sources can be provided upon request.

Issue Date	Dwg No.	Author
15-07-2026		CMMO
Approved		Revision Note
AD		



Attachment 1 – Baseline Pest Reporting

Technical Memo

To: Andrew Dickinson, 28 South Environmental
From: EcoSmart Ecology
CC:
Date: 8 February 2025
Re: Woodbury Offset Site Vertebrate Pest Assessment

INTRODUCTION

EcoSmart Ecology was contracted by 28 South Environmental to undertake an assessment of vertebrate pest presence at the Woodbury Offset Site located at 528-530 Woolshed Creek Road, Woolshed, QLD 4340. This technical memo outlines the methods and results of this assessment.

METHODOLOGY

Survey effort

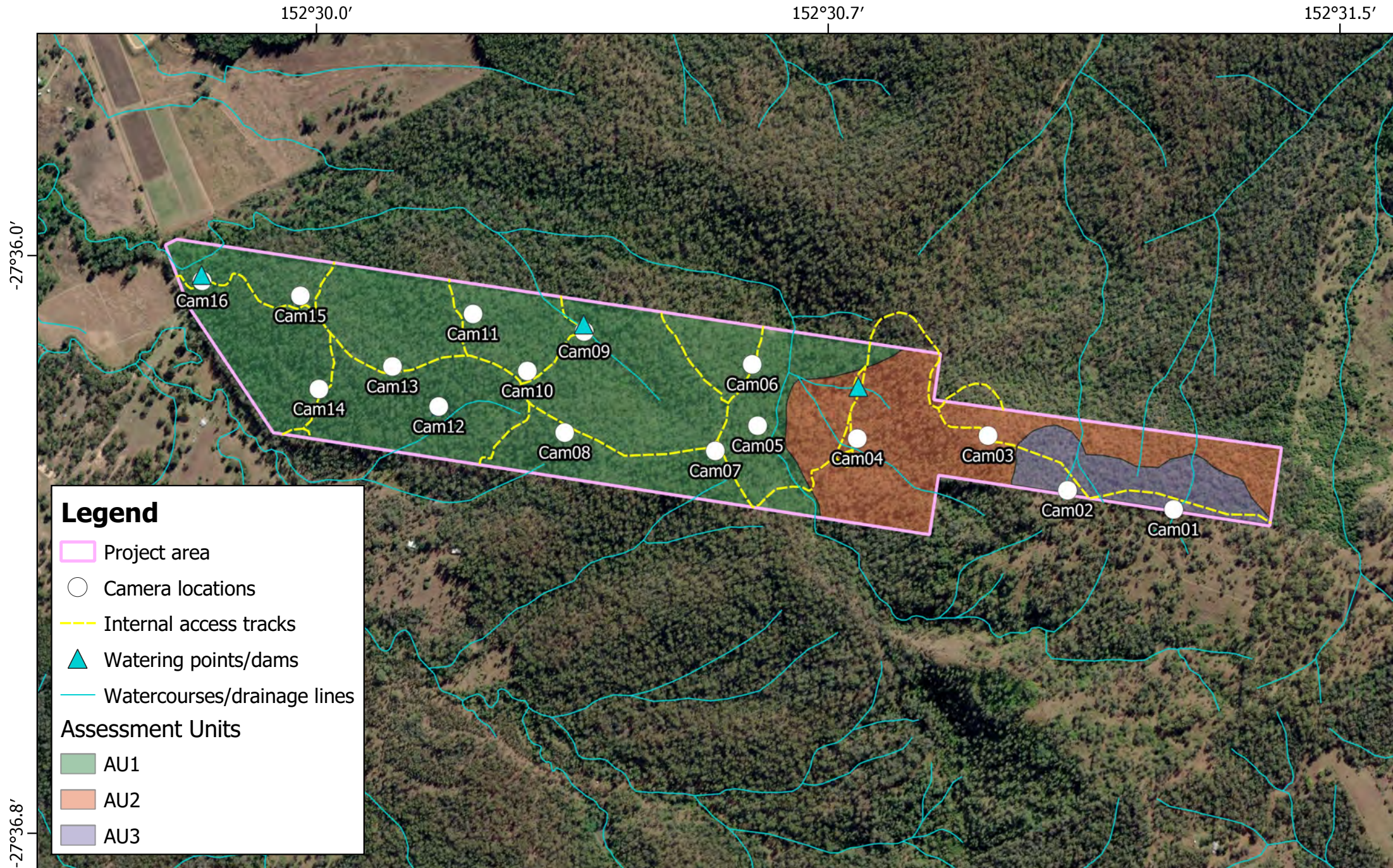
This assessment consisted exclusively of a camera trap survey. A total of 16 Browning Patriot “black flash” cameras were deployed in a semi-regular grid across the project area, encompassing all assessment units (“AUs”) (Figure 1; Appendix A). Cameras were deployed on January 17, 2025 and collected on February 3, 2025 (17 consecutive nights). One camera (Cam14) failed prior to the end of the survey due to a combination of false triggers and Australian brush-turkey (*Alectura latham*) activity. Total survey effort was 260 camera trap-nights.

Survey conditions

Survey weather data was gathered from the Amberley meteorological station (station 040004) located ~20 km east of the project area. Maximum daily temperatures were 29.3–37.3°C (average 32.5°C). Minimum overnight temperatures were 15.2–22.1°C (average 19.9°C). A total of 28.2 mm of rain fell during the survey period, of which 23 mm fell on a single day, January 19.

Camera setup

All cameras were set on trees at ~50 cm above the ground. Cameras were aimed at a PVC bait holder staked to the ground approximately 3 m away, containing chicken necks and additionally spread with sardines, peanut butter, vanilla essence and macadamia oil. Where necessary, vegetation was cleared to reduce vegetation movement and to ensure the bait holder could be easily distinguished in photos. Cameras were set to 24-hour operation, high sensitivity and captured three images per trigger event with a 0 s delay.



RESULTS

A total of 32 taxa were recorded on camera traps. Of these, 29 were identifiable to species level, one to genus level, and two to family level (Table 1). Five pest taxa were identified, including one amphibian and four mammals. Native taxa identified included two reptiles, 13 birds, and 12 mammals.

At least two, and possibly as many as four, wild dogs (*Canis familiaris* x *C. dingo*) were identified on camera¹. No other pest species detected on camera were identifiable to individual level.

No Endangered, Vulnerable or Near Threatened (EVNT) species were recorded on cameras. One Special Least Concern (SLC) species, Short-beaked Echidna (*Tachyglossus aculeatus*), was recorded on seven cameras. As the species has little morphological variation, the number of individuals is unknown.

REFERENCES

Cairns KM, Crowther MS, Nesbitt B, Letnic M (2022) The myth of wild dogs in Australia: are there any out there? *Australian Mammalogy*, 44, 67-75.

¹ While these animals are identified here as wild dogs, some authorities will likely consider them to be true dingoes (*Canis dingo*) following in-depth genetic analysis of over 5000 "wild dogs" (including 356 from Queensland) which showed >98% of animals tested comprised at least 50% dingo ancestry (Cairns *et al.* 2022).

TECHNICAL MEMO

To: Andrew Dickinson

From: EcoSmart Ecology

Re: Woodbury Offset Site Vertebrate Pest Assessment



Table 1. Pest and native vertebrate fauna species recorded on camera traps

Species Name	Common Name	Location															
		Cam01	Cam02	Cam03	Cam04	Cam05	Cam06	Cam07	Cam08	Cam09	Cam10	Cam11	Cam12	Cam13	Cam14	Cam15	Cam16
PEST SPECIES																	
Amphibians																	
Rhinella marina	Cane Toad	X	X	X		X	X	X	X		X		X	X	X	X	X
Mammals																	
Canis familiaris x C. dingo	Wild Dog		X	X												X	X
Oryctolagus cuniculus	European Rabbit							X									
Rattus rattus	Black Rat					?X											
Vulpes vulpes	Red Fox														X		X
NATIVE SPECIES																	
Reptiles																	
Pogona barbata	Eastern Bearded Dragon							X									
Varanus varius	Lace Monitor	X	X	X	X	X			X			X	X	X	X		X
Birds																	
Accipiter fasciatus	Brown Goshawk			X													
Accipiter novaehollandiae	Grey Goshawk												X				
Alectura lathamii	Australian Brush Turkey	X	X	X		X	X	X	X				X	X	X	X	X
Ardea pacifica	White-necked Heron									X							
Centropus phasianinus	Pheasant Coucal									X							
Cracticus nigrogularis	Pied Butcherbird										X						
Dacelo novaeguineae	Laughing Kookaburra	X								X	X						
Egretta novaehollandiae	White-faced Heron									X							
Gymnorhina tibicen	Australian Magpie	X															

TECHNICAL MEMO

To: Andrew Dickinson

From: EcoSmart Ecology

Re: Woodbury Offset Site Vertebrate Pest Assessment



<i>Leucosarcia melanoleuca</i>	Wonga Pigeon					X	X	X									
<i>Phaps chalcoptera</i>	Common Bronzewing									X							
<i>Rhipidura rufifrons</i>	Rufous Fantail					X											
<i>Turnix varius</i>	Painted Button-quail					X											
Mammals																	
<i>Antechinus</i> sp.													X				
<i>Isodon macrourus</i>	Northern Brown Bandicoot	X		X									X				
<i>Macropus giganteus</i>	Eastern Grey Kangaroo								X								
<i>Notamacropus rufogriseus</i>	Red-necked Wallaby									X	X						X
<i>Perameles nasuta</i>	Southern Long-nosed Bandicoot					X		X									X
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale											X		X			
<i>Rattus fuscipes</i>	Bush rat	X				X											
<i>Tachyglossus aculeatus</i>	Echidna	X				X					X		X	X		X	X
<i>Trichosurus vulpecula</i>	Common Brushtail possum		X			X	X				X	X		X	X	X	
<i>Wallabia bicolor</i>	Swamp Wallaby	X	X	X	X	X	X	X			X			X		X	X
Unidentified bandicoot (Peramelidae)			X	X	X			X	X			X		X			
Unidentified rodent (Muridae)		X															
TOTAL		10	7	8	3	12	5	8	5	6	7	4	7	8	5	6	9



APPENDIX A. Camera stations

Camera	Coordinates	Photo	Camera	Coordinates	Photo
Cam01	-27.60549, 152.52093		Cam02	-27.60507, 152.51834	
Cam03	-27.60389, 152.51640		Cam04	-27.60395, 152.51321	



Cam05	-27.60367, 152.51077		Cam06	-27.60235, 152.51064	
Cam07	-27.60422, 152.50974		Cam08	-27.60382, 152.50606	



Cam09	-27.60164, 152.50654		Cam10	-27.60249, 152.50515	
Cam11	-27.60126, 152.50382		Cam12	-27.60326, 152.50298	

Cam13	-27.60239, 152.50185		Cam14	-27.60288, 152.50006	
Cam15	-27.60087, 152.49961		Cam16	-27.60054, 152.49720	

Attachment 2 – Baseline Weed Reporting

Technical Memorandum

Baseline Invasive Weed Assessment, Woolshed (EPBC 2024/09825)

30 January 2025

1. Introduction

28 South Environmental (**28 South**) has been engaged by Sutgold Pty Ltd (**the Applicant**) to prepare a Preliminary Documentation Report responding to the further information requirements of the Department of Climate Change, the Environment, Energy and Water (**DCCEEW**) for Double Jump Road Residential Estate Development, Victoria Point, QLD (**EPBC 2024/09825**) dated 5 July 2024.

That documentation outlines the need to assess, amongst other matters, *'the extent and presence of weeds, and the extent of threats'* at the proposed 88.63 hectare Offset Site located at 528-530 Woolshed Creek Road, Woolshed Queensland, formally described as Lot 236 on CH312334. Cherish the Environment (the **Offset Provider**) will manage the offset until ecological benefit is achieved the Client paying the Offset Provider an annual fee to deliver, manage and maintain the offset for the duration of the offset.

The purpose of this weed assessment is to inform the Offset Management Plan (**OMP**), produced to guide the restoration and habitat improvement of the invasive matters that require attention during offset delivery and maintenance. The purpose of the OMP is to demonstrate that the Applicant and the Offset Provider understand requirements for Natural Assisted Regeneration (**NAR**) at the Offset Area in order to improve the quality of the habitat for the MNES affected by the proposed action.

In order to prioritise areas where NAR will be most effective, invasive weed assessment was performed to assess the density and diversity of invasive species within the offset area. Invasive species in this context are Weeds of National Significance (**WONS**), and Restricted weeds listed by the State under the *Biosecurity Act 2014* (Qld) (**Biosecurity Act**). In addition to improving habitat quality within the offset area the client will be fulfilling their General Biosecurity Obligation under the *Biosecurity Act*.

2. Techniques employed

Initial botanical (biocondition) assessment of the Offset Site occurred 16 July 2024 noted the presence of a number of WoNS and Restricted matters. It was observed at that time that the richness and abundance of weeds was dominated by extensive thickets of Lantana (*Lantana camara*) that were observed to cloak the central and eastern portions of the Offset Site.

The purpose of this invasive weed assessment is to respond to DCCEEW information request and to establish a baseline of invasive weeds through mapping and documentation of richness and abundance as required by section 7 of the request for further information (**RFI**) issued by DCCEEW. Assessment was undertaken by two botanists on January 16, 17 and 20, 2025 in seasonally suitable conditions which facilitated species identification through presence of flowering and fruiting bodies on most species encountered.

In the field, weeds were identified by an informed random meander assessment¹. This technique was adopted was used to map the presence of species within the offset area with weed species when encountered spatially located with a GPS and estimates of abundance assigned (see below). This method was adopted as it is sufficient to develop an understanding of population dynamics of the species within the area as well as obtaining a general inventory of invasive species present within the proposed offset. Random Meanders are represented as **Figure 1**.

In the field, extensive thickets of Lantana were strongly associated with clayloam soils derived from parent basalt (the underlying geological formation, *viz-a-viz* Land Zone 8). These thickets proved to be impenetrable. When encountered in the field the edge of these areas was identified by GPS with either points or polygons being recorded. Traverses through thickets along recently established fire / access trails facilitated additional weed assessment within these dense thickets. Field meanders, post processing of data and remote sensing utilising the project GIS further allowed polygons for these areas to be defined and mapped to create abundance mapping.

In the field representations of Lantana were mapped as encountered and sorted into the following three categories:

- low – less than 10 stems within a patch of Lantana (*Lantana camara*), sparse distribution
- moderate - more than 10 stems of Lantana (*Lantana camara*) with a patchy and disconnected distribution, and.
- high – large continuous patch often forming an impenetrable wall of vegetation.

Instances of other WoNS species found within the offset area include creeping Lantana (*Lantana montividentis*), velvet tree pair (*Opuntia tomentosa*), and fireweed (*Senecio madagascarensis*) were categorised into three classes when encountered:

- low – 0-5 stems;
- moderate – 5-20 stems; and
- high – 20 or more stems.

These other species were recorded as points within the map area as they typically co-occurred with the Lantana (*Lantana camara*).

Where category 3 regulated weeds under the *Biosecurity Act 2014* were observed within the offset area, a data point was collected with the species identity and the density of the infestation. The density of the infestation was collected using the following criteria:

- low – 0-5 stems;
- moderate – 5-20 stems; and
- high – 20 or more stems.

Where Lantana (*Lantana camara*) infestations became too dense to travers, existing tracks were used to survey the extent of the infestation and it was assumed that the infestation continued down to the boundary of the offset property.

¹ After the random meander technique described by Cropper, 1993 (Cropper SC 1993, Management of Endangered Plants, CSIRO Publications Victoria). It is noted that although the technique was derived for identifying threatened plants in the field across a range of habitat types, the underlying assessment approach is useful for weed assessments as well.

3. Results

During the survey 34 invasive species were recorded (refer **Figure 2**). Of these four are WONS (**Figure 3a** and **Figure 3b**) and eight are Category 3 weeds under the *Biosecurity Act* (**Figure 4a** and **Figure 4b**). The WONS include:

- Lantana (*Lantana camara*)
- Velvety tree pair (*Opuntia tomentosa*)
- Fire weed (*Senecio madagascarensis*).

The ten category 3 weeds recorded within the offset area include:

- Climbing asparagus (*Asparagus africanus*)
- Groundsel bush (*Baccharis halmifolia*)
- Mother-of-millions (*Bryophyllum delagoense*)
- Balloon vine (*Cardiospermum grandiflorum*)
- Lantana (*Lantana camara*)
- Creeping lantana (*Lantana montevidensis*)
- Chinese privet (*Ligustrum sinense*).
- Velvety tree pair (*Opuntia tomentosa*)
- Fire weed (*Senecio madagascarensis*)
- Yellow bells (*Tecoma stans*)

The remaining weeds within the offset area can be classified as environmental weeds but are not prioritised within this report. A comprehensive invasive species register can be found in **Addenda 1**.

3.1 Lantana (*Lantana camara*)

A heat map illustrating the infestation density and boundaries of the significant Lantana (*Lantana camara*) infestations can be found in **Figure 5**.

Lantana has a cosmopolitan distribution within the site ranging from sparse, singular plants to significant, impenetrable thickets preventing access to significant parts of the site without prior mechanical weed removal. Within the western portion of the site dominated by Spotted gum (*Corymbia citriodora* subsp. *variegata*) open forest², Lantana (*Lantana camara*) infestations were at their greatest density at lower elevations where water concentrates in the landscape leading to ideal growing conditions for this species, i.e. adjacent to the western property boundary. At higher elevations, areas along internal access tracks and immediately adjacent to them, still contained Lantana (*Lantana camara*) however, the density of the infestations were significantly lower compared to lowland areas.

² RE12.9-10.2 - *Corymbia citriodora* subsp. *variegata* +/- *Eucalyptus crebra* open forest on sedimentary geologies

Lantana density increased significantly within the eastern portion of the site³. Lantana (*Lantana camara*) densities were uniformly high and required tracks to be developed through the Offset Site using an excavator prior to surveys commencing. **Photo plates 1 – 20** show dense infestations within the areas of the offset dominated basalt derived soils. All images taken from the photo point sites 1-18 can be found in **Addenda 2**.



Photo plate 1 – Photo Point 1 showing a high density infestation of *Lantana camara*.



Photo Plate 2 – Photo Point 2 showing *Lantana camara* infestations adjacent to uncolonized native vegetation within the offset area.

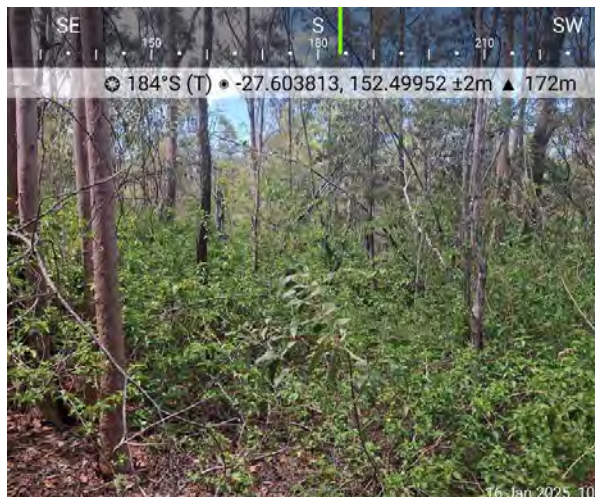


Photo plate 3 – Photo Point 3 showing *Lantana camara* high intensity infestations within the offset area (RE12.9-10.2).



Photo Plate 4 – Photo Point 4 shows *Lantana camara* free community within the offset area to provide a reference for what *Lantana camara* infested locations have the potential to look like.

³ RE12.8.17 Mixed woodland with combinations of *Eucalyptus crebra*, *Eucalyptus melanophloia*, *Eucalyptus tereticornis*, *Corymbia tessellaris*, *Corymbia intermedia* woodland on Cainozoic igneous geology and RE12.8.24 - *Corymbia citriodora* subsp. *variegata*, *Eucalyptus crebra* +/- *Eucalyptus moluccana* open forest on Cainozoic igneous geologies.



Photo plate 5 – Photo Point 5 *Lantana camara* infestation adjacent to relatively unaffected native vegetation within the offset area



Photo Plate 6 – Photo point 6 showing a moderate *Lantana camara* infestation within a native canopy.



Photo plate 7 – Photo Point 7 a transition between a low *Lantana camara* infestation to a high infestation (background of the image)



Photo plate 8 – Photo Point 8 unaffected area without *Lantana camara* infestations acting as a reference site for weed control comparisons



Photo plate 9 – Photo Point 9 unaffected area without *Lantana camara* infestations acting as a reference site for weed control comparisons



Photo Plate 10 – Photo Point 10 shows a transitional zone between a low density infestation to a high density infestation with intact vegetation acting as a reference for weed control comparisons



Photo plate 11 – Photo Point 11 showing a low to moderate area of infestations of *Lantana camara* within the offset area.



Photo plate 12 – Photo Point 12 showing high intensity *Lantana camara* infestations on the banks of a watercourse within the offset area



Photo plate 13 – Photo Point 13 showing a wall of *Lantana camara* adjacent to a watercourse within the offset area bordering the inaccessible area for surveys



Photo Plate 14 – Photo Point 14 shows a transition between low intensity *Lantana camara* infestations and high intensity infestations within the background of the image



Photo plate 15 – Photo Point 15 shows a dense *Lantana camara* infestation adjacent within the offset area near the inaccessible eastern portion of the property



Photo plate 16 – Photo Point 16 shows dense *Lantana camara* thickets adjacent to previously cleared tracks within the offset area.



Photo plate 17 – Photo Point 17 shows an area unaffected by *Lantana camara* infestations as a reference for weed management works



Photo plate 18 – Photo Point 18 showing dense *Lantana camara* thickets adjacent to cleared tracks within the offset area



Photo Plate 19 – Photo Point 19 showing thick *Lantana camara* thickets suppressing native shrub and canopy species germination within the western portion of the offset site.



Photo Plate 20 – Photo Point 20 showing thick *Lantana camara* thickets suppressing native shrub and canopy species germination within the western portion of the offset site.

3.2 Other species

Several other WONS and category 3 species were present on site including:

- Climbing asparagus (*Asparagus africanus*)
- Groundsel bush (*Baccharis halmifolia*)
- Mother-of-millions (*Bryophyllum delagoense*)
- Balloon vine (*Cardiospermum grandiflorum*)
- Creeping lantana (*Lantana montevidensis*)
- Chinese privet (*Ligustrum sinense*).
- Velvety tree pair (*Opuntia tomentosa*)
- Fire weed (*Senecio madagascarensis*)

- Yellow bells (*Tecoma stans*).

These species were dispersed randomly throughout the site however Climbing asparagus (*Asparagus africanus*) was found to co-exist with dense Lantana infestations where it would extend into the canopy of the mature trees within these dense patches (Figure 3a,b and Figure 4a,b).

The majority of these weed infestations were low density with only 1-5 individuals per data point. The predominantly low densities of these other species could be due to the suite of native grasses suppressing their germination and competing for resources including soil moisture, nutrients and light in naïve dominated areas and Lantana (*Lantana camara*) would perform the same suppressing actions as natives where it forms large thickets. Any infestations that were considered to be a high-density infestations typically occurred in and around drainage features and gullies within the site. These areas are where the passage of water is likely to foster the ideal conditions for plant growth, attract animals acting as dispersal vectors for these species and experience movement of plant matter and material by overland flow in extreme weather events.

The highest weed diversity was associated with tracks, drainage features and creeklines within the offset area. This is due to constant disturbance in these areas promoting weed succession, potential importing of invasive species by vehicles and easy mobility for species that could disperse the seeds of invasive species.

Chinese privet was sporadically distributed throughout the eastern part of the offset however survey bias could be leading to an underestimation of its abundance as access to the remainder of the eastern portion of the offset was significantly reduced due to the high density of Lantana preventing further ingress to these locations.

4. Threats to MNES Species

Lantana (*Lantana camara*) infestations can have a significant impact on protected species within the offset area. Several studies have outlined the effects of Lantana (*Lantana camara*) on native ecosystems. Gooden et al (2009) assessed the condition of native plants in areas infested with Lantana (*Lantana camara*) and without an infestation. The study showed invasion by Lantana (*Lantana camara*) led to a reduction in species richness compared to uninvaded areas with lower fern, herb, tree and vine species richness. Additionally, infestation suppresses canopy recruitment with juvenile tree densities are lower in areas invaded by Lantana compared to uninvaded areas. Adult densities were the same across both conditions, suggesting that Lantana (*Lantana camara*) suppresses the germination of other species to reduce competition with native vegetation to perpetuate their dominance within an invaded area.

It is thought that this dominance within an area is achieved by the secretion of essential oils, leechates, residues and rhizosphere of Lantana (*Lantana camara*) including phenolic compounds, sesquiterpenes, triterpenes and flavonoid compounds into the soil to suppress the germination and growth of other species (Kato-Noguchi & Kurniadie, 2021). Ruwanza (2020) had a similar finding to Gooden et al (2009) showing decreased native species richness with increasing Lantana (*Lantana camara*) infestation as well as decreases in native species cover and density.

Invasion by Lantana (*Lantana camara*) and its effects on native vegetation can negatively impact threatened species including Koala (*Phascolarctos cinereus*) and the Grey-headed Flying-fox (*Pteropus poliocephalus*). The proliferation of Lantana (*Lantana camara*) will affect the koala habitat and population dynamics through manipulating tree canopy change; by suppressing recruitment and skewing canopy population dynamics towards increasingly older age cohorts. In habitat previously considered suitable, Koala Habitat Trees (KHTs) will diminish over time. This will lead to the compounding loss of KHT within Lantana infested areas over time with canopy trees being replaced by Lantana thicket as the Ecologically Dominant Layer. Gentle et al (2006) found that shading was the greatest limiting factor to the run-away spread and growth of Lantana (*Lantana camara*), as the canopy becomes increasing 'open', light is no longer a factor limiting Lantana (*Lantana camara*) growth.

In addition to limiting germination of canopy species, in the case of severe infestations, Lantana can grow into the canopy, smother canopy trees and cause the decline of the tree (McKercher, personal observations). The reduction of mature canopy species will reduce the suitability of the property as an offset site for both koala (*Phascolarctos*

cinereus) and grey-headed flying fox (*Pteropus poliocephalus*) due to the gradual reduction in available forage and shelter habitat.

Lantana (*Lantana camara*) can grow into impenetrable walls of dense vegetation. In addition to preventing significant recruitment of natives, dense infestations of Lantana prevent Koala (*Phascolarctos cinereus*) from utilising forage habitat in significant infestations; either as shelter, forage or movement habitat. The Department of Climate Change, Energy, the Environment and Water (DCCEEW) Approved Conservation Advice for the Endangered Koala (*Phascolarctos cinereus*) identifies that for habitat to be considered habitat critical to the survival of the Koala (*Phascolarctos cinereus*) free movement of Koala to both find mates and move between food and shelter resources and to avoid predation is essential.

Koala area most vulnerable to predation by wild dogs (*Canus lupus familiaris*) and other predators while travelling between habitat trees. If movement through habitat becomes impeded or the distance between accessible patches becomes too great due to Lantana (*Lantana camara*) infestations, local Koala (*Phascolarctos cinereus*) will become more susceptible to attack by predators and extirpation. Additionally, greater investment in travel between patches and to mates reduce foraging time, intake of food resources and decreases mating success.

Another significant weed species, climbing asparagus fern (*Asparagus africanus*), has the potential to significantly impact canopy species within the offset area. Armstrong et al (2006) states that climbing asparagus can smother native canopy. The smothering, and eventual death, or canopy induced structural failure of canopy species will reduce the available food resources for the Koala (*Phascolarctos cinereus*) and Grey-headed Flying-fox (*Pteropus poliocephalus*). This reduction in the available resources will make the habitat un-useable by these species and reduce the suitability of this proposed Offset Site with time in the absence of intervention to arrest these species.

5. Conclusions

A total of 34 invasive species were documented within the offset area, including three WONS and ten category 3 weeds under the *Biosecurity Act*. Lantana (*Lantana camara*) was the most common and abundant weed and has had a significant impact upon the site forming a dense near impenetrable thicket in the understorey. Many parts of the eastern portion of the offset are inaccessible due to the thick Lantana infestations and several dense infestations can be found in the western portion of the site. Other invasive species were sporadically distributed around the site, typically in low densities due to the relatively intact ground stratum outside of significant Lantana infestations.

Gullies, drainage features, tracks and creeklines were hot spots for dense weed infestations for both Lantana (*Lantana camara*) and the remaining species due to their optimal growth conditions or high level of disturbance promoting weedy community succession and seed introduction.

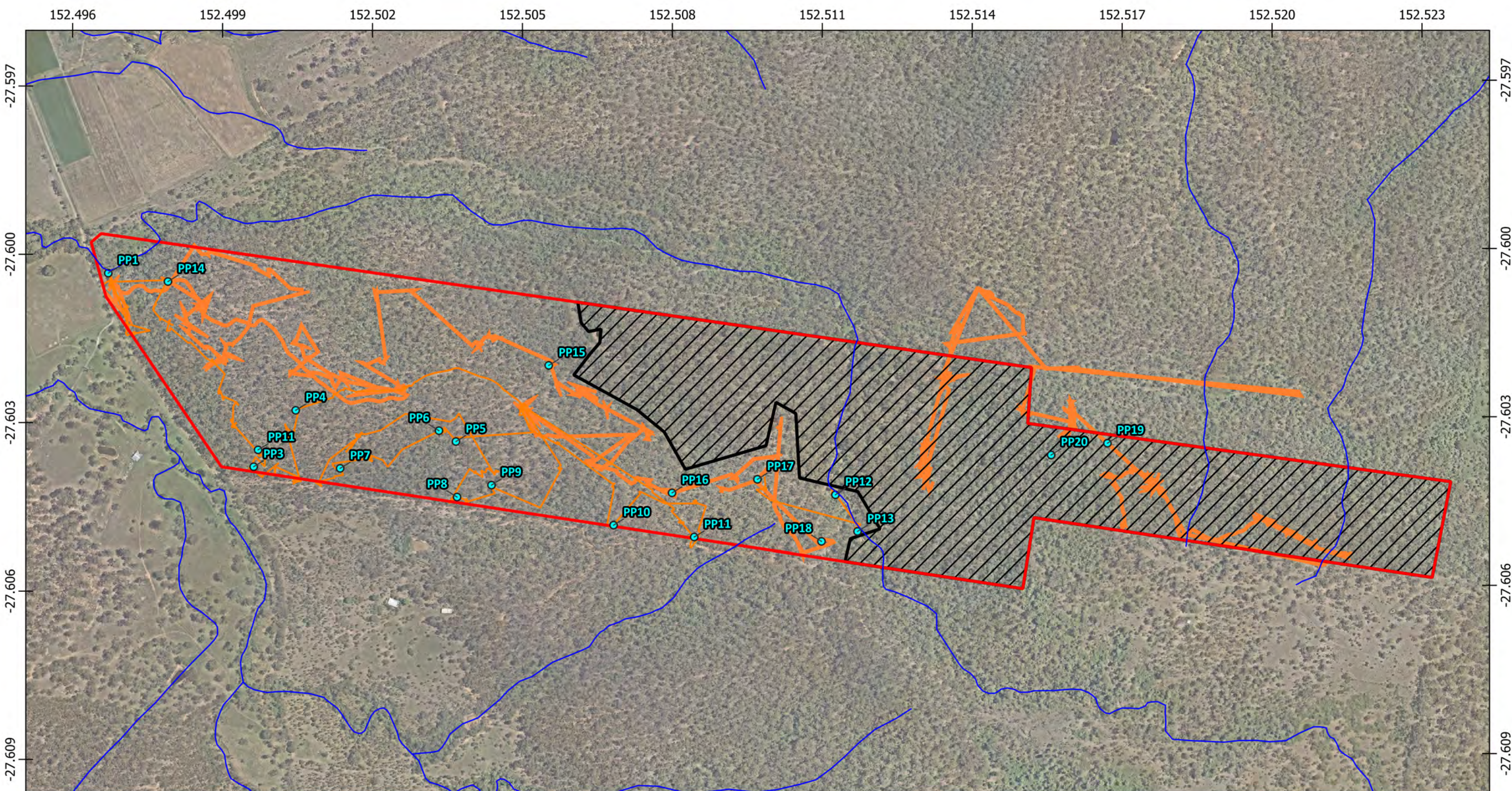
While weed infestations within the site are extensive and of a high intensity in many locations, native vegetation within the offset area is still of high quality with some recruitment occurring despite the broad scale weed infestations. The removal of the invasive species from within the offset area will significantly improve the quality of the vegetation within the offset area and allow for those areas with high quality native vegetation to recolonise these now locations within the site.

It is recommended that an additional survey be performed once the Lantana is removed from the Offset Site, especially eastern parts of the site on igneous geology, as the dense thickets of Lantana are likely suppressing other weed species dormant in the seed bank. Once Lantana is removed, weed succession in these areas will increase the diversity of invasive species within the eastern portion of the site.

6. References

- Armstrong, TR Breden, RC Hinchcliffe, D (2006) *The control of climbing asparagus (Asparagus africanus Lam.) in remnant Brigalow scrub in south-east Queensland*. Plant Protection Quarterly. vol. 21, iss. 3, accessed: January 2025
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- Ruwanza, S (2020) *Effects of Lantana camara invasion on vegetation diversity and composition in the Vhembe Biosphere Reserve, Limpopo Province of South Africa*. Scientific Africa, vol 10, accessed: January 2025, doi: <https://doi.org/10.1016/j.sciaf.2020.e00610>

Figures



Double Jump Road OMS

Legend

- Offset Area Boundary
- Waterway/overland flow path
- Inaccessible area - Dense understorey thicket of *Lantana camara*
- Survey track
- Photo Point

Figure 1 - Survey tracks within the offset area

28 South Project Ref: 2019-100e

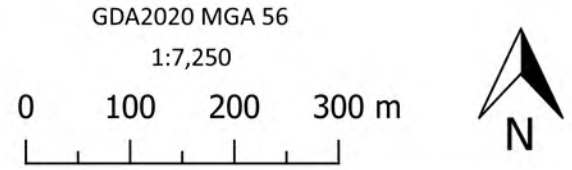
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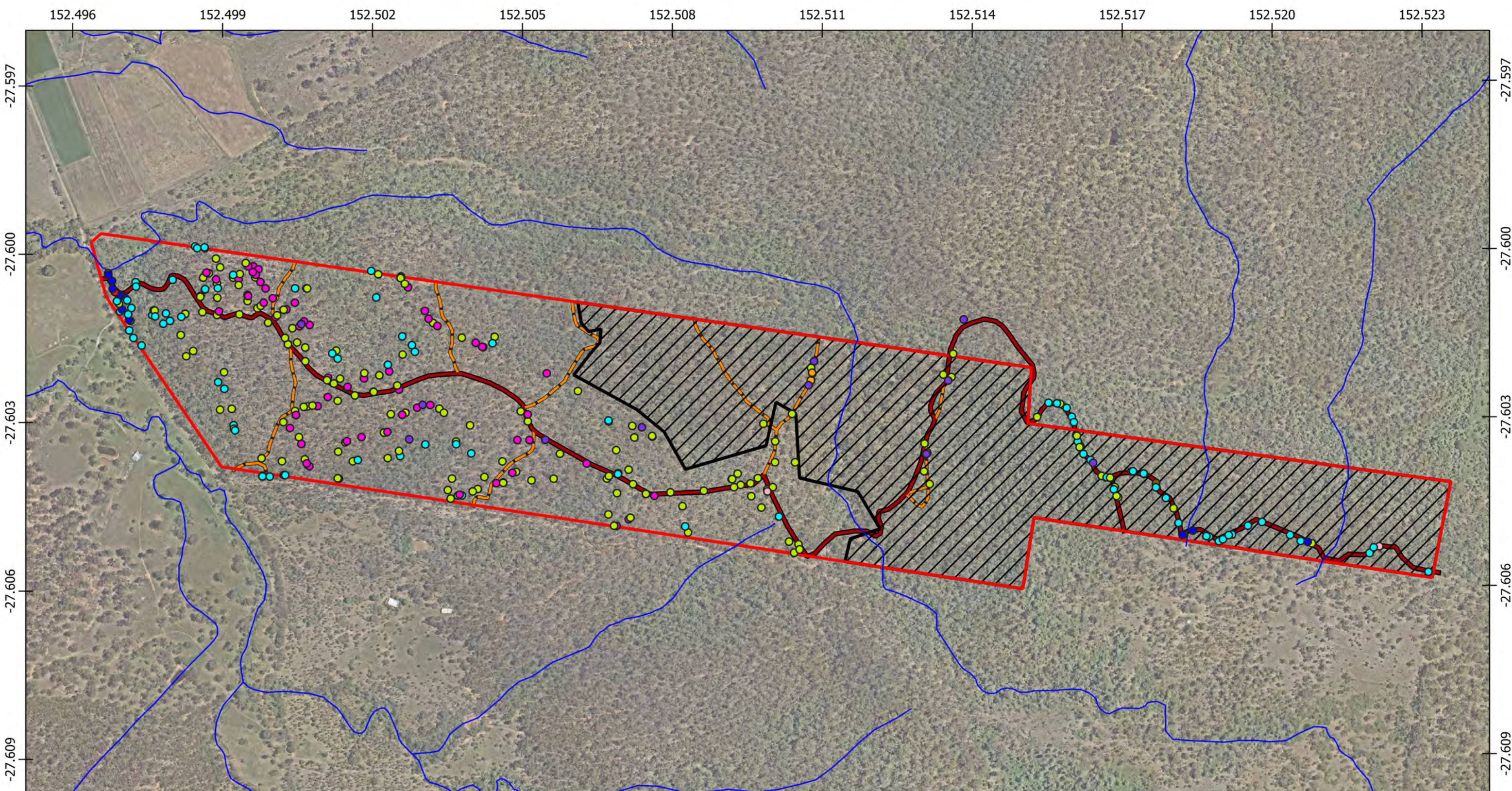
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Links to data sources can be provided upon request.

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AD		v3





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Figure 2 - Total weed Species Richness

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Links to data sources can be provided upon request.

- Offset Area Boundary
- Waterway/overland flow path
- Inaccessible area - Dense understorey thicket of *Lantana camara*

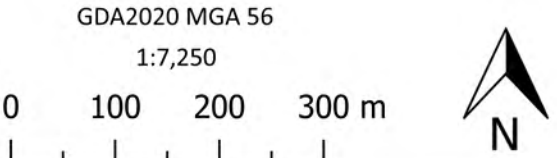
Access Tracks and Firebreaks

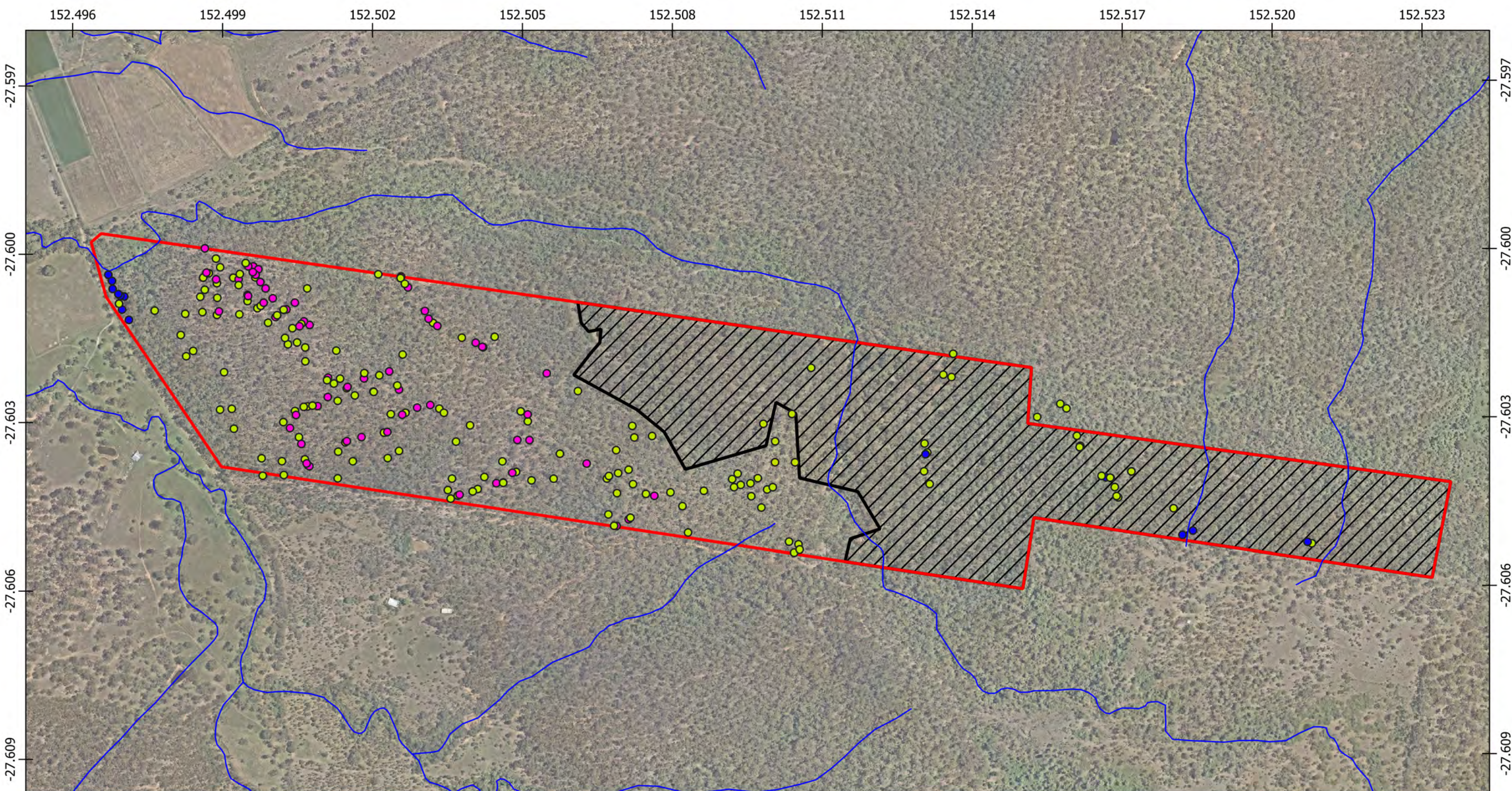
- Track
- Fire break

Weed Species

- *Asparagus africanus* [91]
- *Baccharis halmifolius* [1]
- *Bryophyllum delagoense* [3]
- *Cardiospermum halicacabum* [1]
- *Lantana camara* [59]
- *Lantana montevidensis* [14]
- *Ligustrum sinense* [1]
- *Opuntia tomentosa* [162]
- *Senecio madagascarensis* [14]
- *Tecoma stans* [3]

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Legend

- Offset Area Boundary
- Waterway/overland flow path
- Inaccessible area - Dense understorey thicket of Lantana camara

- Weed Species**
- Lantana camara [59]
 - Opuntia tomentosa [162]
 - Senecio madagascarensis [14]

Figure 3a - Weeds of National Significance (WONS) Species Richness

28 South Project Ref: 2019-100e

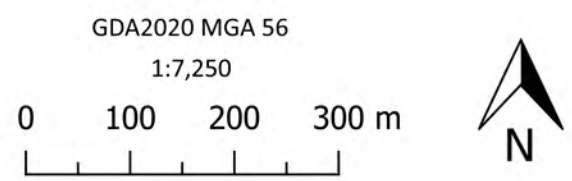
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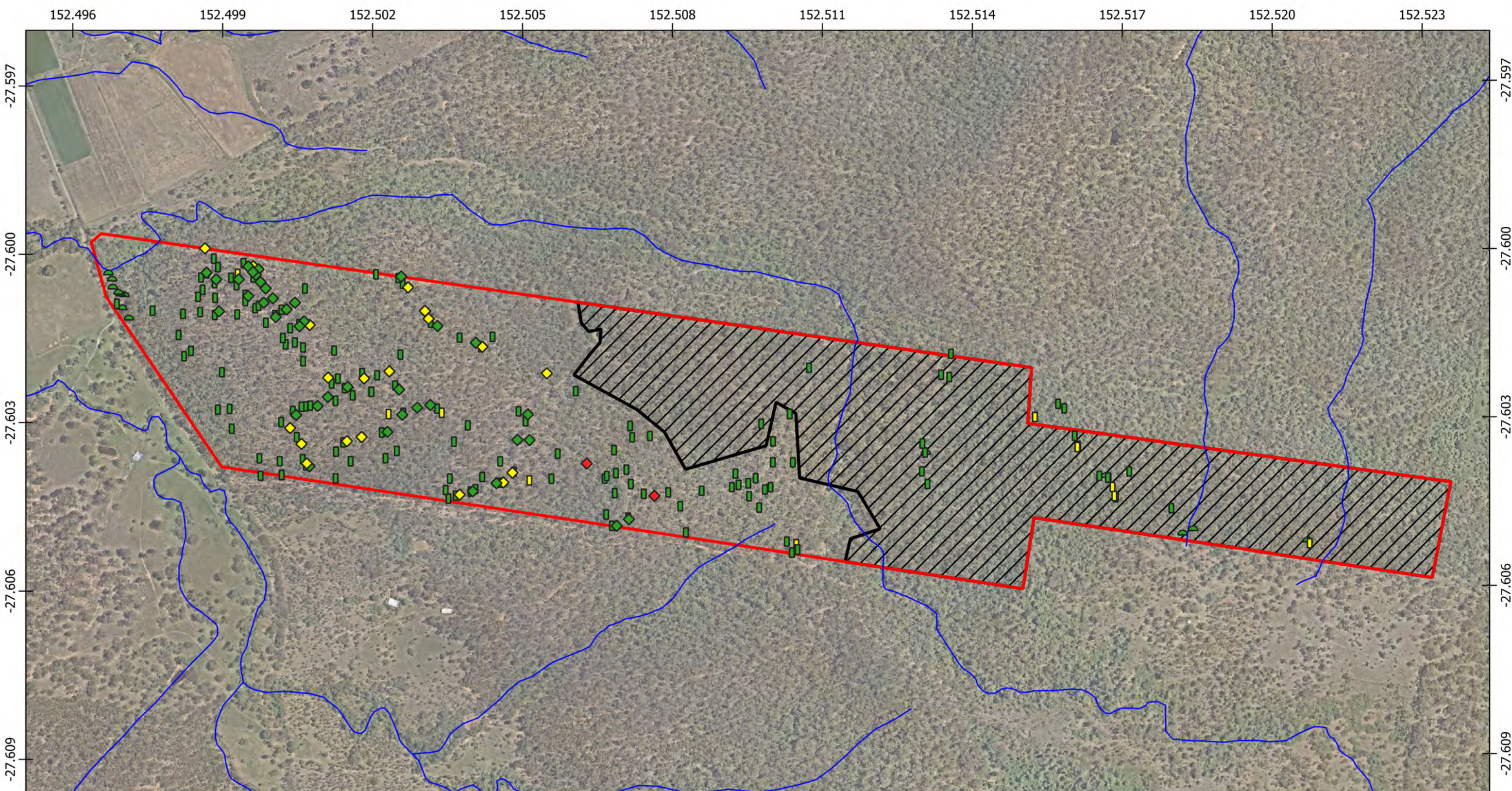
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Figure 3b - Weeds of National Significance (WONS) Species Density

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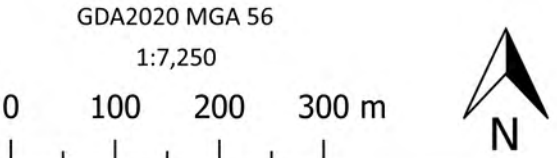


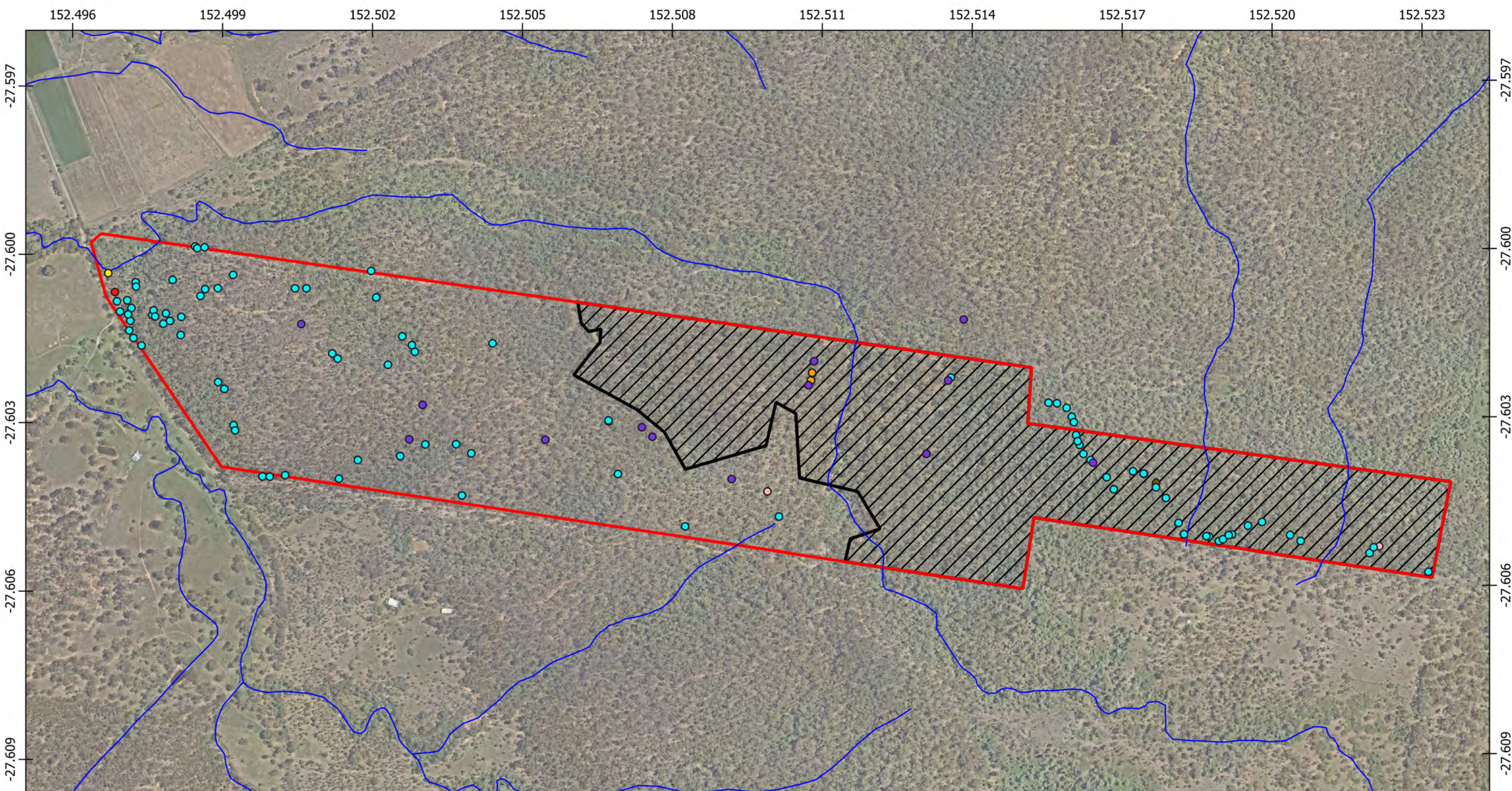
- Offset Area Boundary
- Waterway/overland flow path
- Inaccessible area - Dense understorey thicket of *Lantana camara*

- Lantana camara* [59]**
- Low [38]
 - Medium [19]
 - High [2]

- Opuntia tomentosa* [162]**
- Low [150]
 - Medium [10]
- Senecio madagascarensis* [14]**
- Low [14]

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Figure 4a - Category 3 Restricted Weed Species Richness

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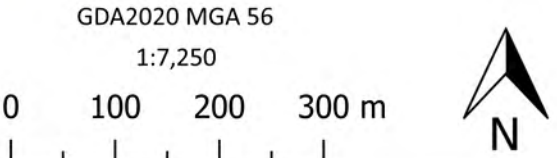
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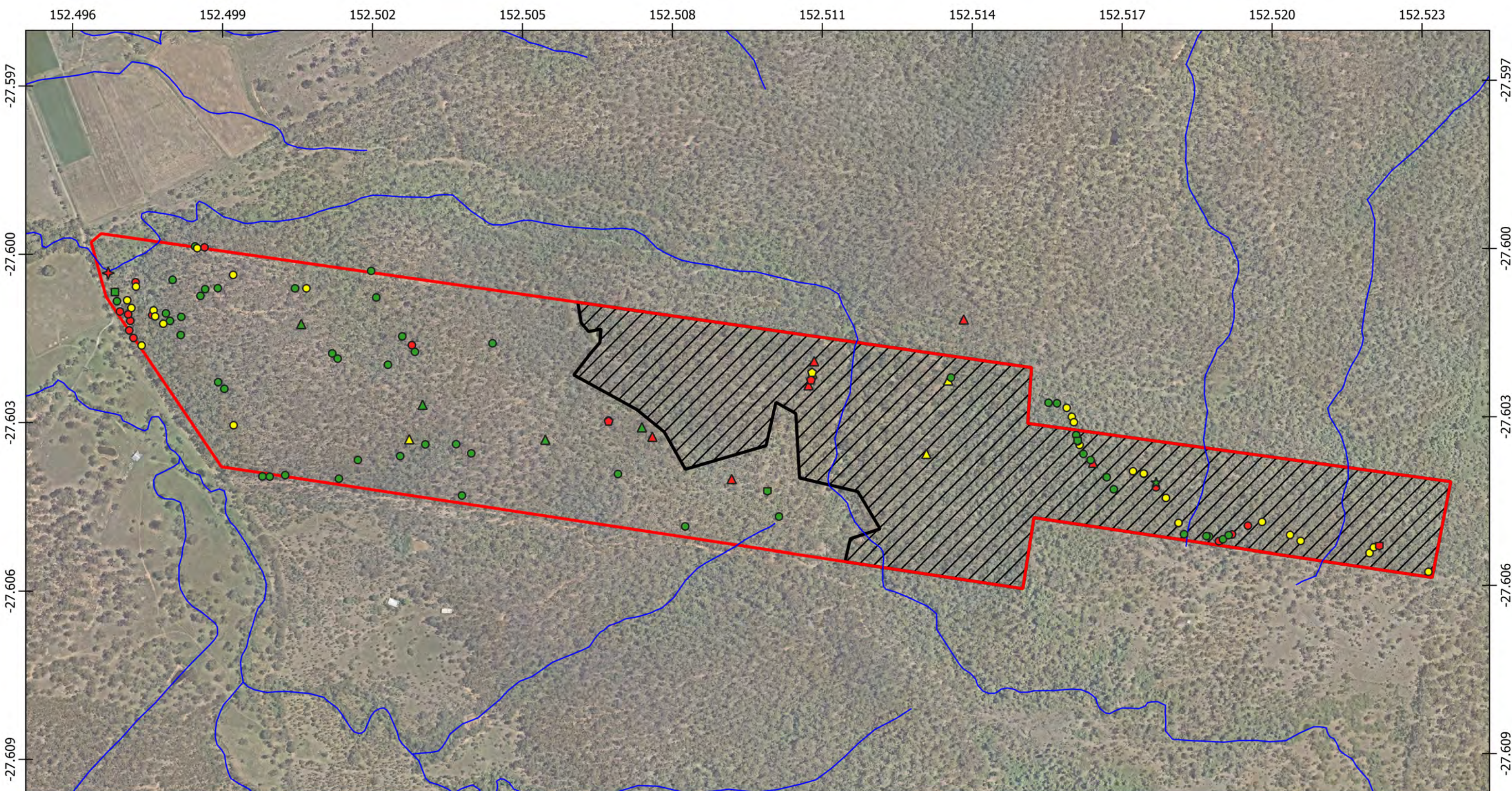
- Offset Area Boundary
- Waterway/overland flow path
- Inaccessible area - Dense understorey thicket of Lantana camara

- Patchy weed species copy
- Asparagus africanus [91]
 - Baccharis halmifolius [1]
 - Bryophyllum delagoense [3]
 - Cardiospermum halicacabum [1]
 - Lantana montevidensis [14]
 - Ligustrum sinense [1]
 - Tecoma stans [3]

NOTE: Category 3 Restricted Weeds which are WONS are not represented

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Figure 4b - Category 3 Restricted Weed Species Density

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Links to data sources can be provided upon request.



- Offset Area Boundary
- Waterway/overland flow path
- Inaccessible area - Dense understorey thicket of Lantana camara
- Asparagus africanus [91]**
 - Low [51]
 - Medium [26]
 - High [13]

- Baccharis halmifolia [1]**
 - Low [1]
- Bryophyllum delagoense [3]**
 - Medium [1]
 - High [2]

- Cardiospermum halicacabum [1]**
 - High [1]

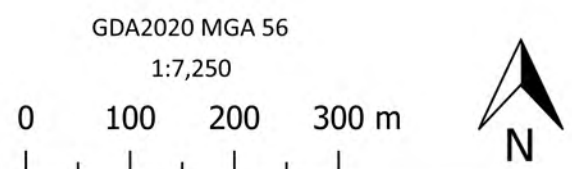
- Lantana montevidensis [14]**
 - Low [4]
 - Medium [4]
 - High [6]

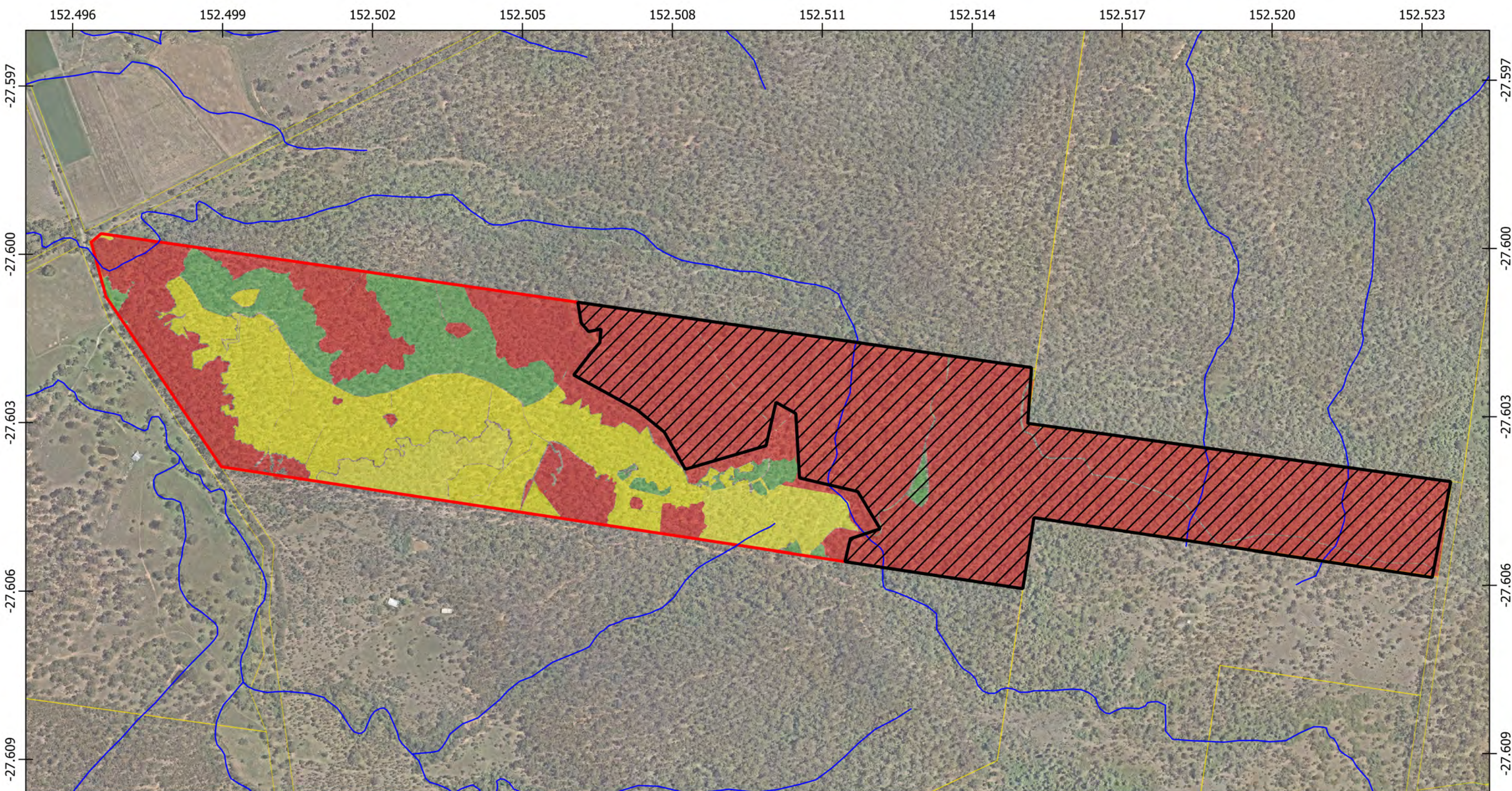
- Ligustrum sinense [1]**
 - Low [1]

- Tecoma stans [3]**
 - Low [2]
 - High [1]

NOTE: Category 3 Restricted Weeds which are WONS are not represented

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Figure 5 - Lantana camara Broad Scale Infestation Density

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The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

Links to data sources can be provided upon request.

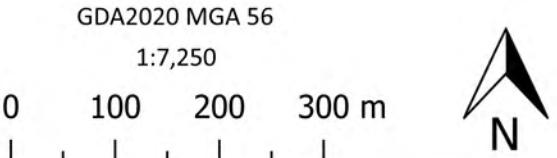


- Offset Area Boundary
- Waterway/overland flow path

Broad scale Lantana camara infestation

- Low
- Moderate
- High
- Inaccessible area

Issue Date	Dwg No.	Author
14-02-2025		MO
Approved		Revision Note
AD		v3



Addenda 1

Invasive species list

Table A-1 Invasive species observed on site

Species name	Common name	WONS	Biosecurity Act 2014 Category
<i>Ageratina adenophora</i>	Crofton weed	No	not applicable (n/a)
<i>Ageratina riparia</i>	Mist flower	No	n/a
<i>Asparagus africanus</i>	Climbing asparagus	No	3
<i>Baccharis halimifolia</i>	Groundsel bush	Yes	3
<i>Bidens pilosa</i>	Cobbler's pegs	No	n/a
<i>Bryophyllum delagoense</i>	Mother-of-millions	No	3
<i>Cardiospermum grandiflorum</i>	Balloon vine	No	3
<i>Chloris virgata</i>	Rhodes grass	No	n/a
<i>Conyza bonariensis</i>	Fleabane	No	n/a
<i>Crotalaria sp.</i>	Rattlepod	No	n/a
<i>Gomphocarpus physocarpus</i>	Cotton balloon bush	No	n/a
<i>Ipomea indica</i>	Morning glory	No	n/a
<i>Lantana camara</i>	Lantana	Yes	3
<i>Lantana montevidensis</i>	Creeping lantana	No	3
<i>Ligustrum sinense</i>	Chinese privet	No	3
<i>Macroptilium lathyroides</i>	Phasey bean	No	n/a
<i>Megathyrsus maximus</i>	Guinea grass	No	n/a
<i>Melinis repens</i>	Red natal Natal grass	No	n/a
<i>Opuntia tomentosa</i>	Velvety tree pear	Yes	3
<i>Passiflora foetida</i>	Stinking passionfruit	No	n/a
<i>Passiflora suberosa</i>	Corky passionfruit	No	n/a
<i>Passiflora subpeltata</i>	White passionfruit	No	n/a
<i>Physalis minima</i>	Wild gooseberry	No	n/a
<i>Phytolacca octandra</i>	Ink weed	No	n/a
<i>Praxelis clematidea</i>	Praxelis	No	n/a
<i>Ricinus communis</i>	Coral berry	No	n/a
<i>Senecio madagascariensis</i>	Fireweed	Yes	3
<i>Senna pendula</i>	Smooth senna	No	n/a
<i>Sida rhombifolia</i>	Sida	No	n/a
<i>Solanum nigrum</i>	Blackberry nightshade	No	n/a
<i>Solanum seaforthianum</i>	Climbing nightshade	No	n/a
<i>Tagetes minuta</i>	Stinking Roger	No	n/a
<i>Tecoma stans</i>	Yellow bells	No	3
<i>Tipuana tipu</i>	Tipuana	No	n/a
<i>Verbena bonariensis</i>	Purple top verbena	No	n/a
<i>Vigna luteola</i>	Vigna	no	n/a

Addenda 2

Photo Points



Photo plate 21 – Photo Point 1 (north) *Lantana camara* infestation



Photo Plate 22 – Photo point 1 (south) *Lantana camara* infestation with some native species



Photo plate 23 – Photo Point 1 (east) *Lantana camara* and *Cardiospermum halicacabum* infestation within a creek line



Photo plate 24 – Photo Point 1 (west) *Lantana camara* and *Cardiospermum halicacabum* infestation within a creek line and climbing into the canopy



Photo plate 25 – Photo Point 2 (north) relatively unaffected native vegetation above the high intensity *Lantana camara* infestation along a hillslope

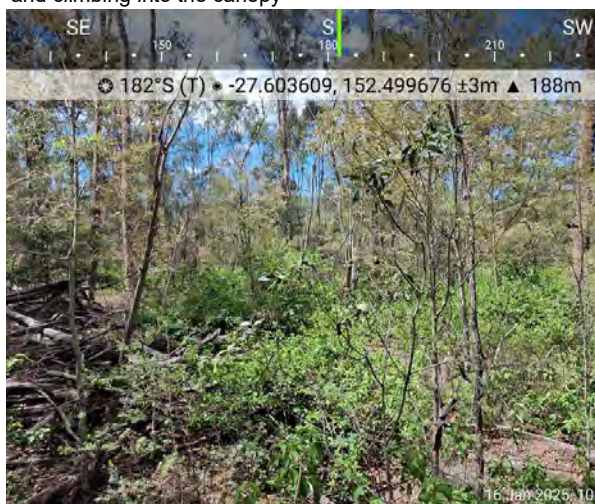


Photo Plate 26 – Photo Point 2 (south) periphery of a high intensity *Lantana camara* infestation within the offset area



Photo plate 27 – Photo Point 2 (east) transition from native dominated community to a high intensity *Lantana camara* infestation.



Photo plate 28 – Photo Point 2 (west) transition from native dominated community to a high intensity *Lantana camara* infestation.



Photo plate 29 – Photo Point 3 (north) showing part of a high intensity *Lantana camara* infestation.



Photo Plate 30 – Photo Point 3 (south) showing a high intensity *Lantana camara* infestation within the offset area with native recruiting canopy trees and shrubs persisting within the infestation



Photo plate 31 – Photo Point 3 (east) showing a transition between a high intensity *Lantana camara* infestation and unaffected native vegetation.



Photo plate 32 – Photo Point 3 (south) showing a high intensity *Lantana camara* infestation within the offset area.



Photo plate 33 – Photo Point 4 (north) unaffected vegetation within the offset area highlight the eventual state of the vegetation post lantana treatment



Photo plate 34 – Photo Point 4 (south) unaffected vegetation within the offset area highlight the eventual state of the vegetation post lantana treatment



Photo Plate 35 - Photo Point 4 (east) unaffected vegetation within the offset area highlight the eventual state of the vegetation post lantana treatment



Photo Plate 36 - Photo Point 4 (west) unaffected vegetation within the offset area highlight the eventual state of the vegetation post lantana treatment



Photo Plate 37 - Photo Point 5 (north) shows a high intensity *Lantana camara* infestation within the offset area



Photo Plate 38 - Photo Point 5 (south) shows a medium intensity *Lantana camara* infestation with density decreasing with elevation



Photo Plate 39 - Photo Point 5 (east) shows a medium intensity *Lantana camara* infestation with density decreasing with elevation



Photo Plate 40 - Photo Point 5 (west) shows a medium intensity *Lantana camara* infestation with density decreasing with elevation



Photo Plate 41 - Photo Point 6 (north) shows a low intensity *Lantana camara* infestation with density decreasing with elevation. Sparse single bunches of *Lantana camara* occur in the background of the image.



Photo Plate 42 - Photo Point 6 (south) shows the transition between a high intensity *Lantana camara* infestation (background) to a low intensity infestation in the foreground.



Photo Plate 43 - Photo Point 6 (east) shows a low intensity *Lantana camara* infestation



Photo Plate 44 - Photo Point 6 (east) shows a medium intensity *Lantana camara* infestation in the foreground of the image



Photo Plate 45 - Photo Point 7 (north) shows a low intensity *Lantana camara* infestation within the offset area



Photo Plate 46 - Photo Point 7 (south) shows a medium intensity *Lantana camara* infestation within the offset area



Photo Plate 47 - Photo Point 7 (east) shows a medium intensity *Lantana camara* infestation within the offset area

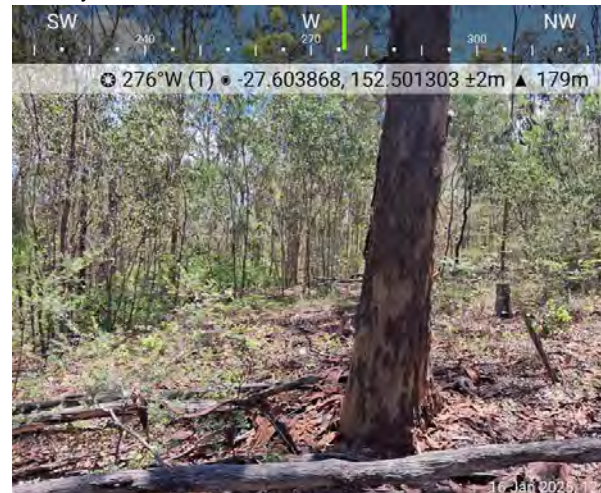


Photo Plate 48 - Photo Point 7 (west) shows a low intensity *Lantana camara* infestation within the offset area



Photo Plate 49 - Photo Point 8 (north) shows a low intensity *Lantana camara* infestation within the offset area with sparse bushes in the background of the image



Photo Plate 50 - Photo Point 8 (south) shows an unaffected portion of the offset site free from *Lantana camara* infestation



Photo Plate 51 - Photo Point 8 (east) shows a medium intensity *Lantana camara* infestation within the offset area



Photo Plate 52 - Photo Point 8 (west) shows a low intensity *Lantana camara* infestation within the offset area within the background of the image within the shrub layer



Photo Plate 53 - Photo Point 9 (north) shows a low intensity *Lantana camara* infestation within the offset area with a native dominated understorey with little to no *Lantana camara* bushes.



Photo Plate 54 - Photo Point 9 (south) shows a low intensity *Lantana camara* infestation within the offset area with a native dominated understorey with little to no *Lantana camara* bushes.



Photo Plate 55 - Photo Point 9 (east) shows a low intensity *Lantana camara* infestation within the offset area within the background of this image



Photo Plate 56 - Photo Point 9 (west) shows a *Lantana camara* free area within the offset area



Photo Plate 57 - Photo Point 10 (north) shows a low intensity *Lantana camara* infestation in the foreground with increasing *Lantana camara* density in the background of the image within the offset area within the background of this image



Photo Plate 58 - Photo Point 10 (south) shows a low intensity *Lantana camara* infestation within the offset area in the foreground of the image within the shrub layer.



Photo Plate 59 - Photo Point 10 (east) shows a low intensity *Lantana camara* infestation within the offset area with *Lantana camara* appearing sporadically within the shrub layer



Photo Plate 60 - Photo Point 10 (west) shows a low intensity *Lantana camara* infestation within the offset area with *Lantana camara* appearing sporadically within the shrub layer



Photo Plate 61 - Photo Point 11 (north) shows a medium intensity *Lantana camara* infestation within the offset area with *Lantana camara* appearing sporadically within the shrub layer



Photo Plate 62 - Photo Point 11 (south) shows a low intensity *Lantana camara* infestation within the offset area with *Lantana camara* appearing sporadically within the shrub layer



Photo Plate 63 - Photo Point 11 (east) shows a low intensity *Lantana camara* infestation transitioning into a high intensity infestation (background of image) within the offset area with *Lantana camara* appearing sporadically within the shrub layer



Photo Plate 64 - Photo Point 11 (west) shows a low intensity *Lantana camara* infestation within the offset area with *Lantana camara* appearing sporadically within the shrub layer



Photo Plate 65 - Photo Point 12 (north) shows a high intensity *Lantana camara* infestation along the banks of a water feature within the offset area making the area inaccessible



Photo Plate 66 - Photo Point 12 (south) shows a high intensity *Lantana camara* infestation along the banks of a water feature within the offset area making the area inaccessible



Photo Plate 67 - Photo Point 12 (east) shows a high intensity *Lantana camara* infestation along the banks of a water feature within the offset area making the area inaccessible



Photo Plate 68 - Photo Point 12 (west) shows a high intensity *Lantana camara* infestation along the banks of a water feature within the offset area making the area inaccessible



Photo Plate 69 - Photo Point 13 (north) shows a high intensity *Lantana camara* infestation adjacent to a track and a creek bed that has been cleared of *Lantana camara* with *Lantana camara* dominating the shrub layer



Photo Plate 70 - Photo Point 13 (south) shows a high intensity *Lantana camara* infestation adjacent to a track and a creek bed that has been cleared of *Lantana camara* with *Lantana camara* dominating the shrub layer



Photo Plate 71 - Photo Point 13 (east) shows a high intensity *Lantana camara* infestation adjacent to a track that has been cleared of *Lantana camara* with *Lantana camara* dominating the shrub layer



Photo Plate 72 - Photo Point 13 (west) shows a high intensity *Lantana camara* infestation adjacent to a track that has been cleared of *Lantana camara* with *Lantana camara* dominating the shrub layer



Photo Plate 73 - Photo Point 14 (north) shows a low intensity *Lantana camara* infestation with sporadic individuals within the shrub layer



Photo Plate 74 - Photo Point 14 (south) shows a medium intensity *Lantana camara* infestation with some individuals occurring within the shrub layer



Photo Plate 75 - Photo Point 14 (east) shows a low intensity *Lantana camara* infestation with sporadic individuals within the area



Photo Plate 76 - Photo Point 14 (west) shows a high intensity *Lantana camara* infestation within the shrub layer forming impassable barriers to survey.



Photo Plate 77 - Photo Point 15 (north) shows a low intensity *Lantana camara* infestation with sporadic individuals within the area



Photo Plate 78 - Photo Point 15 (south) shows a high intensity *Lantana camara* infestation adjacent to high quality vegetation



Photo Plate 79 - Photo Point 15 (east) shows a low intensity *Lantana camara* infestation with sporadic individuals within the area



Photo Plate 80 - Photo Point 16 (north) shows a moderate intensity *Lantana camara* infestation with sporadic individuals within the area



Photo Plate 81 - Photo Point 16 (south) shows a moderate intensity *Lantana camara* infestation with sporadic individuals within the area



Photo Plate 82 - Photo Point 16 (east) shows a high intensity *Lantana camara* infestation adjacent to cleared tracks



Photo Plate 83 - Photo Point 16 (west) shows a high intensity *Lantana camara* infestation adjacent to cleared tracks



Photo Plate 84 - Photo Point 17 (north) shows a low intensity *Lantana camara* infestation with sporadic lantana in the background of the image



Photo Plate 85 - Photo Point 17 (south) shows a low intensity *Lantana camara* infestation



Photo Plate 86 - Photo Point 17 (east) shows a low intensity *Lantana camara* infestation



Photo Plate 87 - Photo Point 17 (west) shows an area unaffected by *Lantana camara* infestations within the offset area



Photo Plate 88 - Photo Point 18 (north) shows a high intensity *Lantana camara* infestation



Photo Plate 89 - Photo Point 18 (south) shows a low intensity *Lantana camara* infestation



Photo Plate 90 - Photo Point 18 (east) shows a high intensity *Lantana camara* infestation adjacent to a cleared track



Photo Plate 91 - Photo Point 18 (west) shows a high intensity *Lantana camara* infestation

Attachment 3 – Lantana Memo

1 December 2025

Fiteni Homes

Attn: Peter McLeod

80 Old Cleveland Road, Capalaba

By Email: peter@fiteni.co

RE: EPBC 2024/09825 – Further assessment of Lantana (*Lantana camara*) occurrence at the proposed Woolshed offset site

Peter,

1. **Background and Purpose of this Advice**

- (A) On 30 January 2025, 28 South Environmental (**28 South**) prepared a document titled “Baseline Invasive Weed Assessment, Woolshed (EPBC 2024/09825)” (**Weed Memo**). The Weed Memo was prepared in response to an information request issued by the Department of Climate Change, the Environment, Energy and Water (**DCCEEW**), seeking further information on the ecological benefits of weed management at the proposed Woolshed offset site (528-530 Woolshed Creek Road, Woolshed (Lot 236 on CH12334)) (**Offset Site**). Specifically, the information request sought further details on “*the extent and presence of weeds, and the extent of threats*” at the proposed offset site. The Weed Memo was submitted as Attachment 15 to the Version 2 Preliminary Documentation (**PD**) Report for this referral. For reference, the Weed Memo is included as **Attachment 2 of the Woolshed Offset Management Plan**.
- (B) Following submission of the Weed Memo, we understood DCCEEW to be generally accepting of the ecological benefits arising from the proposed weed management (particularly Lantana (*Lantana camara*)), and the additional ecological benefits of the Offset Site:
- (i) directly adjoining the Woolshed Reserve, so consolidating existing ecological values; and
 - (ii) being transferred to the reserve’s custodian (Ipswich City Council), at no cost, at the end of the 20-year management period.
- (C) However, during our most recent discussions, DCCEEW’s position was that Lantana management was of little ecological value to the affected matters (particularly the koala), which in turn caused it to question inputs to the “*Quality and availability of food, foraging and shelter habitat*” of the Site Condition Fields and “*Threats to Species*” and “*Species Mobility Capacity*” Site Context Fields of Modified Habitat Quality Assessment (MHQA) and the *Threatened Species Habitat – Risk of Loss (%) without offset* field of the Offsets Assessment Guide (the offset calculator).
- (D) Our view remains that Lantana management at the Offset Site will achieve ecologically meaningful gains for the koala insofar that:
- (i) Lantana is stalling the natural regeneration of the Offset Site’s forest community, depriving the local koala population of future forage and shelter resources that would otherwise become established in the absence of Lantana. The proposed offset would remove and control Lantana for the life of the management period, providing a significant opportunity for forest recovery and

establishment of greater natural resistance to re-invasion.¹ Furthermore, dedication of the Offset Site to the Ipswich City Council (a public entity with a biosecurity obligation under the *Biosecurity Act 2014*) provides confidence that the Lantana will be managed in perpetuity;

- (ii) The dense entanglement characteristic of Lantana thickets also keeps koalas on the ground, thus:
 - (a) leaving them prone to attack by pests;
 - (b) making movement through the landscape difficult, which taxes energy budgets;
 - (c) inhibiting social interactions; and
 - (d) risking dislodgement of back young.
- (iii) We say that Lantana management will:
 - (a) see gains in recruitment of canopy species, many of which are Koala forage and ancillary habitat species (an MHQA matter); improve species mobility (an MHQA matter); and reduce the risk of ecosystem loss without the offset (an Offset Assessment Guide matter).
 - (b) see gains in the quality and availability of food, forage and shelter habitat and avoid ecosystem collapse arising from a lack of canopy recruitment (an MHQA matter); improve species mobility (an MHQA matter); and reduce the risk of ecosystem loss without the offset (an Offset Assessment Guide matter).
 - (c) reduce time spent on the ground, thus reducing the existing threats described in 1(d)(ii) (an MHQA matter);
 - (d) Reduce bushfire intensity (e.g. Weeds Australia² identifies that Lantana “*adds fuel to fires*”, while the Queensland Government³ identifies that environmental weeds such as Lantana “*contribute to fuel loads, increasing bushfire hazard.*”

(E) The purpose of this correspondence is to present further information supporting our position.

(F) We have also sought an independent third-party opinion from Dr Bill Ellis: an expert consulted for the purpose of preparing the Commonwealth’s 2022 conservation advice for the koala. We intend for Dr Ellis to attend upcoming meetings where Lantana management is discussed.

2. Lantana as a Key Threatening Process under the EPBC Act

- (A) “Novel Biota and their impact on biodiversity” is listed as a Key Threatening Process (**KTP**) under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. Lantana is included in the KTP group “Competition, habitat loss and degradation caused by terrestrial weeds.”

¹ Given the prevalence of Lantana in the broader landscape, expectations for no re-invasion by Lantana are unrealistic. This situation applies to both weedy sites that have been recovered (such as proposed at Woolshed) and offset sites where new plantings are provided.

² <https://weeds.org.au/profiles/lantana-common-kamara/> (Accessed 25/11/2025)

³ Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest ‘Natural Hazards, Risk and Resilience - Bushfire’

(B) At the time of this KTP listing, the Threatened Species Scientific Committee advising DCCEEW used Lantana as an example of the impact of terrestrial weeds on Australian biota. Key points from the KTP listing advice follow:⁴

- (i) Lantana is listed as a Weed of National Significance and has spread along the east coast of Australia, from southern New South Wales to Cape York, and from sea-level up to 600 m altitude, or less commonly to 1000 m. It has invaded at least four million hectares, mainly in New South Wales and Queensland (CRC Weed Management, 2003c), and is expected to significantly increase its distribution and density within this range unless properly managed;
- (ii) Lantana has an adverse effect on biodiversity as it suppresses native vegetation by forming dense thickets that shade seedlings, out-competes native species for nutrients, and smothers plants (Biosecurity Queensland, 2010). Lantana is also thought to be allelopathic, i.e. able to inhibit or suppress by chemical means the germination and/or growth of at least some competing plant species (Swarbrick et al., 1995; Gentle and Duggin, 1997; Day et al., 2003);
- (iii) Lantana can flower and set seed all year round and its seeds are widely dispersed by many birds and mammals. Open forests and woodlands on Australia's east coast can be readily invaded by lantana without disturbance, with lantana becoming distributed throughout these community types. Lantana also invades many other ecological communities especially after disturbance, and can become the dominant understorey species in disturbed native forests (Day et al., 2003). It can inhibit succession following a disturbance by out-competing native colonisers and preventing natural recovery. Declines in plant species richness with increasing levels of lantana infestation have been documented in dry rainforest (Fensham et al., 1994); and
- (iv) Lantana is one of the worst invasive weeds in Australia and has been estimated to threaten populations of more than 1,300 native plants and animals.

3. Lantana as a Weed of National Significance

(A) The following information is taken from Weeds Australia:⁵

- (i) Lantana is a Weed of National Significance. It is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts. Lantana forms dense, impenetrable thickets impacting agricultural, native ecosystems, urban areas and human health;
- (ii) Native ecosystems: Lantana forms dense, impenetrable thickets that also easily take over native bushland, adding fuel to fires (CRC 2003). Lantana is a serious threat to biodiversity in several World Heritage-listed areas including the Wet Tropics of northern Queensland, Fraser Island and the Greater Blue Mountains. Numerous plant and animal species of conservation significance are threatened. It is listed as the most significant environmental weed by the South-East Queensland Environmental Weeds Management Group. Lantana dominance appears to adversely affect the species richness of soil fauna assemblages, such as ants, and decreases the diversity of soil fungi. It can also affect flora diversity by reducing seedling germination and by increasing the chance and severity of fire in plant communities such as dry rainforest. Lantana has been identified as a potential threat to many threatened and endangered plants and animals and a number of endangered ecological communities (DECC 2007).

⁴ Sources cited are identified by the listing advice.

⁵ <https://weeds.org.au/profiles/lantana-common-kamara/> (Accessed 25/11/2025)

- (B) The New South Wales Department of Environment and Heritage notes that “*Lantana forms dense thickets that exclude native species, leading to its complete dominance of the understorey and eventually the canopy,*”⁶ and furthermore that, “*Swarbrick et al. (1995) present summary data from Alcova (1987) showing a large (at least 70%) decline in inferred recruitment (number of native tree and shrub saplings present) in Lantana-infested areas of eucalypt woodland compared to Lantana-free areas.*”⁷

4. Survey Methods

- (A) Figure 5 of the Weed Memo identified areas of low, moderate and high-density Lantana. To demonstrate the extent to which Lantana dominated the high-density (often impenetrable) areas, suppressed native regeneration and inhibited koala movement, transects were sensitively hand-cut (rather than being cleared by flail mowers or pushed by a bulldozer) to capture photographs at 30m increments (20m increments in a small number of shorter transects).
- (B) In the west, where Lantana density was high but thought not to be impenetrable, a high-powered petrol brush cutter fitted with a metal blade was used to cut tracks. While this method proved effective initially, the density of Lantana (sometimes in combination with other weeds) was too great to complete some tracks (e.g., in Transects 1 and 2, dense Lantana was topped by Balloon vine (*Cardiospermum grandiflorum*) and Asparagus fern (*Asparagus africanus*). Here, and in other transects where the Lantana was > 3m high, the transect establishment team found there to be difficulty with progressing the transect.
- (C) Based on experience in the Site’s West, the parts of the Site already known to support impenetrable Lantana required a different approach. Here, pole-mounted chainsaws were used to reach up into (and over) the Lantana canes, which often exceeded 3m in height (sometimes 4m). This proved a more effective means of cutting transects, and allowed straighter alignments to be maintained.
- (D) **Table 1** provides notes on the species recorded in the transects shown in **Figure 1. Addenda 1** contains the corresponding photographs. Six photographs are provided for each point:
- (i) “Came from” is a photograph providing a view along the section of the transect already traversed by the botanist. The start of the transect will provide a view back into areas that might not be as heavily affected by Lantana as areas further along the transect;
 - (ii) “Going to” is a photograph providing a view forward along the transect. In some cases, a clear path is not visible because the clump of Lantana immediately ahead of the survey point was too dense to cut. In these circumstances, the transect recommences on the far side of the visible patch;
 - (iii) “Head height view left” provides a view to the left of the botanist taken at head height;
 - (iv) “Head height view right” provides a view to the right of the botanist taken at head height;
 - (v) “Knee height view left” provides a view into the understorey (left view) at knee height. The photograph is intended to illustrate whether Lantana dominates this layer, or whether native regeneration is occurring; and

⁶ <https://www.environment.nsw.gov.au/topics/animals-and-plants/pest-animals-and-weeds/weeds/widespread-weeds/lantana>

⁷ <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2004-2007/invasion-establishment-and-spread-of-lantana-key-threatening-process-listing>

- (vi) “Knee height view right” provides a view into the understorey (right view) at knee height. The photograph is intended to illustrate whether Lantana dominates this layer, or whether native regeneration is occurring.
- (E) Surveys commenced on 1 November 2025. Although late Winter and early Spring are typically Southeast Queensland’s ‘dry season’, conditions were unusually dry in the lead up to the survey, with only 28mm of rainfall received across August, September and all but the final days of October.⁸ This is reflected in the defoliated state of the Lantana compared to the much healthier condition captured in photographs provided in the Weed Memo (from January 2025).

5. Survey Findings and Discussion

- (A) The following discussion provides an overview of findings.
 - (i) Lantana is the dominant midstorey species throughout the areas identified as high-density infestation, which correlates with lower slopes, protected gullies, and areas with basalt-derived soils in the east (or colluvial wash from these areas). Photographs illustrate the difficulty of accessing these areas, much less establishing biocondition plots;
 - (ii) The boundary between the high-density Lantana and the moderate and low-density areas (where Lantana is still present, but not as dominant or problematic) was found to be generally correct, but native shrubs such as *Trema aspera* are more prevalent in some edge areas than suggested by the mapping. A more conservative position could be established by ‘retreating’ the high-density Lantana edge by 30m;
 - (iii) Of the 72 observation points, 20 exhibited no native regeneration below the Lantana. The remainder exhibited some native regeneration, but in the higher-density areas, the native regeneration was generally minor or suppressed (**Table 1**). It was only in areas where the Lantana was more scattered that stronger native regeneration was observed;
 - (iv) An optimistic view might be that the Site is in the early stages of regeneration, with the native species set to overcome the Lantana in time. However, our view is that, without management, the Site is on a trajectory towards a greater degree of Lantana infestation, and that this will further stall the regeneration of native species. This view aligns with the view expressed by the Threatened Species Scientific Committee in the Novel Biota and their impact on biodiversity KTP listing advice (see discussion in Point 2); and
 - (v) While the Offset Site is mapped as remnant vegetation on the Regulated Vegetation Management Map, this is a designation based on canopy cover and not the ‘intactness’ of the lower strata or habitat functionality for the koala. Relevantly, the NSW Department of Planning⁹ notes that

“Degraded koala habitat may have adequate koala food trees but may be unusable by koalas because high levels of weeds such as lantana (Lantana camara) prevent movement between trees. Restoring this type of habitat can increase habitat more quickly than creating new habitats.”

In this light, DCCEEW’s concern that the proposed offset will not deliver meaningful gains in ecological value is questioned. In fact, the Department of Planning’s observation suggest

⁸ Data from the BOM Tallegalla station (-27.6075; 152.580), which is the closest station with contemporary rainfall data.

⁹ NSW Department of Planning. 2022. Koala habitat restoration guidelines: A practical guide to identify, connect and restore koala habitat in New South Wales: NSW Government

that management of Lantana at the Offset Site may have a shorter 'time to ecological benefit' than would the establishment of new habitat elsewhere.

(B) The benefits of Lantana management for the koala would also seem to be recognised by DCCEEW's funding of Lantana management for koala conservation projects.¹⁰ These include:

- (i) Under the heading of "Large Habitat Restoration Projects", a grant of \$2 million to the NSW Northern Tablelands Local Land Services to undertake control of Lantana and other weeds to *"restore koala habitat and enable increased movement of koalas across the landscape."* More generally, weed management is identified as a means of recovering koala habitat (**Addenda 2**);
- (ii) Under the heading of "Large Habitat Restoration Projects", a grant of \$2 million to Healthy Land and Water Ltd for works including 240 hectares of weed control. Relevantly, these works are being undertaken in close proximity to the Site (Grandchester) (**Addenda 2**);
- (iii) Under the "Saving Koala Fund - Community Grants Round 1", a grant of \$165,950.00 to the Sunshine Coast-based Hinterland Bushland Links Inc for works, including removing Lantana across 20 properties. More generally, weed management is a commonly identified means of recovering and improving koala habitat (**Addenda 3**); and
- (iv) Under the "Saving Koala Fund - Community Grants Round 2", a grant of \$110,803.00 to a catchment landcare group for *"removing lantana infestations"*. A grant of \$173,713 to the Moreton Bay Regional Council to *"map Lantana thickets"* to *"inform strategic assisted regeneration works."* More generally, weed management is a commonly identified means of recovering and improving koala habitat (**Addenda 4**);

(C) Further, a DCCEEW new release, "Koala Conservation Builds Momentum in Central Queensland"¹¹ (**Addenda 5**) identifies that:

- (i) *"Introduced weeds like lantana and guinea grass choke out native trees such as the eucalypts our koalas live in."* and that they *"also pose a significant fire threat"*.
- (ii) *"Weeds aren't just a nuisance to us. They're another serious threat to koalas in the Clarke-Connors Range. These invasive plants take over their habitat, destroying the native vegetation koalas rely on for food and shelter, making survival even tougher for them. Controlling the weeds helps the koala to move around in the landscape and for native koala-friendly species to grow."*

(D) The benefits of managing Lantana in koala habitat is also recognised in other jurisdictions. A NSW Government's Biodiversity Conservation Trust news release identifies that:

- (i) *"Lantana, one of the world's top ten invasive species, impedes koala movement, limits access to essential food trees, and increases the risk of bushfires by acting as a fuel ladder, carrying flames into tree canopies."* (**Addenda 6**).

¹⁰ <https://www.dcceew.gov.au/environment/biodiversity/threatened/species/koalas/recovery-projects>

¹¹ <https://www.dcceew.gov.au/about/news/koala-conservation-builds-momentum-central-qld>

6. The following comment is provided by Dr Bill Ellis

- (A) The surveys indicate that the subject site is heavily infested with *Lantana camara*, a weed of National Significance and a listed Key Threatening Process under the EPBC Act (1999). Surveys confirm that *lantana* dominates the midstorey in high-density areas, suppressing native regeneration and creating impenetrable thickets. This condition inhibits natural forest recovery and compromises habitat function for koalas in part by obstructing access to preferred canopy species.
- (B) Ecological Impacts:
- (i) *Lantana* prevents recruitment of koala food trees. In areas of heavy infestation it is not common to find food trees regenerating;
 - (ii) Restricts koala movement – koalas primarily move across the ground between trees and dense thickets of *lantana* make impede this activity. Koalas might therefore have to spend more time traversing these obstacles on the ground and hence have increased risk of predation (e.g. see (Sparkes et al. 2023); and
 - (iii) Dense understory can add to dangerous fuel loads, resulting in more intense fires that can engulf canopies and be destructive in koala habitat.
- (C) Current trajectory: Without any action to reduce the *lantana*, the site is likely to experience worsening *lantana* dominance, further delaying recovery and reducing habitat quality. Note: *Lantana* is recognized nationally as a major biodiversity threat, impacting over 1,300 native species. Its control aligns with obligations under the Biosecurity Act and EPBC offset principles. For these reasons, it is hard to agree with the DCCEE position, as conveyed to me by the proponent, that *lantana* management offers little ecological value for koalas. I note that:
- (i) There appear to be obligations under the EPBC Act (1999) and the Biosecurity Act 2014 to manage declared weeds including *lantana* to prevent further spread and ecological degradation; and
 - (ii) I do not think it is in dispute that *lantana* reduces the habitat quality for koalas.
- (D) What do I think is likely to happen if this site is left unattended?
- (i) Continued suppression of canopy recruitment, leading to long-term decline in koala food and shelter resources;
 - (ii) The site could well become a barrier to movement by koalas in the landscape, forcing koalas to spend more time on the ground where they are subject to greater risk;
 - (iii) The bushfire intensity at the site and probability of fire is likely to increase over time, with potentially catastrophic outcomes for wildlife; and
 - (iv) Spread of this species to adjacent properties, and the ongoing degradation of ecosystem function at the site and surrounds.
- (E) If *lantana* control is undertaken at this site, I would expect to see accelerated regeneration of native species and improved koala habitat through:
- (i) Accelerated forest regeneration, improving forage and shelter resources for koalas;
 - (ii) Better habitat connectivity and hence reduced risk to koalas while moving; and

- (iii) Reduced bushfire intensity and improve ecosystem resilience.
- (F) There are several studies that concur with this approach:
- (i) WWF-Australia – Weed Warriors Project - Lantana blocks koala movement, limits access to food trees and increases bushfire severity. Removal projects improved connectivity and revealed old-growth trees critical for koalas. <https://www.wwf.org.au/news/2025/weed-warriors-saving-koalas-and-other-threatened-species/>
 - (ii) NSW Biodiversity Conservation Trust Case Study - Lantana acts as a fuel ladder for bushfires and impedes koala movement. Clearing lantana under conservation agreements secured over 900 hectares of koala habitat. <https://www.bct.nsw.gov.au/news-stories/clearing-way-koalas-removing-lantana-infestation-northern-rivers-property>
 - (iii) Mountain Range Koala Corridor Project - Removal of 22 hectares of lantana improved koala habitat connectivity and reduced fire risk. Post-restoration surveys confirmed koala presence and movement. <https://koalaactioninc.org/achievements/rehabilitation-activities/mountain-range-koala-corridor-habitat-and-connectivity-enhancement-project>
 - (iv) I also note the intensive and successful approach to lantana control at my St Bees Island site – conducted by QPWS. This has been an important factor in the viability of this koala population.
- (G) Conclusion - Effective lantana control at the Woolshed offset site represents a high-value intervention for koala conservation. By restoring degraded habitat and enabling natural succession, this strategy will significantly improve habitat quality, connectivity, and safety for koalas, while contributing to broader biodiversity outcomes.

Please give me a call if you have any further questions regarding this matter.

Kind regards,



Wayne Moffitt

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Table 1 – Observations

Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
1-0m	Eucalyptus tereticornis, Blakella tessellaris and Casuarina cunninghamiana scattered trees to 25m	High density of Cardiospermum grandiflorum, Lantana camara and Asparagus africanus to 3m in height	None
1-20m	Eucalyptus tereticornis, Blakella tessellaris and Casuarina cunninghamiana scattered trees to 25m	High density of Cardiospermum grandiflorum, Lantana camara and Asparagus africanus to 3m in height	None
2-0m	Eucalyptus tereticornis, Eucalyptus crebra, Acacia leiocalyx scattered trees to 18m. Some semi-mature Mallotus philippensis regeneration	High density of Cardiospermum grandiflorum, Lantana camara and Asparagus africanus to 3m in height	None
3-5m	Blakella citriodora, Eucalyptus crebra open forest to 23m	High density of Lantana camara, some Asparagus africanus	Suppressed Alphitonia excelsa.
3-20m	Blakella tessellaris, Blakella citriodora, Eucalyptus crebra open forest to 23m. Alphitonia excelsa, Acacia maidenii, Acacia glaucocarpa midstorey	High density of Lantana camara, some Asparagus africanus	Suppressed Alphitonia excelsa.
4-5m	Eucalyptus tereticornis, Eucalyptus crebra open forest to 15m Tends to be dense	High density of Lantana camara to 2.1m. Some Asparagus africanus.	None
4-30m	Eucalyptus tereticornis, Eucalyptus crebra and Blakella citriodora open forest to 15m. Alphitonia excelsa in shrub layer. Tends to be dense regeneration of B. tessellaris and E. crebra to 1m	High density of Lantana camara	Minor regeneration of Acacia leiocalyx and Alphitonia excelsa, but some regeneration of canopy species.
4-60m	Blakella tessellaris, Eucalyptus carnea open forest to 14m	High density of Lantana camara, some Asparagus africanus	None
4-90m	Blakella citriodora, Blakella tessellaris, Alphitonia excelsa, Eucalyptus crebra open forest to 21m in height	High density of Lantana camara, some Asparagus africanus	Minor Breynia oblongifolia.
5-5m	Blakella citriodora, Eucalyptus tereticornis and Eucalyptus crebra open forest to 25m. Regeneration of E. crebra and Alphitonia excelsa to 2m in height	High density of Lantana camara, some Asparagus africanus	Minor regeneration of E. crebra and Alphitonia excelsa to 2m in height.

Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
5-30m	Blakella citriodora, Eucalyptus tereticornis open forest to 25m. Regeneration of B. citriodora, B. tessellaris and Alphitonia excelsa to 2m	High density of Lantana camara, some Asparagus africanus	Minor regeneration of B. citriodora, B. tessellaris and Alphitonia excelsa to 2m in height.
5-60m	Eucalyptus tereticornis, Blakella citriodora, Eucalyptus crebra open forest to 24m. Midstorey of Alphitonia excelsa to 8m. Shrubs include A. excelsa, Psydrax odorata, Ficus opposita and Alectryon diversifolius	High density of Lantana camara, some Asparagus africanus	Blakella citriodora resprouting after Lantana removal below 30cm (suppressed)
5-85m	Blakella citriodora open forest to 25m. Regeneration /shrubs of B. tessellaris, Acacia leiocalyx, Alphitonia excelsa and Acacia salicina to 5m.	High density of Lantana camara, some Asparagus africanus	None
6-0m	Blakella citriodora, Eucalyptus crebra, Eucalyptus tereticornis open forest to 25m. Midstorey of Alphitonia excelsa to 8m. Shrubs A. excelsa and Psydrax odorata, Ficus coronata, Alectryon diversifolius	High density of Lantana camara, some Asparagus africanus	None
6-30m	Blakella citriodora, Eucalyptus crebra, Eucalyptus tereticornis open forest to 25m. Midstorey of Lophostemon suaveolens, Alphitonia excelsa. Shrubs of A. excelsa, Blakella citriodora, Psydrax odorata, Ficus opposita and Alectryon diversifolius to 4m	High density of Lantana camara to 3m, some Asparagus africanus	None (despite the presence of taller shrubs).
6-60m	Blakella citriodora, Eucalyptus crebra open forest to 25m. Midstorey of Alphitonia excelsa to 8m. Shrubs of A. excelsa, Blakella citriodora, Psydrax odorata, Ficus coronata and Alectryon diversifolius to 4m	High density of Lantana camara to 4m in height	None
7-0m	Blakella citriodora, Eucalyptus crebra open forest to 25m. Midstorey of Alphitonia excelsa and Aphananthe philippinensis to 8m shrubs A. excelsa, Blakella citriodora and Psydrax odorata to 4m in height	High density of Lantana camara to 4m with Asparagus africanus	None
7-30m	Blakella citriodora, Eucalyptus tereticornis, Eucalyptus crebra open forest to 25m. Midstorey	High density of Lantana camara to 4m with Asparagus africanus	None

Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
	of <i>Alphitonia excelsa</i> and <i>Aphananthe philippinensis</i> to 8m. Shrubs <i>A. excelsa</i> , <i>Bridelia leichhardtii</i> and <i>Psydrax odorata</i> to 6m		
7-60m	<i>Blakella citriodora</i> , <i>Eucalyptus crebra</i> open forest to 25m. Midstorey of <i>Alphitonia excelsa</i> , <i>Psydrax odorata</i> , <i>Blakella citriodora</i> to 8m. Shrubs are dense and include <i>A. excelsa</i> and <i>Psydrax odorata</i> to 3m	Moderate density of <i>Lantana camara</i> to 1.5m.	Low shrubs of <i>Alphitonia excelsa</i> to 30cm. Regeneration occurring in areas of lower density <i>Lantana</i> .
8-0m	<i>Eucalyptus tereticornis</i> , <i>Blakella citriodora</i> , open forest to 25m. Midstorey of <i>Alphitonia excelsa</i> , <i>Psydrax odorata</i> , <i>Aphananthe philippinensis</i> to 8m. Shrubs <i>Alectryon tomentosus</i> to 3m	Moderate density of <i>Lantana camara</i> , dense <i>Asparagus africanus</i>	Some low <i>Aphananthe philippinensis</i> to 30cm. Regeneration occurring in areas of lower density <i>Lantana</i> .
8-30m	<i>Eucalyptus crebra</i> , <i>Blakella citriodora</i> , <i>Blakella tessellaris</i> open forest to 25m. Midstorey of <i>Alphitonia excelsa</i> , <i>Psydrax odorata</i> , and <i>Aphananthe philippinensis</i> to 8m. Shrubs include <i>Alectryon tomentosus</i>	Moderate density of <i>Lantana camara</i> , dense <i>Asparagus africanus</i> and <i>Dolichandra unguis-cati</i> . Also <i>Rivina humilis</i>	None.
8-60m	<i>Blakella citriodora</i> open forest to 27m. Dense Midstorey of <i>Alphitonia excelsa</i> , <i>Psydrax odorata</i> , <i>Blakella citriodora</i> and <i>Corymbia intermedia</i> to 8m	High density to low density of <i>Lantana camara</i> (patchy)	One resprouting <i>Alphitonia excelsa</i> to 20cm.
9-5m	<i>Blakella citriodora</i> open forest to 20m. Dense Midstorey of <i>Alphitonia excelsa</i> , <i>Allocasuarina littoralis</i> , <i>Psydrax odorata</i> , <i>Acacia leiocalyx</i> , <i>Corymbia intermedia</i> to 8m. Shrubs the same to 2m	High density of <i>Lantana camara</i>	Some regenerating <i>Alphitonia excelsa</i> below 5cm.
9-30m	<i>Blakella citriodora</i> open forest to 20m Dense Midstorey of <i>Alphitonia excelsa</i> , <i>Allocasuarina littoralis</i> , <i>Psydrax odorata</i> , <i>Acacia leiocalyx</i> , <i>Blakella citriodora</i> to 8m in height	Moderate density to low density of <i>Lantana camara</i>	Some seedlings of <i>Alstonia constricta</i> and <i>Alphitonia excelsa</i> to 5cm. Regeneration occurring in areas of lower density <i>Lantana</i> .
10-5m	<i>Blakella citriodora</i> open forest to 28m Dense Midstorey of <i>Aphananthe philippensis</i> , <i>Alphitonia excelsa</i> , <i>Psydrax odorata</i> , <i>Acacia leiocalyx</i> ,	High density of <i>Lantana camara</i> and <i>Asparagus africanus</i>	None

Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
	Blakella citriodora to 8m in height		
10-30	Blakella citriodora, Eucalyptus crebra open forest to 25m. Dense Midstorey of Aphananthe philippensis, Alphitonia excelsa and Psydrax odorata to 8m in height	High density of Lantana camara and Asparagus africanus	None
11-5m	Blakella citriodora, Eucalyptus crebra open forest to 25m. Dense Midstorey of Alphitonia excelsa, Psydrax odorata, Blakella citriodora, Acacia glaucocarpa to 8m in height	High to moderate density of Lantana camara	None
11-25m	Blakella citriodora, Eucalyptus crebra open forest to 25m. Moderately dense midstorey of Alphitonia excelsa, Psydrax odorata, Blakella citriodora, Acacia glaucocarpa to 10m. Shrubs dense, the same to 3m in height	High to moderate density of Lantana camara	Minor regenerating Alphitonia excelsa to 60cm. Regeneration occurring in areas of lower density Lantana.
12-5m	Blakella citriodora, Eucalyptus crebra open forest to 25m mid-Dense midstorey of Alphitonia excelsa, Psydrax odorata, Blakella citriodora, Acacia glaucocarpa to 8m in height	High to moderate density of Lantana camara	None
13-5m	Blakella citriodora, Eucalyptus crebra open forest to 25m mid-Dense midstorey of Alphitonia excelsa, Psydrax odorata, Blakella citriodora, Acacia glaucocarpa to 8m. Shrubs dense, the same to 3m in height	Moderate density of Lantana camara	Some regenerating Trema aspera, Alstonia constricta and Alphitonia excelsa below 30cm. Regeneration occurring in areas of lower density Lantana.
13-30m	Blakella citriodora, Eucalyptus crebra open forest to 25m. Moderately dense midstorey of Alphitonia excelsa, Psydrax odorata, Blakella citriodora, Acacia leiocalyx to 8m in height	High density of Lantana camara to 3.5m	Some small Alphitonia excelsa, Flindersia collina below 30cm. Regeneration occurring in areas of lower density Lantana.
13-60m	Blakella citriodora, Eucalyptus crebra open forest to 25m. Dense Midstorey of Alphitonia excelsa, Psydrax odorata, Blakella citriodora, Acacia leiocalyx to 8m in height	High density of Lantana camara to 4m. Near the drainage line.	None.

Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
13-80	Blakella citriodora, Eucalyptus crebra open forest to 25m. Moderately dense midstorey of Alphitonia excelsa, Psydrax odorata, Blakella citriodora, Acacia leiocalyx to 8m. Shrubs mostly lantana to 4m in height	High density of Lantana camara to 4m	Minor Alphitonia excelsa and Alstonia constricta, Dianella sp.
14-5m	Blakella citriodora, Eucalyptus crebra open forest to 25m. Moderately dense midstorey of Alphitonia excelsa, Psydrax odorata, Acacia leiocalyx to 8m. Shrubs Alstonia constricta, Dodonaea viscosa, Acacia leiocalyx, Blakella citriodora to 2m in height	Sparse density of Lantana camara	Minor Alphitonia excelsa, Blakella citriodora. Regeneration occurring in areas of lower density Lantana.
14-30	Blakella citriodora, Eucalyptus crebra open forest to 25m. Dense Midstorey of Alphitonia excelsa, Psydrax odorata, Acacia leiocalyx to 8m. Shrubs, Acacia leiocalyx, Psydrax odorata to 2m in height	High to low density of Lantana camara (patchy)	Minor Alphitonia excelsa, Alstonia constricta, Psydrax odorata less than 20cm. Regeneration occurring in areas of lower density Lantana.
14-52m	Blakella tessellaris, Blakella citriodora open forest to 20m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Acacia glaucocarpa, Psydrax odorata, Blakella tessellaris to 7m. Shrubs similar to 2m in height	High to low density of Lantana camara (patchy)	Minor Alstonia constricta, Breynia oblongifolia regeneration occurring in areas of lower density Lantana.
15-0m	Blakella tessellaris, Blakella citriodora open forest to 20m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Acacia glaucocarpa, Psydrax odorata, Blakella tessellaris to 7m	Moderate density of Lantana camara.	Acacia leiocalyx, Eustrephus latifolius, Alphitonia excelsa, Dianella brevipedunculata, Psydrax odorata, Alstonia constricta. Regeneration occurring in areas of lower density Lantana.
15-30m	Blakella tessellaris, Blakella citriodora open forest to 20m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Acacia glaucocarpa, Psydrax odorata, Blakella tessellaris to 7m	High density of Lantana camara	Minor Breynia oblongifolia, Alphitonia excelsa, Acacia leiocalyx, Psydrax odorata, Eucalyptus tereticornis below 1m.
15-60m	Eucalyptus tereticornis, Blakella citriodora open forest to 20m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Acacia glaucocarpa, Psydrax odorata, Blakella tessellaris to 10m	High density of Lantana camara	Minor Breynia oblongifolia, Acacia leiocalyx, Alstonia constricta.
15-90m	Blakella tessellaris, Blakella citriodora open forest to 20m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Acacia	High density to moderate density of Lantana camara	Minor Alphitonia excelsa, Acacia maidenii, Mallotus philippensis, Blakella tessellaris, Blakella

Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
	glaucocarpa, Psydrax odorata, Blakella tessellaris, Blakella citriodora to 7m		citriodora. Regeneration occurring in areas of lower density Lantana.
16-0m	Blakella citriodora, Eucalyptus crebra open forest to 20m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Eucalyptus crebra, Blakella citriodora, Psydrax odorata to 7m	Moderate density of Lantana camara. Some Asparagus africanus	Alphitonia excelsa, Blakella citriodora, Psydrax odorata. Regeneration occurring in areas of lower density Lantana.
16-30m	Blakella citriodora, Eucalyptus crebra open forest to 20m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Eucalyptus crebra, Blakella citriodora, Psydrax odorata to 7m	High density of Lantana camara	Minor Blakella citriodora, Mallotus philippensis, Psydrax odorata , Acacia leiocalyx.
16-60m	Blakella citriodora, Eucalyptus crebra open forest to 20m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Eucalyptus crebra, Blakella citriodora, Psydrax odorata to 7m	High density of Lantana camara some Asparagus africanus	Minor Trema aspera, Psydrax odorata, Breynia oblongifolia.
16-90m	Blakella citriodora, Eucalyptus crebra Eucalyptus tereticornis open forest to 25m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Eucalyptus crebra, Blakella citriodora, Psydrax odorata to 7m	High density of Lantana camara	Minor Dodonaea viscosa, Psydrax odorata, Alphitonia excelsa.
17-0m	Blakella citriodora, Eucalyptus crebra, Corymbia intermedia open forest to 25m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Eucalyptus crebra, Blakella citriodora, Blakella tessellaris, Acacia glaucocarpa, Psydrax odorata, to 7m	Moderate density of Lantana camara	Acacia leiocalyx, Acacia glaucocarpa, Dodonaea viscosa, Pittosporum angustifolium, Psydrax odorata, Alstonia constricta, Blakella citriodora, Myoporum acuminatum. Regeneration occurring in areas of lower density Lantana.
17-30m	Blakella citriodora, Eucalyptus crebra, Corymbia intermedia open forest to 25m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Eucalyptus crebra, Blakella citriodora, Blakella tessellaris, Acacia glaucocarpa, Psydrax odorata, to 7m	Moderate to low density of Lantana camara	Blakella citriodora, Acacia glaucocarpa, Breynia oblongifolia, Alphitonia excelsa, Alstonia constricta Psydrax odorata. Regeneration occurring in areas of lower density Lantana.
17-60m	Blakella citriodora, Eucalyptus crebra, Corymbia intermedia open forest to 25m. Midstorey of Acacia leiocalyx, Alphitonia excelsa, Eucalyptus crebra,	Low density of Lantana camara	Blakella citriodora, Alphitonia excelsa. Regeneration occurring in areas of lower density Lantana.

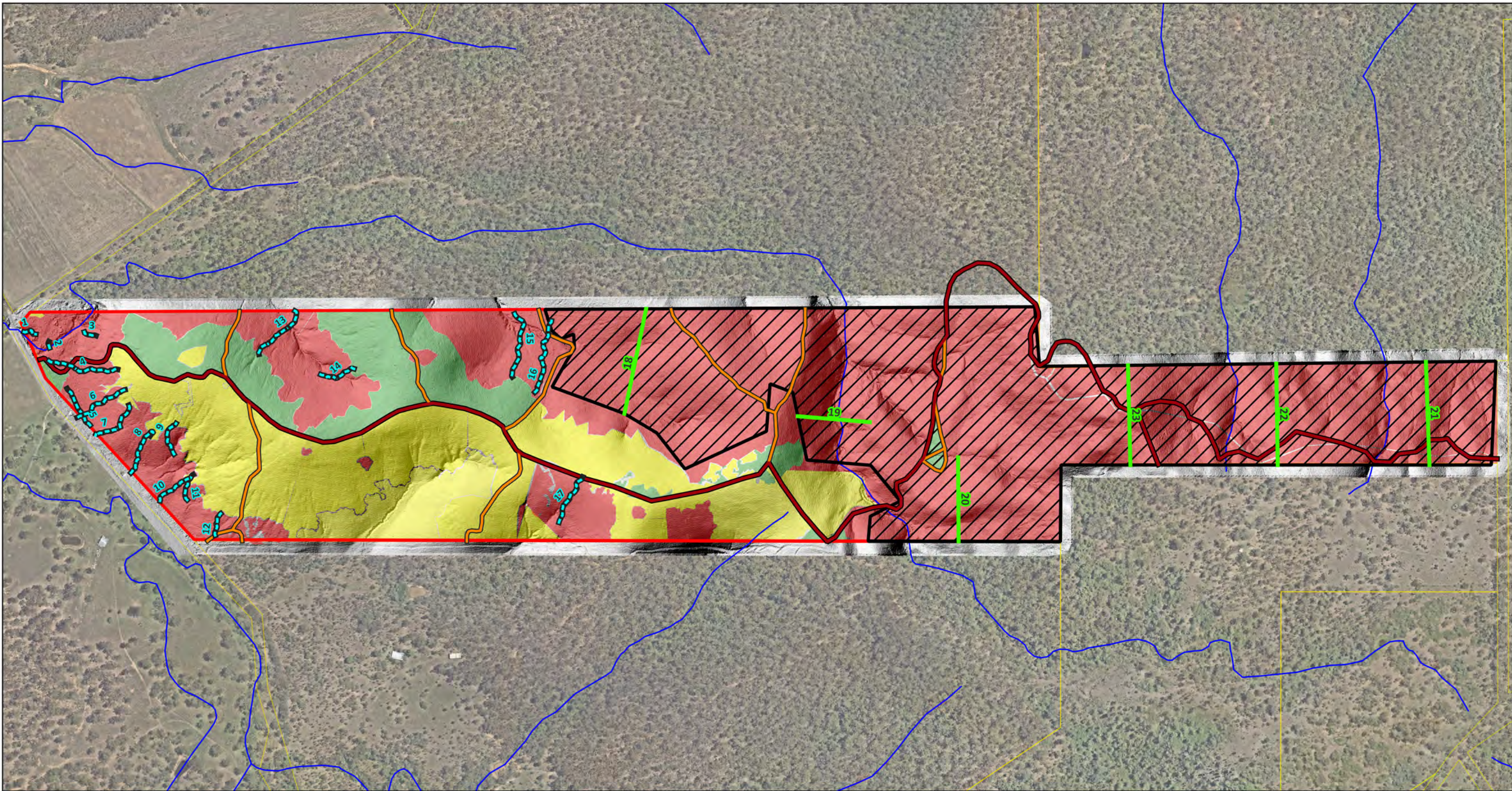
Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
	Blakella citriodora, Blakella tessellaris, Acacia glaucocarpa, Psydrax odorata to 13m		
18-0m	Blakella citriodora, Blakella tessellaris, Eucalyptus crebra open forest to 25m. Midstorey of Alphitonia excelsa, Acacia leiocalyx, Blakella tessellaris, Psydrax odorata to 8m. Shrubs Psydrax odorata, Dodonaea viscosa, Alphitonia excelsa, Acacia leiocalyx and Alstonia constricta to 3m	Moderate density of Lantana camara.	Alphitonia excelsa, Psydrax odorata. Regeneration occurring in areas of lower density Lantana.
18-30m	Blakella citriodora, Blakella tessellaris, open forest to 25m. Midstorey of Alphitonia excelsa, Acacia leiocalyx, Blakella tessellaris, Psydrax odorata to 8m. Shrubs Psydrax odorata, Dodonaea viscosa, Alphitonia excelsa, Acacia leiocalyx, Alstonia constricta to 3m	High density of Lantana camara.	Blakella tessellaris (outside Lantana zone).
18-60m	Blakella citriodora, Blakella tessellaris, Eucalyptus tereticornis open forest to 25m. Midstorey of Alphitonia excelsa, Acacia leiocalyx, Blakella tessellaris, Psydrax odorata to 8m. Shrubs Psydrax odorata, Dodonaea viscosa, Alphitonia excelsa, Acacia leiocalyx, Alstonia constricta to 3m	High density of Lantana camara.	Minor Mallotus philippensis.
18-90m	Blakella citriodora, Blakella tessellaris, open forest to 25m. Midstorey of Alphitonia excelsa, Acacia leiocalyx, Blakella tessellaris, Psydrax odorata to 8m. Shrubs Psydrax odorata, Alphitonia excelsa, Acacia leiocalyx to 3m	High density of Lantana camara.	Blakella citriodora (suppressed), Alphitonia excelsa, Acacia leiocalyx, Psydrax odorata pushed through.
18-120m	Blakella citriodora, Blakella tessellaris, Eucalyptus tereticornis, Eucalyptus crebra open forest to 25m. Midstorey of Alphitonia excelsa, Acacia leiocalyx, Blakella tessellaris, Psydrax odorata to 8m	High density of Lantana camara.	Minor Mallotus philippensis, Blakella citriodora (suppressed), Psydrax odorata.

Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
18-150m	Blakella citriodora, Blakella tessellaris, Eucalyptus tereticornis, Eucalyptus crebra open forest to 25m. Midstorey of Alphitonia excelsa, Acacia leiocalyx, Blakella tessellaris, Psydrax odorata to 8m	High density of Lantana camara.	Minor Blakella citriodora (suppressed), Psydrax odorata, Alphitonia excelsa, Acacia leiocalyx.
19-0m	Blakella citriodora, Eucalyptus crebra open forest to 28m. Midstorey Mallotus philippensis, Acacia disparrima, Alphitonia excelsa to 14m	High density of Lantana camara.	Minor Mallotus philippensis, Ficus opposita (suppressed).
19-30m	Blakella citriodora, Eucalyptus crebra open forest to 28m. Midstorey Mallotus philippensis, Acacia disparrima, Eucalyptus crebra, Blakella citriodora, Alphitonia excelsa to 14m	High density of Lantana camara.	Minor Mallotus philippensis, Blakella citriodora both not under Lantana camara. Acacia leiocalyx and Myoporum acuminatum under Lantana camara.
19-60m	Blakella citriodora, Eucalyptus crebra open forest to 28m. Midstorey Acacia glaucocarpa, Acacia disparrima, Acacia maidenii, Eucalyptus crebra, Blakella citriodora, Alphitonia excelsa to 14m	Moderate density of Lantana camara	Bridelia leichhardtii, Mallotus philippensis, Blakella citriodora (suppressed). Regeneration occurring in areas of lower density Lantana.
20-0m	Eucalyptus tereticornis, Eucalyptus crebra open forest to 30m. Midstorey species Acacia disparrima, Psydrax odorata, Bridelia leichhardtii to 14m	High density of Lantana camara	Minor Mallotus philippensis, Eucalyptus crebra.
20-30m	Eucalyptus tereticornis, Eucalyptus crebra open forest to 30m. Midstorey species Acacia disparrima, Psydrax odorata, Bridelia leichhardtii to 14m	High density of Lantana camara	Minor Mallotus philippensis, Eucalyptus crebra.
20-60m	Eucalyptus tereticornis, Eucalyptus crebra, Corymbia intermedia open forest to 30m. Sparse Midstorey species Acacia maidenii, Psydrax odorata, Blakella tessellaris to 10m	High density of Lantana camara	Minor Mallotus philippensis, Acacia salicina, Alphitonia excelsa, Acacia maidenii, Corymbia intermedia (all suppressed).
20-90m	Eucalyptus tereticornis, Eucalyptus crebra, Blakella tessellaris open forest to 30m. Sparse Midstorey species Acacia disparrima, Psydrax	High density of Lantana camara	Under Lantana Mallotus philippensis, Acacia disparrima (suppressed).

Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
	odorata, Blakella tessellaris to 10m		
20-120m	Eucalyptus crebra, Blakella tessellaris open forest to 30m. Sparse Midstorey species Acacia disparrima, Blakella tessellaris , Eucalyptus crebra to 10m	High density of Lantana camara	Mallotus philippensis, Blakella tessellaris (suppressed).
20-150	Eucalyptus crebra, Blakella tessellaris open forest to 30m. Sparse Midstorey species Acacia disparrima, Blakella tessellaris , Eucalyptus crebra , Angophora leiocarpa to 10m	High density of Lantana camara	Alphitonia excelsa, Blakella tessellaris (all suppressed).
21-0m	Eucalyptus crebra, Blakella citriodora open forest to 25m. Midstorey Acacia disparrima, Blakella citriodora, Mallotus philippensis.	Moderate density of Lantana camara. Some Asparagus africanus	Ficus opposita 1m, not much Lantana needed clearing, already clear. Regeneration occurring in areas of lower density Lantana.
21-30m	Eucalyptus crebra, Blakella citriodora open forest to 25m. Midstorey Acacia disparrima, Blakella citriodora, Mallotus philippensis.	Moderate density of Lantana camara. Some Asparagus africanus , Rivina humilis, Passiflora subpeltata, Opuntia tomentosa, Salvia coccinea	Acacia disparrima (suppressed).
21-60m	Eucalyptus crebra, Blakella citriodora open forest to 25m. Dense midstorey, Mallotus philippensis. Alectryon tomentosus.	Moderate density of Lantana camara. Some Asparagus africanus , Rivina humilis, Passiflora subpeltata, Opuntia tomentosa, Salvia coccinea, Megathyrsus maximus	Mallotus philippensis, Alectryon tomentosus. Regeneration occurring in areas of lower density Lantana.
21-90m	Eucalyptus crebra, Blakella citriodora Eucalyptus melanophloia open forest to 25m. Dense midstorey, Mallotus philippensis, Aphananthe philippensis, Alectryon tomentosus to 7m. Shrubs Mallotus philippensis	Same as above. Plus high density of Megathyrsus maximus. Low density of Lantana camara.	Mallotus philippensis, Alectryon tomentosus, Turraea pubescens. Regeneration occurring in areas of lower density Lantana.
22-0m	Eucalyptus crebra, Blakella citriodora open forest to 25m. Midstorey Acacia disparrima, Eucalyptus crebra, Blakella citriodora, Mallotus philippensis. Shrubs Acacia disparrima, Blakella citriodora, Alphitonia excelsa, Trema tomentosa	High density of Lantana camara, some Asparagus africanus, Rivina humilis	None.

Transect number and observation points	Canopy species	Weed species and Density	Native Regeneration (0-1m high)
22-30m	Eucalyptus crebra, Blakella citriodora open forest to 25m. Midstorey Acacia disparrima, Eucalyptus crebra, Blakella citriodora, Mallotus philippensis. Shrubs Acacia disparrima, Blakella citriodora, Alphitonia excelsa, Trema tomentosa	High density of Lantana camara, some Asparagus africanus, Rivina humilis	Minor Mallotus philippensis
22-60m	Eucalyptus crebra, Blakella citriodora open forest to 25m. Midstorey Acacia disparrima, Eucalyptus crebra, Blakella citriodora, Mallotus philippensis. Shrubs Acacia maidenii, Acacia disparrima, Alphitonia excelsa	High density of Lantana camara, some Asparagus africanus, Rivina humilis	None
22-90m	Eucalyptus crebra, Blakella citriodora open forest to 25m. Midstorey Acacia disparrima, Eucalyptus crebra, Blakella citriodora to 1. Shrubs Acacia maidenii, Acacia disparrima, Alphitonia excelsa, Mallotus philippensis	High density of Lantana camara, some Asparagus africanus, Rivina humilis	Acacia disparrima, Mallotus philippensis (suppressed). Regeneration occurring in areas of lower density Lantana.
22-120m	Eucalyptus crebra, Blakella citriodora, Blakella tessellaris, Open forest to 25m. Midstorey Acacia disparrima, Eucalyptus crebra, Blakella citriodora, Blakella tessellaris to 12m	High density of Lantana camara, some Asparagus africanus, Rivina humilis, Salvia coccinea	Acacia disparrima (suppressed), Bridelia leichhardtii. Regeneration occurring in areas of lower density Lantana.
23-0m note clearing only 30m long	Eucalyptus melanophloia, Eucalyptus tereticornis, Eucalyptus crebra, Blakella tessellaris open forest to 20m. Midstorey Acacia disparrima, Alphitonia excelsa to 10m	High density of Lantana camara, some Asparagus africanus, Rivina humilis	None.

Figures



Double Jump Road Offset

Legend

Figure 1 - Lantana camara Survey Transects

28 South Project Ref: 2019-100e

Source: C:\Users\Mitchell\Dropbox\Projects\2019\2019-100e (Sutgold - EPBC Woodbury Precincts)\Data\GIS\Woodbury EPBC Referral (GDA2020).qgz

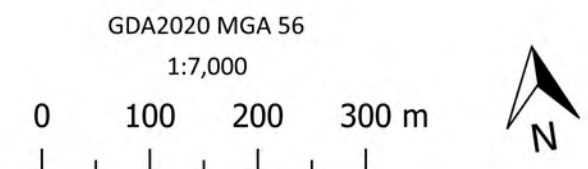
The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

28°S
ENVIRONMENTAL

Links to data sources can be provided upon request.

- Offset Area Boundary
- Waterway/overland flow path
- Broad scale Lantana camara infestation
 - Low
 - Moderate
 - High
- Inaccessible area
- Track
- Fire break
- Brushcutter cut track
- Polesaw cut track

Issue Date	Dwg No.	Author
25-11-2025		MO
Approved	Revision Note	
AD		



Technical Addenda 1 – Transect Photographs

Transect 1: 0m



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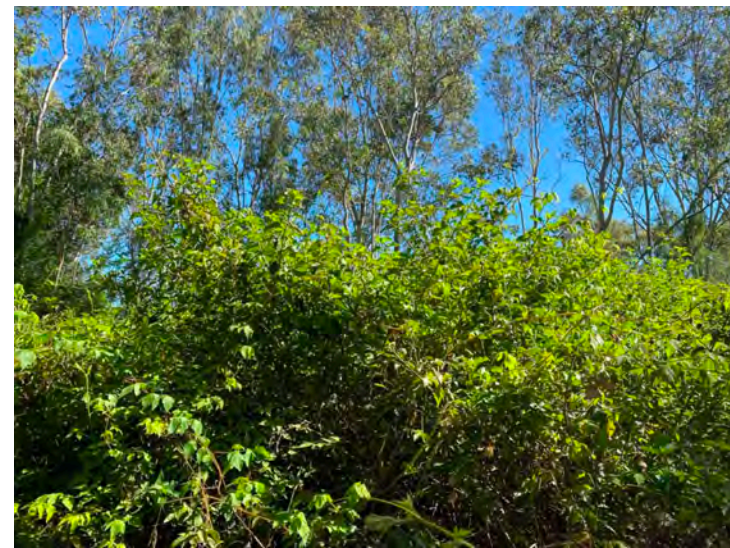
Transect 1: 20m



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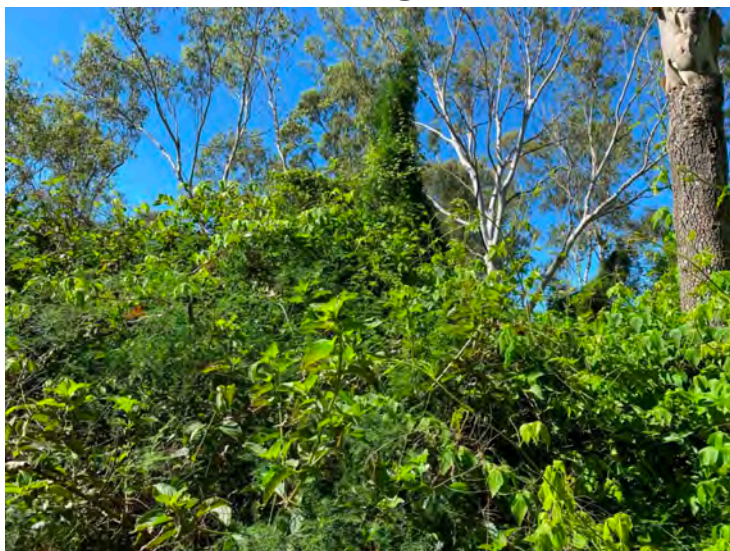
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Transect 4: 5m



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Transect 3: 5m



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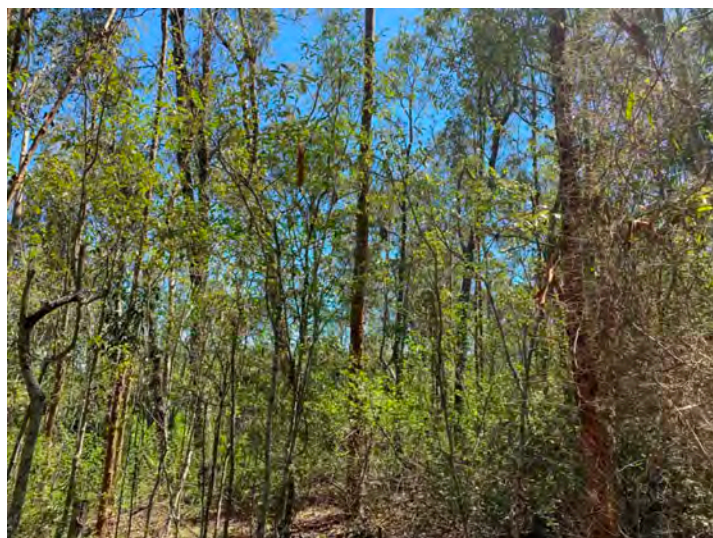
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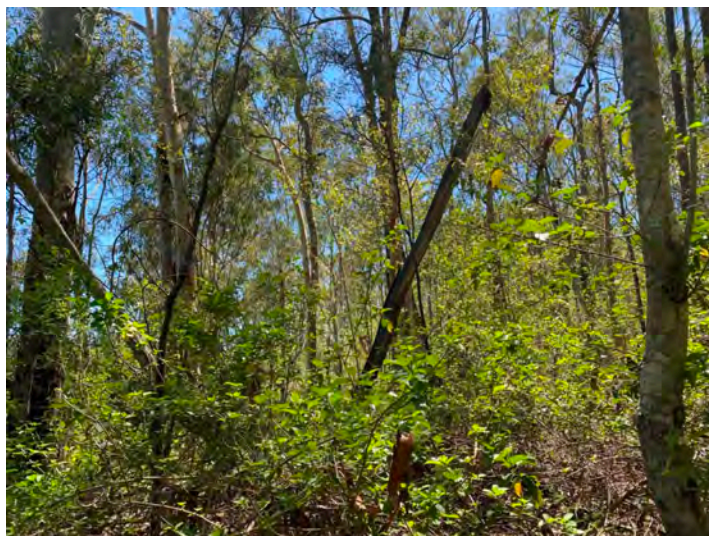
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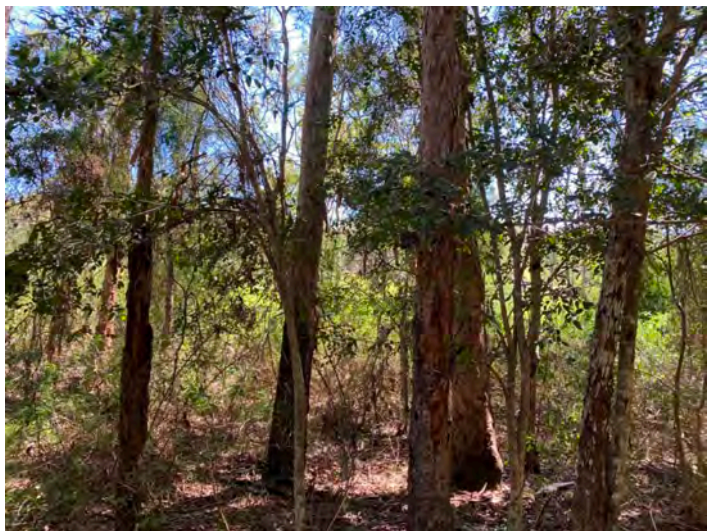


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Transect 11: 25m



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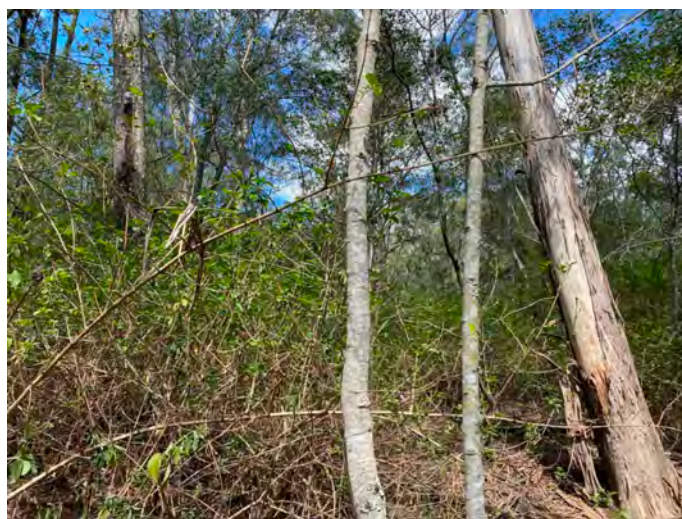
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Addenda 2 – Extract from DCCEE Large Habitat Restoration Projects Page



Koala recovery projects

Last updated: 20 February 2025

We are moving quickly to deliver projects that support the recovery of the koala. These projects are being delivered in partnership with First Nations people, the community, conservation organisations, governments, scientists and land managers.

Community grants

We are supporting \$10 million of community-led projects that:

- improve the extent, quality and connectivity of koala habitat
- reduce threats
- increase understanding and management of koala disease
- improve our understanding of koala populations.

Download

[Approved community grant round 1 projects \(PDF 94.5 KB\)](/sites/default/files/documents/koala-community-grants-round-1.pdf)

[Approved community grant round 1 projects \(DOCX 103 KB\)](/sites/default/files/documents/koala-community-grants-round-1.docx)

[Approved community grant round 2 projects \(PDF 160.56 KB\)](/sites/default/files/documents/koala-community-grants-round-2.pdf)

[Approved community grant round 2 projects \(DOCX 93.75 KB\)](/sites/default/files/documents/koala-community-grants-round-2.docx)

Large habitat restoration projects

A cost-benefit analysis has guided the design and delivery of large-scale habitat restoration and protection projects. This used the Investments Framework for Environmental Resources (INFFER) method. This builds on a previous INFFER analysis completed in 2019. Find out more about the INFFER analysis in [Science for koala recovery](#).
(/environment/biodiversity/threatened/species/koalas/science).

Approved large habitat restoration projects



Delivery Partner	Project Title	Project Summary	Funding (ex GST)
Fitzroy Basin Association Ltd	Koala Habitat Restoration and Protection in the Clarke-Connors Range, Fitzroy Region, Central Queensland	This project will work with landholders to protect and improve the quality and connectivity of koala habitat across 2000 hectares in the Clarke-Connors Range, Central Queensland. The project will deliver weed control to reduce fire risk and promote the growth of native species, fencing and grazing management to allow natural regeneration of trees, and fire planning and actions to reduce fire risk to both koala, and areas of koala habitat. The project will engage First Nations to understand priorities and capacity to lead and participate in the design and delivery of koala conservation actions including koala monitoring and habitat restoration actions.	\$4.5 million
Reef Catchments (Mackay Whitsunday Isaac) Ltd	Koala Habitat Restoration in Sarina, Central Queensland coastal area	This project will improve the quality, extent and connectivity of koala habitat in the Sarina region (located within the Mackay Regional Council area) by: engaging with local landowners to increase connectivity of koala habitat through revegetation projects to establish 27 hectares of habitat; improving habitat through 150 hectares of weed management; and motivating landholders to become involved in koala conservation activities through landholder events and targeted communications and engagement. Work to extend, expand and improve nature corridors will continue to enable Sarina koalas to travel between coastal habitat and inland ranges.	\$3.5 million
Burnett Mary Regional Group	Koala Habitat Restoration and Protection in Gympie, Burnett Mary.	This project will deliver on-ground actions to protect and restore priority koala habitat. This will support the recovery of the Gympie koala population. Over 178 hectares of new koala habitat will be established through revegetation projects on private land. Natural regeneration of koala habitat will be supported by 155 hectares of weed control, with a further 23 hectares of strategic fencing installed to reduce threats of koala habitat from stock. A monitoring regime will measure the impact of these activities on koala populations and on habitat condition. Community groups, researchers and traditional owners will work with landholders to share knowledge, with a collective aim of restoring critical habitat and connectivity of the Gympie koala population.	\$2 million
Healthy Land and Water Ltd	Koala Habitat Restoration and Protection in Grandchester and Flinders Peak, SEQLD.	This project will improve habitat quality, extent and connectivity for koalas within the Grandchester and Flinders Peak areas of South East Queensland. The project will partner with land managers and local communities to address koala habitat loss, fragmentation and degradation. On ground actions include 70 hectares of revegetation, 240 hectares of weed control, 20 hectares management of grazing pressures, and activities to support fire management to protect critical koala habitat from fire. These actions will be supported by community and landholder engagement activities, including events, workshops	\$2 million

Delivery Partner	Project Title	Project Summary	Funding (ex GST)
		and direct activities on their properties. Project success will be measured through a monitoring program for koala populations and koala habitat improvements.	
Northern Tablelands Local Land Services	Koala Habitat Restoration and Protection in the Northern Tablelands, NSW.	This project will deliver on-ground actions to improve the quality, quantity, and connectivity of koala habitat in the Armidale region of the Northern Tablelands. Revegetation projects with local landholders, land managers and the community will create 50 hectares of new koala habitat. The quality of habitat across a further 70 hectares will be improved through supported natural regeneration and improved grazing management practices. Targeted weed control of lantana, blackberry, and hawthorn across 340 hectares will restore koala habitat, and enable increased movement of koalas across the landscape. The project will build community members skills, knowledge, and capacity to deliver best practice on-ground koala conservation actions.	\$2 million
North Coast Local Land Services	Koala Habitat Restoration and Protection in the Coffs Harbour - North Bellingen Area of Regional Koala Significance (ARKS), NSW	This project engages landholders, local and NSW governments to protect and restore priority koala habitat in the Coffs Harbour and Bellingen Local Government Areas. The project will create 80 hectares of new koala habitat and improve the quality of a further 350 hectares of existing habitat through weed management and mitigation of livestock impacts. Another 30 hectares will be protected through fire management, including cultural burning. These actions will be supported by land management agreements, with detailed site management plans. Community participation will be encouraged with landholders invited to report koala sightings, get involved in koala workshops, and through involvement in koala restoration activities on their properties.	\$3 million
South East Local Land Services	Koala Habitat Restoration and Protection in the Southern Highlands and Southern Tablelands Area of Regional Koala Significance (ARKS), NSW	This project will deliver on-ground actions to improve the quality, quantity, and connectivity of koala habitat in the Southern Tablelands and Southern Highlands of New South Wales. The project will create 58.5 hectares of new koala habitat. A further 121 hectares of koala habitat will be improved through weed control. Fencing of over 29 kilometres will be established and 1050 hectares of feral herbivore control undertaken to reduce browsing pressure on koala habitat. Community awareness and education will be supported through 5 community engagement events. A partnership with First Nations people and the Local Land Council will be supported by training to share knowledge on koala conservation.	\$3 million
World Wide Fund for Nature - Australia	Koalas Forever Northern Rivers Recovery Hub Restoration	The project will deliver koala habitat restoration and create new koala habitat in cleared and burnt priority koala meta-populations within the Northern Rivers, NSW. Local landholders will be supported to expand and restore more than 630 hectares of koala habitat through revegetation of 135,000 koala trees, targeted weed	\$3.5 million

Delivery Partner	Project Title	Project Summary	Funding (ex GST)
		control, stock removal through fencing, and drone seeding of landslip areas. The project has a strong community focus supported by 12 community workshops, planting days and citizen science monitoring programs. The project also works with First Nations peoples who will share their knowledge to undertake cultural burning across 30 hectares in the North-east Hinterland, to assist landholders to better protect koalas on their properties.	
NSW Department of Planning and Environment (DPE)	Bring back the bush for koalas on the Mid North Coast.	This project will create, restore and connect isolated and degraded areas of Koala habitat in the Forster, Comboyne and South Taree areas of the Mid-North Coast. Restoration activities aim to improve connectivity to encourage greater and safer movement of koalas in this area. This will be supported through restoration of 300 hectares of koala habitat, revegetation of 150 hectares and 50 hectares of cultural burning to improve habitat condition. The delivery of 3 community events will motivate landholders to become involved in koala conservation activities, with at least 40 landholders to be engaged in koala habitat restoration on their properties.	\$4 million

National Koala Monitoring Program

This program uses state of the art surveying tools and techniques to better understand the status and trend of koala populations. We partner with universities and First Nations people through the program. We're also working to build survey know-how with citizen scientists.

The program will create a national snapshot of koala populations and koala distribution. It will allow us to detect changes in koala populations over time.

Find out more about the [National Koala Monitoring Program](#)

(/environment/biodiversity/threatened/species/koalas/national-koala-monitoring-program).

Health grants

We are investing in initiatives to improve koala health. This includes expanding koala hospitals and services. We are also investing in koala chlamydia vaccines.

Approved koala health projects



Read more

The work we are doing now builds on previous koala recovery and conservation efforts. This includes:

- \$6 million investment through the Environment Restoration Fund
- \$18 million for koala recovery as part of bushfire recovery investments.

Download

[Koala projects funded under the initial \\$6 Million through the Environment Restoration Fund \(PDF 129 KB\)](#)

(/sites/default/files/documents/koala-projects-erf.pdf)

[Koala projects funded under the initial \\$6 Million through the Environment Restoration Fund \(DOCX 67 KB\)](#)

(/sites/default/files/documents/koala-projects-erf.docx)

[Koala conservation infographic \(PDF 1.9 MB\)](#) (/sites/default/files/documents/koala-conservation-infographic.pdf)

[Koala conservation infographic \(DOCX 69 KB\)](#) (/sites/default/files/documents/koala-conservation-infographic.docx)

[Approved Koala conservation projects \(PDF 172 KB\)](#) (/sites/default/files/documents/koala-conservation-projects.pdf)

[Approved Koala conservation projects \(DOCX 65 KB\)](#) (/sites/default/files/documents/koala-conservation-projects.docx)

Addenda 3 – Extract
from DCCEEWS Saving
Koala Fund –
Community Grants
Round 1



Saving Koalas Fund - Community Grants Round 1

Applicant	Project Title	Project summary	Grant Amount (ex GST)
All Sustainable Futures Incorporated	Restoring and connecting Koala habitat along the Pappinbarra Valley	The project will deliver landscape wide restoration and connection of koala habitat, with approximately 40,000 trees planted along the Pappinbarra River corridor (40km) on 12 farms. This will be supported by field days, volunteer tree planting events, digital media for social media platforms and monitoring and evaluation to record koala status and improvement.	\$200,000
Armidale Tree Group Incorporated	Kindly Koala Habitat	Armidale Tree Group will prepare and plant 40 acres of land to create biodiverse koala habitat in the Armidale region. This planting will add to existing key koala habitat, increasing both available habitat and improving corridor linkages in the immediate area for existing koala populations. The project will increase biodiversity through the addition of key mid-storey species which will improve the structural composition of the planting and increase and support habitat for local woodland birds listed as vulnerable in NSW.	\$64,086
Australian Earth Laws Alliance Ltd	Koala health and habitat rehabilitation in the Esk/Somerset region, SE QLD	The project will increase understanding and management of disease and injury affecting koalas and improve their habitat in the Somerset region of South-East Queensland. Significant areas of interest for habitat rehabilitation have been identified which can increase the carrying capacity of the region. Genetic and health information will be used to establish a conservation management and action plan for koalas in the community.	\$109,213
Australian Wildlife Conservancy	Habitat restoration & ecological research at Curramore and Mt Zero-Taravale	The project will partner with a community group to revegetate 5 hectares of cleared koala habitat at the Australian Wildlife Conservancy's Curramore Sanctuary in the Sunshine Coast region. Koala's will be monitored through two parallel monitoring efforts using separate technologies at Curramore. Larger scale koala monitoring will also be conducted in north Queensland at the Mt. Zero – Taravale (MZZ) Sanctuary in the Paluma region.	\$179,211
Bangalow Koalas Inc	Bangalow Koalas Community Wildlife Corridor	This project will improve the extent, quality and connectivity of koala habitat in strategic locations in the Bangalow region, including planting into riparian areas. Key activities include weed removal and planting over 12,000 trees.	\$177,347
Bunyah Restoration Project Incorporated	The Bunyah Koala Project - Farming for Conservation	The "Farming for Conservation" model will improve outcomes for koalas as well as on farm productivity and wider diversity values. This will be achieved in a regenerative farming framework and include: 18,000 new koala food trees in wildlife corridors linking otherwise fragmented koala habitat; baseline population and reproductive health surveys; the installation, maintenance and long-term monitoring of five koala drinkers; eDNA testing to understand the wider threatened ecological community; and community/Farmer field and open days.	\$199,800
Burnett Catchment Care Association	Burnett Koala Program: Establishing baseline data for koala populations	This is a community-led multi-stakeholder collaborative project aimed at better understanding population dynamics and health of inland Burnett koalas. This will help to better inform sound management of koalas and their habitat and help ensure their survival, conservation and recovery. The project will develop a baseline dataset of koala population dynamics and health via DNA testing of scats, non-invasively collected by the community.	\$196,451
Dorrigo Community Nursery Inc	Dorrigo Plateau Corridor Digital Mapping and Koala Restoration Project	The project will digitally capture koala movement in three areas across the Dorrigo Plateau and improve data and knowledge of the koala populations in order to support effective decision making, conservation and planting of koala habitat species. Dorrigo Community Nursery will partner with communities and individuals to improve the extent, quality and connectivity of the koala's habitat and reduce local weed threats , and to establish an ongoing role and capability in monitoring, conservation and management.	\$160,153
Ecollaboration Ltd	Sunshine Coast Hinterland Koala Habitat Restoration	The project will deliver improved biodiversity, increased koala populations and greater community engagement in the Sunshine Coast hinterland of South-East Queensland. Key activities include habitat restoration and species monitoring at Kirbys Road Environmental Reserve, as well as community education.	\$99,192

Environment, Planning and Sustainable Development Directorate - Departmental	Understanding and Conserving Gula (Koala) on Ngunnawal Country, ACT	This project seeks to better understand and enhance koala populations in the ACT through Traditional Owner engagement. Activities will include baseline surveys of koala populations to provide evidence of koala abundance and distribution, and tree planting events led by the Ngunnawal Community. An important part of this project is to upskill Ngunnawal people on survey methods so that community members can lead monitoring. Data collected will influence koala habitat restoration. A workshop will enable sharing of knowledge about koalas between the Ngunnawal and other Aboriginal groups.	\$107,974
Forest Land Management Pty Ltd	Purga Koala Habitat Restoration Project - Stage 1	The project will increase the area of existing koala habitat in the Ipswich region of South-East Queensland by planting and maintaining new forest. This will improve the capacity of existing forests to support healthy koala populations by reducing edge effect and connecting patches of remnant vegetation and existing revegetation with riparian zones.	\$155,700
Friends of The Koala	Hanging out at East Coraki: Koalas thriving in an agricultural landscape	The project will support community-led koala recovery by improving resilience and viability of koalas and their habitat in the East Coraki area. Key activities include: removing weed species from known koala riparian habitat; planting koala habitat trees; fencing plantings where necessary; preparing a Landscape Koala Habitat Management Plan; koala health checks; community field days; and citizen science koala monitoring.	\$199,980
Hastings Landcare Incorporated	Supporting Hastings Landholders in Koala Habitat Protection	The project will engage local landholders in the Port Macquarie-Hastings Local Government Area to carry out on-ground actions to support koala habitat protection, restoration, and threat mitigation that extends, improves and/or connects habitat, as well as create awareness around koala conservation.	\$199,700
Hinterland Bush Links Inc	Hinterland Koala Habitat Project	The project aims to protect, restore, and increase koala habitat on the Sunshine Coast hinterland of South-East Queensland. It involves working with landholders to plant over 5,000 koala habitat trees on 17 properties, removing lantana across 20 properties, providing education and increasing awareness. It is a collaborative project between Hinterland Bush Links, Sunshine Coast Council, Bunya Bunya Aboriginal Corporation, Barung Landcare, Koala Action, Queensland Koala Crusaders and 20 private landholders.	\$165,950
Jaliigirr Biodiversity Alliance Inc	Jaliigirr Koala Conservation Action in the Coffs Harbour & Bellingen ARKS (Areas of Regional Koala Significance)	Jaliigirr Biodiversity Alliance will work in partnership with government agencies, traditional custodians, local community groups and volunteers to undertake actions to assist with conservation outcomes for koala in the Coffs Harbour and North Bellingen regions. Bush regeneration contractors, Indigenous rangers and Landcare groups will support the project through weed control and revegetation activities in 54 hectares of koala habitats and linkages. Scent detection dogs will survey 15 locations totalling 75 hectares throughout the project area to collect koala scat material for genetic and genomic analysis. Specialised training and rescue equipment will be provided to support key community members for the triage and care of koalas.	\$199,200
Koala Action Gympie Region Inc	Corridors, Community and Koalas – connections for protection!	This project will improve connectivity of important koala habitat in the Mary River area by planting over 5,300 trees. The project will use drones and detection dogs to increase data on local koala populations in the Gympie region to ensure effectiveness of current and future conservation efforts. The project will share this knowledge as part of “Living with Koalas” education sessions with the community to boost local conservation efforts.	\$181,819
Local Land Services	Habitat for Cold Country Koalas, Avonside NSW	The project will work with private land managers and Upper Snowy Landcare to protect and enhance habitat for koalas in the area between Berridale, Beloka and Jindabyne (Avonside) in NSW. The project will focus on protecting, enhancing and expanding habitat available for koalas. The project will also reduce threats to this population via pest animal management activities and land manager education initiatives in conjunction with Landcare.	\$200,000
Local Land Services	Connecting koalas: Protecting the Rockley Mount population (Bathurst)	The project will increase population knowledge, improve/expand habitat and increase community awareness of koalas in the Rockley Mount region. Surveys backed by citizen science will be undertaken at sites to map existing populations, using remote sensing, acoustic recordings and visual identification. Habitat connectivity will be increased through habitat enhancement and restoration activities including the targeted planting of up to 5,000 feed tree seedlings on private land. Community events, involving Indigenous communities, will be held to engage with local schools and the broader community.	\$200,000
Mid-Western Regional Council	Mapping, Protecting and Enhancing Koala habitat within the MWRC LGA	The project will map known and potential koala habitat and develop a management plan to conserve koala habitat in the Mid-Western Regional Council Local Government Area. The Council will work with landholders to carry out actions to improve the extent and quality of koala habitat on private land and to improve habitat quality, extent and linkages. The community will be engaged through citizen science activities, workshops and educational material. The project will also deliver community education including developing and implementing a citizen science project to engage community members in koala conservation, and the creation of educational material.	\$155,000

Nambucca Landcare Co-Ordinating Committee	Nambucca Valley Koala Conservation Project	The Project aims to enhance and increase koala habitat within the Nambucca Valley. This project will undertake weed control to improve the quality of available koala habitat. New wildlife corridors will be established to allow koalas to move safely through the landscape, and gaps within the vegetation will be filled with extra tree plantings to improve the quality of available koala habitat.	\$147,862
Owad Investments Pty Ltd	Darling Downs community-led non-invasive Koala genetic & disease study	The project will undertake a non-invasive koala genetic and disease study in the Darling Downs region of South-East Queensland, with a focus around Pittsworth. Koala scats will be collected by citizen-scientist members of the Pittsworth District Landcare Association. DNA extracted from the scats will be subjected to a range of key tests and analyses to unveil information about the individuals and identify key population dynamics processes. A comprehensive report will summarise the relevant spatial and molecular findings that inform effective decision making and conservation action.	\$133,460
Paws & Brooks Nature Sanctuary Inc	Recovery and Protection of Koala Habitat at Summerholm	The project will increase the area and quality of refugial koala habitat and will expand the Grantchester-Mt Mort koala territory through revegetation and assisted regeneration. It will also include: a koala tree fodder farm to assist koala carers by providing a local source of food; citizen science activities to improve the knowledge about the local koala population; and community education programs to inform the wider community about impacts on koala populations.	\$99,320
Pine Rivers Catchment Assn Inc	Wongam Koala Gully Project	The project will remove weeds and plant over 17,000 feed trees in the Wongam Koala Gully (WKG), a high-quality corridor connecting the koala populations in the Bunyaville and Samford Conservation Parks. The project intends to create a Koala Totem with the help of the Traditional Owners and educate the local residents in reducing threats to koalas. It will also use innovative artificial intelligence to analyse the data collected from cameras installed at the WKG.	\$200,000
Port Stephens Council	Koala diet, habitat mapping and corridor restoration in Port Stephens	The project will undertake activities in the Port Stephens Local Government Area (LGA) including: koala scat analysis to identify dietary composition and variability amongst local-subpopulations; vegetation and koala abundance/density mapping; identification of key koala corridors; and restoration and enhancement of priority koala linkage areas through targeted weed control.	\$200,000
Quoll Society of Australia Inc	Stepping Stones in the Southern Downs Phase 2	The Quoll Society and its volunteers will work with landholders to revegetate strategic movement corridors in order to improve habitat connectivity for the koala in the Southern Downs and Goondiwindi region. The project will benefit not only koalas, but a range of threatened species including regent honeyeaters, spotted-tailed quolls, and greater gliders.	\$199,600
River Nations Indigenous Corporation	Improving Knowledge and Habitat of Goolar (Koala) in Bundaberg Region	The project will contribute koala population data to the National Koala Monitoring Program through monitoring activities in the Bundaberg Region. The project will build capacity of Traditional Owners to undertake fauna monitoring and ecological restoration activities, and to develop listed fauna and weed management plans. The project will also reduce pressure on koalas in their existing habitat by delivering land management activities that will improve the quality of existing habitat.	\$166,766
South Endeavour Pty Limited	Koala habitat enhancement over 7000ha on 6 reserves in Northern NSW	The project is focused on 6 privately protected conservation reserves on the NSW North Coast, New England Tablelands and Northwestern Slopes. The project involves: mapping of koala habitat; audio, scat spotlight and thermal surveys to determine presence/absence and population estimates; assessment of disease status; replanting of habitat; assessment of suitability of "empty" sites for potential future translocation; and fire planning.	\$151,000
Southern Queensland Natural Resources Management Ltd	Reducing threats to a unique koala population in the Queensland rangelands	The project will work with First Nations people, local land managers and knowledge holders in western Queensland to confirm stronghold areas of current koala populations and improve the habitat values, including landscape linkages, to enhance their resilience to climate change. The project will also provide restoration, rehabilitation and other management advice to landholders.	\$200,000
Watergum Community Inc	Scenic Rim Koala Ecological and Community project	Weed management works on 5 private properties (120 hectares), koala surveys and koala community workshops will be conducted to: improve koala habitat, provide environmental restoration, increase knowledge on population and health, improve community engagement and knowledge, and promote protection and recovery to better conserve koalas and their habitat in the Scenic Rim region.	\$194,871
Wildcare Australia Inc	Lifting capability in Koala Care and Rescue - South-east Queensland	This project will support volunteer rescue groups to lift capability in on-ground care, treatment and triage of koalas and ultimately increase koala health outcomes. The project includes: the purchase of specialised koala rescue equipment to enable the efficient rescue of sick and injured koalas so they can receive prompt veterinary care; provision of specialised training for koala carers in both adult and orphaned koala rehabilitation; and, development of education material to educate the community on identifying the early signs of disease in local koala populations.	\$57,786

Worimi Local Aboriginal Land Council	Port Stephens community-led non-invasive Koala genetic & disease study	Worimi Local Aboriginal Land Council (WLALC) will perform a non-invasive koala genetic and disease study in the Port Stephens region of NSW, building on previous efforts to provide an LGA-wide baseline understanding of the health of Port Stephens koalas. DNA extracted from scats collected by WLALC will be subjected to a range of key tests and analyses to unveil information about the individuals and identify key population dynamics processes. A comprehensive report will summarise the relevant spatial and molecular findings required to inform effective decision making and conservation actions.	\$186,110
Workways Australia Limited	Guanaba Indigenous Protected Area Koala Habitat Restoration	The project will deliver habitat restoration at the Guanaba Indigenous Protected Area (IPA), near Mount Tamborine in South-East Queensland, working alongside Indigenous bush regenerators. The local community, including pre-school children, will be engaged in educational activities about koalas and Indigenous cultural heritage. A koala habitat restoration workshop will engage community and showcase project achievements.	\$72,580

Addenda 4 – Extract
from DCCEEWS Saving
Koala Fund –
Community Grants
Round 2



Saving Koalas Fund – Community Grants Round 2

Applicant	Project Title	Proponent summary	Grant Amount (ex GST)
Armidale Tree Group Incorporated	Dumaresq Habitat Reconstruction	This project will see 30 hectares of koala habitat reconstructed or restored in the Dumaresq, Armidale region, a designated New South Wales 'Area of Regional Koala Significance.' The project will rebuild koala habitat, which was destroyed during a natural disaster in 2021, while also building biodiverse woodland patches which will benefit not only threatened koalas, but also declining woodland birds in the local area. The project will see 15,000 native tree and shrub seedlings propagated and planted, with 2000 of these seedlings planted by local volunteers. The habitat plantings will also create key linkages to other ecological plantings in the wider area, which will help to facilitate safe movement by koalas for breeding and foraging.	\$199,174
Australian Trust for Conservation Volunteers	Connecting Koalas in Queensland and NSW primary habitat areas	This project will assist private landholders and local communities in their efforts to restore and rehabilitate the habitat of koalas. Through our support, the project aims to increase the range and movement of local koala populations, improving their capacity to thrive. Our focus is on facilitating the movement of koalas across two strategic population areas in Northern Rivers NSW and Campbelltown NSW by developing corridors. The main elements of the project will be planting 2750 koala food and habitat trees, completing 20 ha of weed control targeting Weeds of National Significance and engaging the public through on-ground planting events.	\$197,000
Brisbane City Council	Whites Hill and Bulimba Creek Corridor - Koala Habitat Restoration	The project will revegetate 4.7 ha of degraded area adjoining existing koala habitat areas with known koala populations. The proposed revegetation areas have limited canopy trees and are currently overrun with dense exotic grass preventing ground movement of koalas and most other fauna species. These areas have some isolated koala food/habitat trees, currently inaccessible due to ground stratum being dominated by weeds. Through active and ongoing weed management and the associated revegetation works, this project will increase the amount of koala food trees and habitat trees, improve the bio condition of the area and the adjoining areas, and increase fauna movement potential throughout the corridor.	\$186,323
Clarence Landcare Inc	Gumbayngirr Youth - Koala Habitat Restoration	Clarence Landcare will work with the Gumbayngirr Koala Junior Ranger 'Team' to rehabilitate koala habitat on 17 ha of school grounds. The team will meet monthly to increase their knowledge of koalas and plan how the koala events will be delivered. Awareness of the South Grafton hill koala population will be raised through school events (x2) and events aimed at urban fringe neighbours (x2). Local Gumbayngirr cultural connection with the koala will be interwoven throughout the project, such as a cultural burn to assist in habitat repair, a koala dance by the student dance troupe, and the Two Koala Brothers songline. Adjoining rural and residential landholders will be engaged to plan improved koala habitat and connectivity.	\$140,737
Dungog Common Recreation Reserve Land Manager	Connecting Koala Habitats to the Dungog Common	Dungog Common is culturally significant to the Gringai people. Through traditional land management practices such as cultural burns, the project will improve the quality of koala habitat on this 650-acre (263 hectare) reserve. It will employ and enable members of the Karuah Aboriginal community to reconnect to country by restoring a more resilient native vegetation cover on the lands. A working group will be established comprised of key local stakeholders and agencies. Activities include infrared drone surveys, game camera monitoring and vegetation surveys to inform locations and management approaches of high priority to koala habitats. Finally, the project will build on existing on-ground programs at the Common and on adjacent freehold and Crown lands.	\$200,000
Ecollaboration Ltd.	Sunshine Coast Koala Habitat Connections	Eumundi Conservation Park is an identified Koala Priority Area and Core Koala Habitat according to the South East Queensland Koala Conservation Strategy 2020-2025. Key project activities include habitat restoration, species monitoring, evaluation, and community education. The outcomes for this project include: monitoring koala populations and their resilience; monitoring pest species; protecting and restoring the natural habitat (weed control and natural regeneration); community engagement and education; and engaging surrounding landholders and community members to report koala sightings through our KoalaWatch Citizen Science program. Benefits include improved biodiversity, increased koala populations and greater community engagement.	\$147,864



Applicant	Project Title	Proponent summary	Grant Amount (ex GST)
Friends of Parks Queensland Incorporated	Pine Ridge Conservation Park Community Koala Habitat Project	The Friends of Pine Ridge Conservation Park aim to add to the area of core koala habitat within the Gold Coast region by planting 15, 000 koala food and shelter trees within Pine Ridge Conservation Park. This 30 000 square metre planting will allow for the local community to become heavily involved in koala conservation by helping to provide and care for trees that will provide habitat for koalas for decades to come. An emphasis will also be placed on collaboration with other conservation groups within the Gold Coast and the Traditional Owners of the park. Vital habitat extensions like this will help to ensure the security of koala populations for years to come.	\$58,478
Gold Coast City Council	Assisted regeneration and weed control at Lower Beechmont Conservation Area	This project is an assisted regeneration and weed control project at Lower Beechmont Conservation Area. The site is 13.17 Ha in size and can be described as acacia regrowth dominated by environmental weeds. The site is identified as a state priority koala rehabilitation area with a well recorded local koala population. The project aims to improve koala habitat within the city's Clagiraba to Moreton Bay Critical Corridor, reduce further degradation of surrounding landscapes by preventing further spread of ecological weeds, and complement the already significant investment made by the city to restore this conservation area.	\$197,550
Gomaren and Doctors Creek Catchment Landcare Group	Gomaren & Doctors Creek Catchment Landcare Group - Bring Koala's Back	Koalas form part of our local community and over time have been impacted by clearing, drought, predation, and road fatality. Our group wants to raise awareness of koalas, record/map available habitat and whereabouts and encourage/assist landholders to restore/ improve current koala habitat areas. We want to bring koalas back to our catchment area. This project aims to improve connectivity of koala habitat in the Gomaren & Doctors creek catchment area by planting a target of 3,000 food trees, creating and linking wildlife corridors, removing lantana infestations, provision of ongoing operational support post project end date, providing education and gathering up-to-date information about habitats and sightings.	\$110,803
Kingfisher Environmental Consultancy Pty Ltd.	Cherry Tree to Busby's Flat post-fire koala connectivity project	Following the devastating fires of 2019, unburnt areas within the Rappville fire footprint have a heightened role in helping repopulate koalas across the fire-affected landscape. Committed landholders at Deep Creek on the NSW Richmond Range are embracing their role as koala habitat stewards by undertaking a weed control and fire management project which aims to enhance the quality, extent and availability of unburnt habitat to resident koalas. By working with other landholders downstream along Busby's Creek the groups aim to improve knowledge of koala patches and connectivity and promote further restoration work to restore and protect connectivity and enable the dispersal of animals into burnt areas as they recover.	\$197,313
Koala Action Gympie Region Inc	Preserving the viability of wild koala populations in the Gympie Region	This project will improve koala habitat extent, quality and connectivity by planting at least 3,500 trees covering an area of approximately 4 hectares in the Mary Valley region on various private properties. The project will also analyse data on koalas in the Gympie region, using information from our current drone surveys, additional surveys to be done with this grant and 3 years' worth of data collected via Gympie Regional Council's citizen science based Wildwatch program to look at the health and genetic diversity of our local koala populations. Our overall aim is to develop a plan for future activities to keep koalas healthy and living in the wild.	\$181,904
Landscapes Queensland Limited	Purga Creek Koala Corridor- creating landscape connectivity for koalas	The Purga Creek Koala Corridor project will create new koala habitat and improve the quality and connectivity of existing koala habitat along Purga Creek. Most of this creek corridor is within a Koala Priority Area which connects to the Flinders Karawatha Corridor - the largest remaining contiguous stretch of open eucalypt forest in South East Queensland. The project will involve fencing off restoration areas, treatment of invasive weeds along a stretch of riparian zone, revegetation of adjoining floodplain and assisted regeneration of over a hectare of freshwater wetland. This work should also benefit other threatened species recorded in the vicinity including Powerful Owl, Glossy-black Cockatoo, Yellow-bellied gliders and Greater Gliders.	\$179,170
Local Land Services (Greater Sydney)	Caring for Country, Caring for Koalas	Using traditional cultural knowledge and practice with contemporary land management approaches, this project encourages participation and leadership from Traditional Owners and First Nations peoples of southwest Sydney, to continue and reclaim Caring for Country skills to protect and care for koalas, including using cultural fire. As stage 1 of a longer-term (10 year) goal, the aim is to improve the extent and quality of 'Koala Country' by restoring health and balance to several connective corridor sites in southwest Sydney. Through a multidisciplinary cross agency / land management partnership, activities will be co-designed by First Nations Elders and Knowledge Holders, seeking to build capacity and confidence in local First Nations peoples in conserving koalas.	\$200,000
Millmerran Landcare Group Inc	Enhancing and Protecting Millmerrans koalas	To counteract the damage that development, weed and pest incursion, mismanagement and overclearing has had on koala habitat and other native species, we intend to work with private rural landholders enhancing existing native vegetation to increase its quality, as well as incorporate new plantings into areas that have low connectivity between native vegetated areas with known koala presence. Various methods will be used including new plantings, weed and pest control, and wildfire abatement, as well as baseline and follow-up monitoring.	\$112,500



Applicant	Project Title	Proponent summary	Grant Amount (ex GST)
Moreton Bay Regional Council	House Mountain Range Koala Corridor Habitat and Connectivity Enhancement	This project will enhance koala habitat and connectivity through the House Mountain Range Corridor with a focus on the Brian Burke Koala Nature Refuge (269 ha) and McDowalls Road Reserve (45 ha). Thermal drones will be used to map the koala population across both reserves (314ha). In addition, remote sensing technologies will map lantana thickets across both reserves to inform strategic assisted regeneration works across the 314ha project site . A key outcome of this assisted regeneration work is to improve the habitat available to the koala population of the corridor. In addition, the works will improve the connectivity of the corridor to support residential, immigrating and migrating koalas and other native fauna.	\$173,713
Ngiyambandigay Wajaarr Aboriginal Corporation	Dunggirr Wajaarr Darruyamba (making good koala country))	This is an Aboriginal led project between Ngiyambandigay Wajaarr (Coffs Harbour) and Jannymili Bawrungga Rangers (Bowraville) who will be undertake a range of activities with private and public land holders to improve and enhance koala habitat/corridors across the Gumbaynggirr traditional land. The activities will range from using traditional knowledges and Western Scientific principles that will see traditional owners and non-Aboriginal landholders work closely in partnership to support koala conservation. The outcomes will lead to a range of outcomes including reduction of noxious weeds impacting koalas ; extending and improving existing koala corridors and cross-cultural knowledge sharing and relationship building.	\$185,350
Noosa And District Landcare Group Inc	Using Applied & Citizen Science for targeted Koala conservation in Noosa	On-ground koala habitat protection and enhancement rely on sound scientific understanding of habitat utilisation, koala distribution and highest priority actions. This project proposes to harness all available local resources and expertise to enhance onground planning and actions through advanced habitat connectivity analysis utilising upgraded fine scale vegetation mapping; recently acquired and new thermal drone koala population data; and boosted citizen science records (using a new digital platform and community awareness material). 6000 trees will be planted, all koala records garnered will be directly fed into Wildnet and information collated used immediately in Council's Environmental Levy land acquisition planning.	\$116,023
R&M Wiseman Investments Pty Ltd	Allambi Retreat Koala Habitat Protection and Expansion	This project will rehabilitate 107 acres (43 hectares) of known koala habitat at Allambi Retreat, located in the Cedar Creek region of Brisbane. There is an active koala population at Allambi Retreat, which borders the McDowalls Road reserve and forms part of an existing Habitat Corridor that links the Reserve to Cedar Creek. We will create a sanctuary for our local koala population by continuing to remove invasive weeds , planting koala food trees and creating fire breaks. In collaboration with researchers, this project will increase the core koala habitat in the area using strategic plantings to build a safe, sustainable habitat that will enhance the local koala population's ability to thrive.	\$174,240
Richmond Landcare Incorporated	Koala Connect: Habitat Restoration and Connectivity Project	This project aims to restore and connect koala habitat in the Lismore and Ballina shires. It supports landholders in enhancing and expanding habitat and connectivity through tree planting, weed control and targeted threat management. Koala-focused workshops for landholders on habitat restoration and management will also be facilitated. The project's goal is to improve the health and resilience of the local koala population and help ensure their long-term survival. The project is supported by various organizations and will incorporate input from the local First Nations people.	\$200,000
Save Mt Lofty Inc	Toowoomba Region Koala Habitat Project	Our project will promote the restoration of koala habitat in three specific areas, being areas of potential koala habitat replanting and conservation within the South East Queensland Koala Mapping area. Our project will verify the veracity of existing koala habitat mapping using thermal drone imaging technology. We will then review potential identified areas for potential future koala habitat planting restoration areas. Our project will then work with identified landholders to plant and maintain suitable koala habitat with the assistance of project volunteers from our Toowoomba Region Koala Count. All project activities will be documented via our project website and social media to encourage further local landowner koala habitat corridor restoration.	\$120,889
Scenic Rim Regional Council	Saving Koalas through community action in the Scenic Rim	The saving koalas through community action in the Scenic Rim project is a conservation and recovery effort to improve the trajectory of koalas through three key activities: community action, applied research and ecological restoration. It will deliver a coordinated, region-wide community citizen science effort to collect koala scat. Analysis of this scat will deliver necessary information and knowledge on koala populations and health within the Scenic Rim, facilitating strategic, evidence-based conservation decision making. Ecological restoration work will also be delivered in a strategic, high priority location to improve the quality and connectivity of koala habitat.	\$179,450



Australian Government

Department of Climate Change, Energy,
the Environment and Water

Applicant	Project Title	Proponent summary	Grant Amount (ex GST)
Science For Wildlife Limited	Koalas and climate change: managing fire refugia and restoring habitats.	There are nationally important koala populations in and around the Greater Blue Mountains World Heritage Area. Understanding where koalas are distributed and then mitigating multiple threats including bushfires, climate change and habitat loss are vital for effective conservation. This project will a) assess undocumented koala colonies, their habitat use and connectivity with other populations within a potential climate refuge b) build on post-fire koala occurrence data across diverse habitats to inform the management of fire refugia and c) implement community engagement and koala habitat restoration activities. Outcomes include cross-tenure actions to improve the extent, connectivity and quality of habitat for several koala populations.	\$198,017
Sunshine Coast Council	Saving Sunshine Coast Koalas – Gathering knowledge in the wildy unknown	This project aims to fill identified knowledge gaps in the distribution, abundance, health and diet of koala populations within the Sunshine Coast Council (SCC) region so that local recovery efforts can be strategically targeted to efficiently achieve maximum on-ground impact. The project will also extend koala landscape and genetic connectivity by adding to an existing koala restoration project on Council managed reserve and work towards landscape connectivity through engagement with private landholders and traditional owners at a workshop and a separate koala planting day on covenant-protected private land.	\$199,231
Sutherland Shire Council	Sutherland Shire Koala Habitat Restoration	Sutherland Shire is home to a growing population of healthy koalas. To date, 156 individual koalas have been recorded on Council, State and National Park land, predominantly in the tall, open sclerophyll forests of the Woronora Valley. This project will improve the extent, quality, and connectivity of koala habitat by controlling weeds in critical koala habitat; improving and extending koala habitat by planting preferred food tree species where koalas are known to occur and implementing a public engagement/ education strategy to reduce human-koala conflict e.g. managing dogs off-leash in koala habitat.	\$200,000
The Coastwatchers Association Incorporated	Eurobodalla Koala Recovery Project	The project encourages revival of the local koala population. It will enhance knowledge of home ranges and connectivity corridors across private properties, state forests and national parks in a landscape where koalas were regularly seen until the mid-20th Century but now only has rare sightings. A thermal drone survey will search for remaining koalas and map residency and movement patterns, matched to topographic, vegetation and other habitat factors. Plantings of high use NSW South Coast koala tree species will be strategically placed to make home ranges and connectivity corridors resilient in the face of climate change and urban development pressures.	\$200,000
Watergum Community Inc	Urban fringe community driven Koala Conservation	Urbanisation, drought, bushfires and an ever-expanding urban footprint has allowed Gold Coast and Scenic Rim edge koala populations to be under intense pressure. Koala habitat is scarce, hence why creating and maintaining suitable koala corridors and highways is more important than ever. Project activities will include weed management works on 10 private properties and reserves (200 hectares), creating a community Eucalyptus ID resource, wildlife carers fodder farm maintenance and scat analysis. These actions will help to improve koala habitat, provide environmental restoration, increase knowledge on population and health, improve community engagement and knowledge, and promote protection and recovery to better conserve koalas and their habitat.	\$199,600
Wild Mountains Limited	Wild Mountains Koala Bushland Restoration Program	In line with the National Recovery Plan, Wild Mountains will strategically restore 40 ha of bushland by ridding it of weeds that severely inhibit the on-ground movement of koalas, prohibit regeneration and increase severe fire risk. We will conduct a slow burn to reduce these weeds and open up a 1.6km overgrown track system so as to make the area accessible for spraying. We expect the weeds will reshoot with summer rain. A professional contractor will spray weed regrowth in the 23-24 summer with follow-up spraying in the 24-25 summer. The benefit of the project is maintaining a koala corridor of contiguous forest with a grassy understory and native shrubs allowing for unhindered movement for koalas, natural tree regrowth while reducing the damaging fire hazard.	\$195,865

Addenda 5 – DCCEEW Newsletter Regarding the Recovery of Koala Habitat in Central Queensland



Koala conservation builds momentum in Central Queensland

[CASE STUDY](#) (/ABOUT/NEWS/ALL?F[Q]=TYPE:1870)

[THREATENED](#) (/ABOUT/NEWS/ALL?F[Q]=TOPIC:1857)

24 March 2025

Central Queensland is an important hub for koalas.

Historically, it has been considered a koala refuge.

Unfortunately, local koala populations are in decline. This is mainly due to land clearing and the fragmentation of their habitat.

Queensland's Natural Resource Management (NRM) organisations are working to reverse this trend, supported by our [Saving Koalas Fund](#) (/environment/biodiversity/threatened/species/koalas/saving-koalas-fund).

Reef Catchments NRM are helping local landholders to tackle the invasive weeds in the Sarina region, near Mackay.

Introduced weeds like lantana and guinea grass choke out native trees such as the eucalypts our koalas live in.

They also pose a significant fire threat.

Luckily enough we have supportive landholders who are removing the weeds and planting koala food and habitat trees.

They are creating koala-friendly corridors and improving the existing koala habitat.

Thank you to the Sarina community. The project could not have succeeded without their strong commitment to building and maintaining connected landscapes for koalas.

Further south, the Fitzroy Basin Association (FBA) is working with landholders to restore and protect koala habitat in the Clarke-Connors Range.

The range has a significant koala population.

Over the last few years FBA has worked with passionate land managers and a local koala advisory group.

The goal: to better understand the area's koala population and habitat.

Weeds aren't just a nuisance to us. They're another serious threat to koalas in the Clarke-Connors Range.

These invasive plants take over their habitat, destroying the native vegetation koalas rely on for food and shelter, making survival even tougher for them.

Controlling the weeds helps the koala to move around in the landscape and for native koala-friendly species to grow.

A shout out to the graziers who have played a significant role in this success story.

This results from their willingness to improve the health of their local environment for both their businesses and koalas.

Read more

[Koala recovery case studies](#) (/environment/biodiversity/threatened/species/koalas/national-koala-recovery/case-studies)

Addenda 6 – NSW
Government
Biodiversity
Conservation Trust
News Release on the
Benefits of Lantana
Management

Clearing the way for koalas, removing lantana infestation on Northern Rivers property

13 Aug 2025

Biodiversity

When Barbara Linley purchased her Tullymorgan farm in the Northern Rivers region of New South Wales, her goal was to preserve its natural beauty. But the unexpected discovery of koalas quickly brought a major challenge into focus—an extensive lantana infestation, covering about 80% of her property.

Lantana, one of the world’s top ten invasive species, impedes koala movement, limits access to essential food trees, and increases the risk of bushfires by acting as a fuel ladder, carrying flames into tree canopies.

Determined to protect her land and the koalas that live there, Barbara entered into a private conservation agreement which covered approximately 51 hectares of her farm. Through a conservation agreement, Barbara secured up to \$45,000 in funding to help clear weeds like lantana and enhance the quality of koala habitat on her property.

This initiative, a collaboration between the World Wide Fund for Nature-Australia (WWF-Australia), the NSW Department of Climate Change, Energy, the Environment and Water, the NSW Biodiversity Conservation Trust, and Envite Environment, has exceeded its target of protecting 500 hectares. Over 900 hectares of koala habitat have been secured, with more agreements still in the works.



For Barbara, the funds allowed her to make remarkable progress. She worked with local contractor, Lola Topsom to remove the lantana. Together, they revealed some of the property’s rich biodiversity, like a towering eucalypt tree believed to be over 500 years old, previously concealed by lantana and evidence of native species using the land such as powerful owls, little bent-wing bats and yellow-tailed black cockatoos.

Barbara also removed cattle being agisted on her farm and Envite Environment planted 1,000 new koala trees to reconnect fragmented habitat.

Tanya Pritchard, Senior Manager Koala Recovery for WWF-Australia, said private landholders are playing a crucial role to help the recovery of koalas.

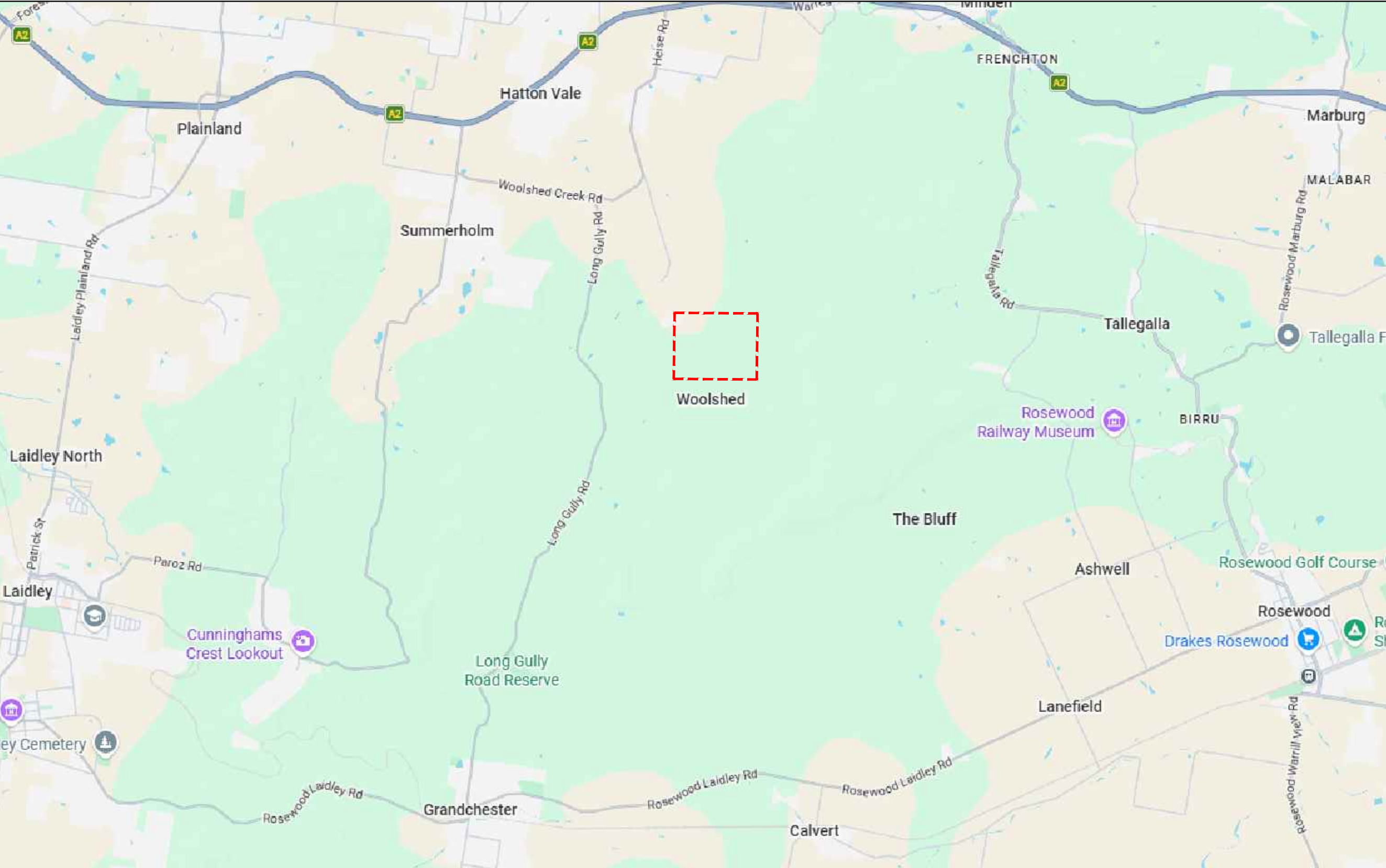
“More than 50% of remaining habitat for koalas is on private land, so landholders such as Barbara are a critical for koalas long-term survival,” Tanya said.

“Supporting landholders to enter a private conservation agreement and assisting with restoration costs will ensure these areas are protected as high-quality habitat for future generations of koalas and other wildlife species,” she said.

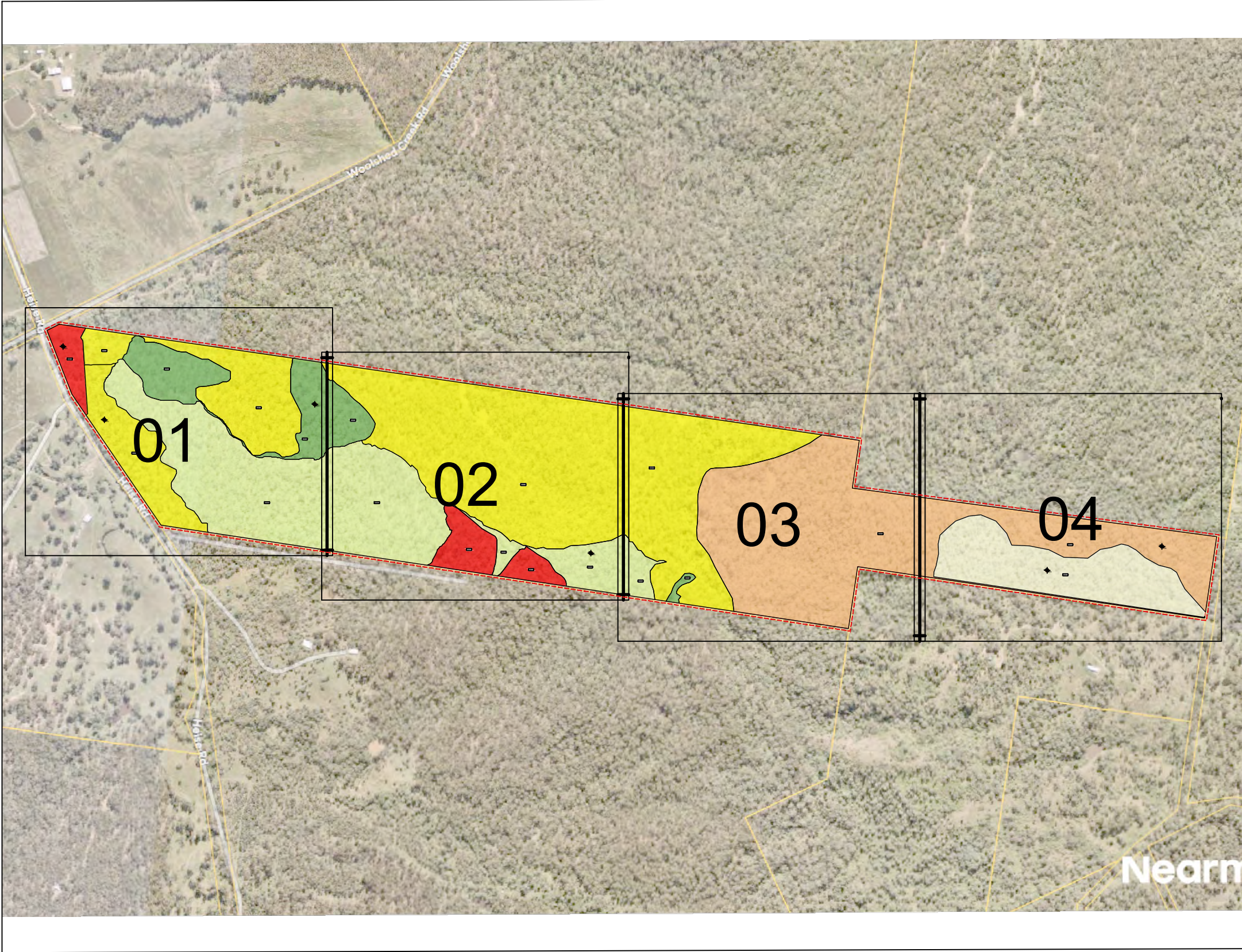
Attachment 4 – Woolshed Offset Rehabilitation Management Plan

2019-100e - WOOLSHED OFFSET SITE

Offset Site 1 Rehabilitation Management Plan



SITE CONTEXT PLAN (NTS) 

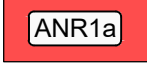
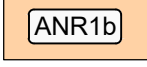
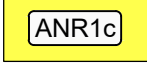
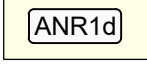
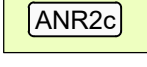
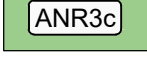


KEY PLAN (NTS) 

DRAWING REGISTER

Drawing Number	Title	Revision
2019-100E-OS1-100	Cover Sheet Plan	C
2019-100E-OS1-101	Background and Purpose	C
2019-100E-OS1-102	Rehabilitation Notes	C
2019-100E-OS1-103	Management Unit Schedule	C
2019-100E-OS1-104	Weed Mangement Schedule & Rehab Schedule	C
2019-100E-OS1-105	Plant Schedule	C
2019-100E-OS1-106	Plant Schedule	C
2019-100E-OS1-401	Rehabilitation Mangement Plan	C
2019-100E-OS1-402	Rehabilitation Mangement Plan	C
2019-100E-OS1-403	Rehabilitation Mangement Plan	C
2019-100E-OS1-404	Rehabilitation Mangement Plan	C
2019-100E-OS1-901	Details	C

LEGEND

-  EXTENT OF WORKS
-  ASSISTED NATURAL REGENERATION - TYPE 1a
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 1b
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 1c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 1d
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 2c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 3c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  PHOTO MONITORING POINT LOCATION

The spatial data referenced has been obtained from a variety of verified and licenced sources as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DOR repositories QImagery and QGlobe.

Use figured dimensions in preference to scaled. Notify the Ecologist/ Ecological Designer before proceeding if any anomaly is found between this drawing and conditions on site. Location of existing services are indicative only, verify on site prior to commencing works.

Issue	Date	Details	Approved
A	24.03.26	FOR REVIEW	CP
B	16.07.26	OMP VERSION	CP
C	18.08.26	OMP VERSION	CP

Client:
SUTGOLD

Contact Name:
Client Address:

Consultants:

A L2, Cameron House 354 Brunswick Street,
Fortitude Valley, QLD 4006
E projects@28South.com.au

28°S
ENVIRONMENTAL

Project:
**2019-100e
WOOLSHED - RMP
OFFSET SITE 1**

Designed by:	Drawn by:	Checked:
CM	JC	CP

Drawing Title:
COVER SHEET

Issue Detail:
OMP VERSION

Sheet No.:
Page 1

Issue:
C

Rehabilitation Approach and Goals

Cherish as Offset Provider shall undertake all works. Where works are undertaken by others under instruction from Cherish, reference to 'Cherish' shall be taken to also refer to the contracted entity.

GENERAL NOTES

Refer any discrepancy, ambiguity or inconsistency to the superintendent before proceeding with the work.

All works described in these specification notes and on the drawings shall be carried out by Cherish. Any works required by regulation or law to be carried out by others shall be engaged by Cherish. Cherish shall pay all fees and charges for such works.

All stout on site to be confirmed prior to construction.

SET-OUT

All setout is shown indicatively only and to be confirmed on site. Setting out all works is to be in accordance with the drawings. Cherish as offset provider shall be responsible for the accuracy of the whole of the works during their progress and make good any errors caused by negligence or poor workmanship.

SAFETY

Cherish shall develop safe work method statements and safety plans for all works to ensure that work site complies with all requirements from health authorities and WHS requirements.

SERVICES

Cherish shall make themselves aware of all underground and overhead services prior to commencement of works. The Rehabilitation Contractor shall also be responsible for determining the locations as-built and to be constructed services during the works. The locations of services on these drawings are indicative only.

SEDIMENT AND EROSION CONTROL:

The rehabilitation contractor must install silt control fencing as required on site, to prevent soil material from entering the water courses, dams, and other water bodies. Sediment and erosion control measures should be implemented in accordance with IPWEA standard drawings. It should be noted that it is the responsibility of the engaged contractor to comply with the erosion and sediment control measures and if necessary, identify where further measures could be installed within rehabilitation zones to assist in the avoidance, minimization and mitigation of soil loss.

CONTRACTOR QUALIFICATIONS

Rehabilitation works should be carried out by qualified and experienced Bush Regeneration Contractors. Contractors will need to provide a Commercial Operators licence. Employees and Contractors applying pesticides in Queensland are obliged to have a Commercial Operators Licence, (ACDC licence) issued under the *Agricultural Chemicals Distribution Control Act 1966 (Qld)*. This will also mean that Contractors have to demonstrate compliance with Occupational Health and Safety laws as well as environmental and heritage protection legislation. Bush Regenerators must comply with the requirements of the *Workplace Health and Safety Act 2011 (Qld)*. Bush Regeneration Contractors should also obtain all relevant permits required under State and Commonwealth legislation (e.g. *Nature Conservation Act 1992 (Qld)*, *Fisheries Act 1994 (Qld)*, *Vegetation Management Act 1999 (Qld)* and *Biosecurity Act 2014 (Qld)*). Contractors must also be aware of and adhere to cultural heritage protection obligations under the *Aboriginal Cultural Heritage Act 2003 (Qld)* and where chemicals are in use, the *Agricultural Chemicals Distribution Control Act 1966 (Qld)*.

FIRE ANT MOVEMENT CONTROLS

To prevent the spread of fire ants, the Queensland Government has implemented controls that apply to individuals and commercial operators, to restrict the movement of materials that could carry fire ants including soil, turf, potted plants, mulch, baled hay or straw, animal manures mining or quarry products.

Penalties apply for non-compliance with the movement controls. If the engaged contractors are unsure of their obligations under the *Biosecurity Act 2014 (Qld)* they must contact the relevant Queensland State Government Department.

CONTROLLING DOMESTIC PETS AND WILDLIFE

It is important to exclude domestic pets and wildlife from Management Units during the formative periods of the restoration efforts. This will help avoid the loss of tube stock or regenerating vegetation from being impacted and or loss through foraging.

RUBBISH REMOVAL

The Rehab Contractor is to ensure all areas identified in this drawing package are free of rubbish and debris. Any rubbish or debris on site as a result of adjacent construction works, dumping or public use shall be removed within 10 business days following notification from the Superintendent.

MONITORING

Monitoring to demonstrate compliance in achieving the Success Criteria of this plan will be carried out via the annualised monitoring procedures defined within Section 6.8 of the overarching Offset Management Plan.

Monitoring described within this section is to assist in the scrutiny of day-to-day works carried out within this plan. This is not a part of annual reporting obligations, though data from such day-to-day works monitoring can be used within annual compliance reports where necessary.

Monitoring locations must remain consistent throughout the implementation period and be supported by repeat photographic records.

- Photographs shall be taken in directions of true north, east, south and west at each monitoring site.
- The plot should be marked with star pickets and a yellow safety cap securely fixed for ease of identification in the field. All works and chemicals used should be logged and documented as part of the Monitoring Program.

Monitoring will be defined by three distinct periods:

- Establishment Period
 - 3 Month reporting
- Maintenance Period Years
 - 6 Month reporting
- Ongoing Maintenance Period
 - 12 Month reporting

Monitoring should incorporate the matters described within this plan to track progress towards the Success Criteria of this RMP (however this monitoring is not to inform compliance within annual reporting, but instead assist Cherish and all other parties involved determine ongoing management methods).

Monitoring Data Collection Requirements

The following information must be collected during monitoring events and included in progress reporting:

- Survival and condition of planted vegetation, including an estimate of the number of dead or declining plants;

- Number and species of replacement plants installed since the previous monitoring event;
- Estimated percentage weed cover within each ANR area and management unit;
- Extent and density of natural regeneration within each ANR area and management unit;
- Photographic records from established permanent photo monitoring points;
- Evidence of weed treatment effectiveness and any follow-up actions undertaken;
- General observations regarding vegetation health, site condition and restoration trajectory; and
- Recommendations for corrective actions or adaptive management measures where required.

Monitoring results should be used to assess progress toward the Success Criteria, and inform any necessary adaptive management responses.

Refer to the Monitoring and Evaluation Checklist

The restoration contractor should develop a pro-forma for the collection of relevant monitoring information during all events to ensure consistency and comparability between surveys. Where actions are required to address instances of non-compliance or plant failure, corrective actions are to be implemented by the rehabilitation contractor. Refer to Corrective Actions detailed in the specification below.

SUCCESS CRITERIA

Successful Natural Regeneration parameters within the rehabilitation areas must reflect the following:

- An average of:
 - 1 native plant per 1m² across the ground stratum of the MU
 - 1 native plant per 5 m² across the shrub stratum of the MU;;
 - 1 native plant per 10 m² across the sub-canopy stratum of the MU;
 - 1 native plant per 10 m² across the canopy stratum of the MU; or
 - at a density representative of the defined in the REDD. Native sedges species and other native emergent macrophytes can be considered as plants within each RMU;
- Will be assessed through annualised reporting procedures to track progress in achieving interim habitat quality gains (see **Offset Management Plan, Section 6.7 and Section 6.8.3**).
 - The acceptable target for rehabilitation within all Management Units is 90% success rate of all planted tubestock following a comprehensive planting, monitoring and maintenance during the rehabilitation stage
- Will be assessed through annualised reporting of habitat quality gains (see **Woolshed Offset Management Plan, Section 6.8.3**), though internal monitoring /reporting defined in the Works/monitoring Checklist can assist in tracking success.

This will assist in achieving compliance with the overarching Woolshed Offset Management Plan by:

- 95% overall reduction in area compared with the baseline extent of WoNS and weeds listed under the Biosecurity Act 2014 (**Woolshed Offset Management Plan, Attachment 2**).
- Will be assessed through annualised reporting procedures to track progress in weed reduction against baseline data (see **Offset Management Plan, Section 6.2 and Section 6.8.1**)
 - Achieving interim habitat quality gains (see **Offset Management Plan, Section 6.7 and Section 6.8.3**).

MAINTENANCE

The minimum following maintenance measures are required to be undertaken by the engaged restoration contractor:

- where specified, planting areas must be regularly watered for a period of 4-6 weeks or as deemed necessary by the contractor to ensure establishment is successful;
- recurrent listed WoNS and Biosecurity Act 2014 pest plants within the Management Units are to be removed (weed management measures are outlined within the Weed Management Table and as per the South East Queensland Ecological Restoration Framework;
- all fallen debris and hollow logs are to be retained in situ to retain terrestrial microhabitats; and
- hollow-bearing limbs and suitable hollow logs removed during operational works must be salvaged and relocated into the Management Units to enhance the microhabitats available within the Site; and
- all stock planted within the Management Units area must be replaced as required to maintain a minimum of 1 native plant per m² across each Management Unit or as indicated in the plant schedule.

CORRECTIVE ACTIONS

The following corrective actions are to be implemented in instances of non-compliance with the success criteria:

- If retained trees show signs of ill health (i.e. dead or poor health):
 - o An arborist is to be engaged to identify likely causes and to recommend mitigation measures to improve regeneration conditions.
 - o Cherish will engage a suitably qualified professional to identify the likely cause of health decline and apply recommended mitigation measure/s to improve growing conditions (as recommended by the suitably qualified professional).
 - o Remove ill or dead plantings, within six months of detection and undertake any remediation works and re-establishment planting.
- Where plant failure of >10% of the planted stock occurs during the establishment period:
 - o Supplementary planting will be undertaken within six months or the next appropriate planting period (whichever comes first) of detection.
- Should the planting fail again, within one month of detection, Cherish is to engage a suitably qualified professional to identify the likely cause of plant failure.
- Apply recommended mitigation measure/s to improve growing conditions (as recommended by the suitably q qualified professional).
- Where weed re-establishment occurs, additional treatment and removal works are to be instigated:
 - o Within three months of detection, noting that treatment during non-growth periods may be ineffective and are best targeted during growth periods for greater effectiveness treat all WoNs and Category 3 (Restricted) Biosecurity Act 2014 weeds with methods to avoid impacts to restoration works (mechanically or chemically dependent on circumstances).
 - o Within 3 months of detection undertake an investigation of the potential source point of seeding.
 - o Within six months of detection undertake additional treatment and removal works are to be followed up during the next potential growth period to avoid regeneration and potential seeding events.
 - o If evidence of excessive spraying exists or if off-target damage is evident, further restoration will be required to the satisfaction of the Approval Authority.
- Where planted specimens within the establishment and monitoring period (i.e. 48 months) fail to strike:
 - o Supplementary planting will be undertaken within six months or the next appropriate planting period (whichever comes first) of detection.

- Should the planting fail again, within one month of detection, Cherish is to engage a suitably qualified professional to identify the likely cause of plant failure.
- Apply recommended mitigation measure/s to improve growing conditions
- Where growth rates are not as expected (following BioCondition / MHQA assessment at years 1, 3, 5, 7, 9, 11, 13, 15, 17 ,19):
 - o within three months of detection engage a suitably qualified professional to review the plantings and advise on methods to increase growth rates through other interventions.
 - o within three months of detection undertake soil testing to determine what rate of soil ameliorants or fertilizers may be required to improve the chemical balance of the soils for improved plant growth.
 - o within 12 months of detection revise management plan for rehabilitation revise management actions for the offset.
 - o within 24 months of detection if the corrective actions have not amended the slowing Discuss with the Department to negotiate changes to timeframes to meet the completion criteria.
- Within 12 months of discussing growth rates with the Department Revise the OMP and submit to Minister for approval.
- Where growth rates are not as expected (following establishment monitoring Year 0 - Year 5 post planting):
 - o within three months of detection engage a suitably qualified professional to review the plantings and advise on methods to increase growth rates through other interventions.
 - o within three months of detection undertake soil testing to determine what rate of soil ameliorants or fertilizers may be required to improve the chemical balance of the soils for improved plant growth.
 - o within 12 months of detection revise management plan for rehabilitation revise management actions for the offset.
 - o within 24 months of detection if the corrective actions have not amended the slowing Discuss with the Department to negotiate changes to timeframes to meet the completion criteria.
 - o within 12 months of discussing growth rates with the Department Revise the OMP and submit to Minister for approval.

FIRE ANT MOVEMENT CONTROLS

To prevent the spread of fire ants, the Queensland Government has implemented controls that apply to individuals and commercial operators, to restrict the movement of materials that could carry fire ants including soil, turf, potted plants, mulch, baled hay or straw, animal manures mining or quarry products.

Penalties apply for non-compliance with the movement controls. If the engaged contractors are unsure of their obligations under the Biosecurity Act 2014 (Qld) they must contact the relevant Queensland State Government Department.

CONTROLLING DOMESTIC PETS AND WILDLIFE

Domestic pets will be excluded from the offset site. Feral herbivores which may damage the offset area (pigs, deer etc) will be actively controlled during the 20 year offset period).

RUBBISH REMOVAL

The Rehab Contractor is to ensure all areas identified in this drawing package are free of rubbish and debris. Any rubbish or debris on site as a result of adjacent construction works, dumping or public use shall be removed within 10 business days following notification from the Superintendent.

The spatial data referenced has been obtained from a variety of verified and licenced sources as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DOR repositories QImagery and QGlobe.

Use figured dimensions in preference to scaled. Notify the Ecologist/ Ecological Designer before proceeding if any anomaly is found between this drawing and conditions on site. Location of existing services are indicative only, verify on site prior to commencing works.

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A	24.03.26	FOR REVIEW	CP
B	15.07.26	OMP VERSION	CP
C	18.08.26	OMP VERSION	CP

Client:
SUTGOLD

Contact Name:
Client Address:

Consultants:

A L2, Cameron House 354 Brunswick Street,
Fortitude Valley, QLD 4006
E projects@28South.com.au



Project:
**2019-100e
WOOLSHED - RMP
OFFSET SITE 1**

	Designed by: CM	Drawn by: JC	Checked: CP
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DrawingTitle:
REHABILITATION NOTES

Issue Detail:
OMP VERSION

Sheet No.: Page 3	Issue: C
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Rehabilitation Approach and Goals (Cont.)

WEED REMOVAL METHOD

All weeding should be informed by the Woolshed Biosecurity Management Plan (**Offset Management Plan, Attachment 6**) and the Woolshed Fire Management Plan (**Offset Management Plan, Attachment 7**).

However, methods within this plan can be implemented in conjunction with the Plans described above.

All environmental and declared weed tree and shrub species within the extent of revegetation area are to be treated as follows: Refer to the weed schedule for weeds encountered on site.

- a. Initial treatment:
 - Trees and large shrubs to be cut at ground level, spray immediately with water: glyphosate. Removal and chipping of the cut trunk and branches to be done off site.
 - Large infestations of woody vines to be cut at stump to ground level and left to die in place. Smaller infestations to be cut at stump to ground level and removed from host or dig out where practical.
 - Exotic groundcovers, small shrubs and saplings to be treated with foliar spray “Roundup Bioactive” or equivalent.
- b. Follow-up treatment
 - The above steps are to be repeated at monthly intervals for the duration of the maintenance period for all species within the rehabilitation area.
 - Rate of weed kill for exotic trees and shrubs must be 100% at end of maintenance period.

For Existing Weeds encountered on site refer to SEQ Ecological Restoration Framework Part 3 for weed treatment.

KEY

- G = Glyphosate 360 g/L
- MM = Metsulfuron methyl /10L = per 10L water
- CS&P = Cut, scrape and paint with: G(neat) or G(1:1.5) = 1 part Glyphosate: 1.5 parts water
- Adj = recommended adjuvant(s) (see below for ‘Spray Adjuvants’)

NOTE

- All ‘spray’ treatments infer through wetting of the target foliage to the point of run-off
- All ‘crown-out’ treatments infer complete elevation from contact with ground, composted/chipped on-site, and/or removal from site.
- ‘Inject’ infers industry standard treatment for tree weeds in environmental areas.

SPRAY ADJUVANT

L1700tm (spray adjuvant/penetrant) at 25-30ml per 10-15L AND Spray oil (adjuvant/surfactant) at 20-25ml per 10-15L i.e. Protec Oil or Spraytec Oil) OR Pulsetm at 20ms per 10L

PROTECTION OF WORKS

The Rehab Contractor shall ensure works are adequately demarcated and protected for the duration of construction. All domestic animals are to be excluded from the rehabilitation area. Ensure that only authorized personnel access the site. All existing native vegetation is not to be disturbed.

WEED SUPPRESSION

In areas where Assisted Natural Regeneration is to occur, juvenile endemic plants are to be identified trough flagging or staking. The contractor is to establish a weed suppression method around each juvenile plant to suppress weed and pasture grasses. Weed suppression can be either:

- 1m diameter 100mm layer of high-quality weed-free well composted composted forest mulch - mulch material can be sourced from cleared vegetation material if adequately seasoned; or
- 600 x 600mm jute mat square pinned down with biodegradable stakes as per detail for tubestock planting.

RE-VEGETATION PLANTING SPECIFICATION NOTES

Revegetation can only be undertaken, once suitable control of weed presence within understorey is completed. As such, timing of revegetation must be informed by the staging and timing of weed control described within the section 4.6 of the Woolshed Biosecurity Management Plan (**Woolshed Offset Management Plan, Attachment 6, Section 4.6**) and section 3 of the Woolshed Fire Management Plan (**Woolshed Offset Management Plan, Attachment 7, Section 3**).

The success criteria for rehabilitation within all Management Units is 90% success rate of all planted tubestock following a comprehensive planting, monitoring and maintenance during the rehabilitation stage (success of this will ultimately be achieved through annualised reporting of habitat quality gains (see **Woolshed Offset Management Plan, Section 6.8.3**).

Refer to the Management Unit Schedule for planting specification, planting schedules and planting details.

The following outlines planting measures for rehabilitation works:

- All Management Units are revegetated using native species of local provenance where practicable. Should species be unavailable within the planting palette tables assigned to each Management Units, the contractor should contact 28South Environmental to identify an appropriate replacement species. This should at first be sought from the Regional Ecosystems technical descriptions;
- The planting density in revegetation areas should reflect that outlined in the planting schedules for each Management Unit. This has been identified to simulate natural regeneration densities and provide a dense buffer and to function as weed suppressant. Distribution of planting densities across the management units can vary and the contractor is to allow for this across the management units at the time of planting to achieve a satisfactory outcome at the end of the maintenance period.
- Any additional native species found regenerating through the soil seed bank and the seed found in the cleared, mulched material should be retained and protected as a part of the rehabilitation maintenance;
- One fertilizer tablet should be placed in each planting hole at the time of planting. The plants should be watered in at planting and then watered weekly for the first 12 weeks following planting.
- Erosion control netting in areas of higher velocities and inundation should be coir mesh as specified and be installed as per manufacturers specification (key in trenches 200mm deep, install perpendicular to direction of flow and overlap in roof tile pattern, use min 300mm long U-shape pins at 3/m².
- Weed mats should be from Jute thick and be installed as per manufacturers specification.

WATER RETENTION ADDITIVE

Where possible watering to the rehabilitation areas should be carried out as a minimum through the first three months of the establishment period through either water truck application or temporary irrigation.

In areas not accessible or remote, Hydrocell flakes to be applied at the rate of 100ml per plant. Ensure the hydrocell is thoroughly saturated before application.

The spatial data referenced has been obtained from a variety of verified and licenced sources as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, cinlents and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DOR repositories QImagery and QGlobe.

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Issue	Date	Details	Approved
A	15.07.26	OMP VERSION	CP
B	18.08.26	OMP VERSION	CP

Client:
SUTGOLD

Contact Name:
Client Address:

Consultants:

A L2, Cameron House 354 Brunswick Street,
Fortitude Valley, QLD 4006
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Project:
**2019-100e
WOOLSHED - RMP
OFFSET SITE 1**

	Designed by: CM	Drawn by: JC	Checked: CP
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DrawingTitle:
REHABILITATION NOTES

Issue Detail:
OMP VERSION

Sheet No.: Page 4	Issue: B
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Management Unit Schedule

Management Unit Schedule				
Project Name:	Woolshed Creek Offset Area Management Plan			
Project Number:	2019-100e			
Revision:	A			
Date:	18/03/2026			
Code	Management Unit	Description	Area (m ²)	Material Specification
ANR-1a	Assisted Natural Rehabilitation Type 1a	This MU is occurs within the western portion of the offset area along the banks and immediately adjacent to a tributary of Woolshed Creek. This MU has been mapped as containing lower slope floristic components of RE12.9-10.2. This MU has a variety of invasive species occurring with including dense thickets of Lantana (<i>Lantana camara</i>), Balloon Vine (<i>Cardiospermum halicacabum</i>), Fireweed (<i>Senecio madagascariensis</i>) and other species 2-3 metres in height. The target RE for this MU is the lower slope components of RE12.9-10.2 via performing weed management activities and infill planting into gaps created by thicket eradication. The infill planting is intended to encourage the development of canopy cover and improve the integrity of the ground and shrub stratum to shade and suppress invasive species.	32,218.32	Initial and follow up weed management in accordance with the Woolshed Biosecurity Management Plan (Offset Management Plan). Infill planting of tubestock with water crystals, Weed mat 600 x 600 mm Jute (Supplier tbc), Tree guard with hardwood stake (Supplier TBC)
ANR-1b	Assisted Natural Rehabilitation Type 1b	This MU occurs within the steeper eastern portion of the lot ranging from the thinner eastern areas of the lot and spilling out from here to around the area where the lot widens. The MU occurs on steeper terrain with a predominantly northerly aspect (range is northwest to northeast) and an elevation of 210-340m AHD. Soils are predominantly chocolate brown and black clays. The vegetation present is representative of RE12.8.17 comprising Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>), Moreton Bay Ash (<i>Corymbia tessellaris</i>), Queensland Blue Gum (<i>Eucalyptus tereticornis</i>), with Pink Bloodwood (<i>Corymbia intermedia</i>) and occasionally Silver Leaved Ironbark (<i>Eucalyptus melanophloia</i>). Climbing Asparagus (<i>Asparagus africanus</i>) is a problematic canopy weed. The understory of this MU is significantly disturbed with Lantana (<i>Lantana camara</i>) dominating the shrub layer as to make an impassable thicket 2-3m in height. This Lantana infestation has suppressed much of the native canopy germination and native ground and shrub layer resilience. Climbing Asparagus is also present scrambling through the Lantana thicket. This Lantana infestation has suppressed much of the native canopy germination and native ground and shrub layer resilience. This significant infestation of Lantana (<i>Lantana camara</i>) must be removed to restore the natural community succession dynamics, allowing native ground cover and shrub species to re-colonise the site and canopy species to begin recruiting. The target RE for this MU is 12.8.17, which will be achieved by performing significant invasive species removal and infill planting where possible. The hillside can be extremely rocky and where planting cannot occur due to poor soil or impervious ground conditions to augers other solutions will need to be investigated including the spread of seed mixtures with topsoil into areas where mechanical planting will not be feasible. Infill planting will allow for increased canopy cover and ground layer and shrub layer more reflective of RE 12.8.17.	211,279.82	Initial and follow up weed management in accordance with the Woolshed Biosecurity Management Plan (Offset Management Plan). Infill planting of tubestock with water crystals where possible, Weed mat 600 x 600 mm Jute (Supplier tbc), Tree guard with hardwood stake (supplier TBC). If planting is not possible the investigation of other planting methods will need to occur. This MU will also require experimentation with different weed removal strategies as outlined in ANR-1 Assisted Natural Regeneration Type 1 – Weed Management and Infill Planting.
ANR-1c	Assisted Natural Rehabilitation Type 1c	This MU typically occurs within the lower elevations within the site and is distributed throughout the site. This vegetation is analogous with RE 12.9-10.2 with Spotted Gum (<i>Corymbia citriodora</i> subsp. <i>variegata</i>) dominating the canopy. The understory of this MU is significantly disturbed with Lantana (<i>Lantana camara</i>) dominating the shrub layer as to make an impassable thicket 2-3m in height. This Lantana infestation has suppressed much of the native canopy germination and native ground and shrub layer resilience. The Lantana (<i>Lantana camara</i>) infestations require removal and if no native germination occurs within two years of successful removal infill planting of canopy, shrub and ground cover species will be required. The target RE for this MU is 12.9-10.2.	359,929.80	Initial and follow up weed management in accordance with the Woolshed Biosecurity Management Plan (Offset Management Plan). Infill planting of tubestock with water crystals, Weed mat 600 x 600 mm Jute (Supplier tbc), Tree guard with hardwood stake (Supplier TBC)
ANR-1d	Assisted Natural Rehabilitation Type 1d	This MU occupies the rocky, steeper and most elevated (340-360 m AHD) eastern portions of the Offset Area. This vegetation present is analogous with RE 12.8.24 dominated Spotted Gum (<i>Corymbia citriodora</i> subsp. <i>variegata</i>), Narrow-leaved Red Ironbark (<i>Eucalyptus crebra</i>) and occasionally Silver-leaved Ironbark (<i>Eucalyptus melanophloia</i>). The understory of this MU is significantly disturbed with Lantana (<i>Lantana camara</i>) dominating the shrub layer as to make an impassable thicket 2-3m in height. This Lantana infestation has suppressed much of the native canopy germination and native ground and shrub layer resilience. Climbing Asparagus (<i>Asparagus africanus</i>) is a prominent canopy weed and is also present scrambling through the Lantana thicket. This significant infestation of Lantana (<i>Lantana camara</i>) must be removed to restore the natural community succession dynamics, allowing native ground cover and shrub species to re-colonise the site and canopy species to begin recruiting. The target RE for this MU is 12.8.24, which will be achieved by performing significant invasive species removal and infill planting where possible. The hillside can be extremely rocky and where planting cannot occur due to poor soil or impervious ground conditions to augers other solutions may need to be investigated including the spread of seed mixtures with topsoil into areas where mechanical planting will not be feasible. Infill planting will allow for increased canopy cover and ground layer and shrub layer more reflective of RE 12.8.24.	68,145.64	Initial and follow up weed management in accordance with the Woolshed Biosecurity Management Plan (Offset Management Plan). Infill planting of tubestock with water crystals, Weed mat 600 x 600 mm Jute (Supplier tbc), Tree guard with hardwood stake (Supplier TBC)
ANR-2c	Assisted Natural Rehabilitation Type 2c	This MU occurs along the southern slopes of the site and represents a transition zone between areas of high Lantana (<i>Lantana camara</i>) infestations and areas of low to no Lantana (<i>Lantana camara</i>) infestations. The RE this vegetation represents is RE 12.9-10.2 with the canopy dominated by Spotted Gum (<i>Corymbia citriodora</i> subsp. <i>variegata</i>) and a greater abundance of native species within the shrub and ground layers including wiry Panic Grass (<i>Entolasia stricta</i>), Barbed-wire Grass (<i>Cymbopogon refractus</i>) and native forbs including Star-leaved Goodenia (<i>Goodenia rotundifolia</i>). The target for this MU is to remove invasive species infestations, and where necessary perform infill plantings to restore patches of canopy. This MU has relatively good native canopy cover and infill plantings should be concentrated in the shrub and ground layers once Lantana has been removed if signs of natural regeneration doesn't occur within the first two years.	184,184.21	Initial and follow up weed management in accordance with the Woolshed Biosecurity Management Plan (Offset Management Plan). Infill planting of tubestock with water crystals where possible, Weed mat 600 x 600 mm Jute (Supplier tbc), Tree guard with hardwood stake (Supplier TBC).
ANR-3c	Assisted Natural Rehabilitation Type 3c	This MU occurs in several small patches within the north western portion of the site and a small portion within the eastern portion of the site. The vegetation is analogous with RE 12.9-10.2 with a canopy dominated by Spotted Gum (<i>Corymbia citriodora</i> subsp. <i>variegata</i>). This MU is relatively free from Lantana (<i>Lantana camara</i>) and other invasive species. The works within this MU will be minimal with a focus on the removal of invasive species which, if left unchecked, have the potential to disrupt the native vegetation communities within these MU. No infill planting should be required in these locations as the canopies of these areas are intact. If any planting is to occur it should focus on the reinstatement or improvement of the ground and shrub layer where it is deficient.	51,932.84	Initial and follow up weed management in accordance with the Woolshed Biosecurity Management Plan (Offset Management Plan). Infill planting of tubestock with water crystals where possible, Weed mat 600 x 600 mm Jute (Supplier tbc), Tree guard with hardwood stake (Supplier TBC).

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A	24.03.26	FOR REVIEW	CP
B	15.07.26	OPW VERSION	CP
C	18.08.26	OMP VERSION	CP

Client:
SUTGOLD

Contact Name:
Client Address:

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Fortitude Valley, QLD 4006
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Project:
2019-100e
WOOLSHED - RMP
OFFSET SITE 1

Designed by:	Drawn by:	Checked:
CM	JC	CP

DrawingTitle:
MANAGEMENT UNIT SCHEDULE

Issue Detail:

COMP VERSION

Sheet No.:

Page 5

Issue:

C

Weed Management Schedule

The following weeds have been identified on site through inspection. The list of weeds may not be complete and any other weeds encountered should be targeted. Refer to the table for removal and treatment methodology. All chemical treatments to be undertaken by suitably qualified persons.

Botanical Name	Common Name	Treatment Method	WON/ Biosecurity - requires removal	Remove if ecologically inhibiting
<i>Ageratina adenophora</i>	Crofton Weed	Foliar application	No	not applicable (n/a)
<i>Ageratina riparia</i>	Mist Flower	Foliar application	No	n/a
<i>Asparagus africanus</i>	Climbing Asparagus Fern	Foliar application	No	3
<i>Baccharis halimifolia</i>	Groundsel Bush	Foliar spray, Stump cut and paste	Yes	3
<i>Bidens pilosa</i>	Copplers Pegs	Foliar application	No	n/a
<i>Bryophyllum delagoense</i>	Mother-of-Millions	Foliar application	No	3
<i>Cardiospermum grandiflorum</i>	Balloon Vine	Foliar application	No	3
<i>Chloris virgata</i>	Feathertop Rhodes Grass	Foliar application	No	n/a
<i>Crotalaria pallida</i>	Streaked Rattlepod	Foliar application	No	n/a
<i>Erigeron bonariensis</i>	Flax-leaf Fleabane	Foliar application	No	n/a
<i>Gomphocarpus physocarpus</i>	Cotton Balloon Bush	Foliar application	No	n/a
<i>Ipomea indica</i>	Morning Glory	Foliar application	No	n/a
<i>Lantana camara</i>	Lantana	Foliar Application, Stump cut and paste	Yes	3
<i>Lantana montevidensis</i>	Creeping Lantana	Foliar application	No	3
<i>Ligustrum sinense</i>	Chinese Privet	Foliar Application, Stump Cut and Paste, Drill and Inject	No	3
<i>Macroptilium lathyroides</i>	Phasey bean	Foliar application	No	n/a
<i>Megathyrsus maximus</i>	Green Panic	Foliar application	No	n/a
<i>Melinis repens</i>	Red Natal Grass	Foliar application	No	n/a
<i>Opuntia tomentosa</i>	Velvety Trtee Pear	Foliar application, Cut/Drill and inject	Yes	3
<i>Passiflora foetida</i>	Stinking Passionflower	Foliar application	No	n/a
<i>Passiflora suberosa</i>	Corky Passion Whine	Foliar application	No	n/a
<i>Passiflora subpeltata</i>	White Passionflower	Foliar application	No	n/a
<i>Physalis minima</i>	Wild Gooseberry	Foliar application	No	n/a
<i>Ricinus communis</i>	Castor Oil	Foliar Application, Stump cut and paste	No	n/a
<i>Senecio madagascariensis</i>	Fire Weed	Foliar application	No	n/a
<i>Senna pendula var. glabrata</i>	Easter Cassia	Stump cut and paste	No	n/a
<i>Sida rhombifolia</i>	Arrow Leaved Sida	Foliar spray	Yes	3
<i>Solanum chrysotrichum</i>	Giant Devils Fig	Stump cut and paste	No	n/a
<i>Solanum mauritianum</i>	Wild Tobacco	Stump cut and paste	No	n/a
<i>Solanum nigrum</i>	Black Nightshade	Foliar application	No	n/a
<i>Solanum seaforthianum</i>	Brazilian Night Shade	Foliar application	No	n/a
<i>Tagetes minuta</i>	Stinking Roger	Foliar application	No	n/a
<i>Tecoma stans</i>	Yellow Bells	Stump cut and paste	Yes	3
<i>Tipuana tipu</i>	Tipuana	Stump cut and paste, Drill and inject	No	n/a
<i>Verbena bonariensis</i>	Purple Top	Foliar application	No	n/a
<i>Vigna luteola</i>	Vigna	Foliar application	no	n/a

MONITORING CHECKLIST

All timings and progress checklists should be informed through collective assessment of the Woolshed Offset Management Plan and supporting Actions (see **Woolshed Offset Management Plan, section 6**). This checklist is to be used to scrutinise the day-to-day progress of rehabilitation and should will not inform annualised reporting. Stage 1.00 below requires the implementation of Woolshed Biosecurity Management Plan (**Woolshed Offset Management Plan, Attachment 6, Section 4.6**) and section 3 of the Woolshed Fire Management Plan (**Woolshed Offset Management Plan, Attachment 7, Section 3**). However, because of the staged implementation of weed control, revegetation progress will have to occur at different rates (i.e. a plant established in 2027, will be more mature than one planted in 2029, as such progress assessment must be relative).

Item	Works to be completed/ Task	Parties required	Completed (Y/N)
	PLEASE NOTE THAT CALCULATION OF YEARS COMMENCES FROM THE YEAR IN WHICH PLANTING OCCURS (I.E. Year 1 could be 2028 for some plants or 2030, this is based solely on the year in which planting occurs, not action progress)		
1.00	Establishment Period		
1.01	Carry out a pre-start site meeting to confirm the scope of works, methodology, sequencing, burn program requirements, access arrangements, environmental controls and success criteria in accordance with the Woolshed Offset Management Plan.	Cherish/ 28 South	
1.02	Establish weed control segment (see Woolshed Biosecurity Management Plan (Woolshed Offset Management Plan, Attachment 6)) and maintain access network within the Offset Area using pole-attached chainsaws, brush cutters or other any other methods (see Woolshed Biosecurity Management Plan (Woolshed Offset Management Plan, Attachment 6)), progressively opening access to treatment areas.	Cherish	
1.03	Undertake Phase 1 knockdown works, including prioritisation of burn blocks based on Lantana (Lantana camara) density (see weed treatment timing within section 4.6 of the Woolshed Biosecurity Management Plan (Woolshed Offset Management Plan, Attachment 6, Section 4.6) and section 3 of the Woolshed Fire Management Plan (Woolshed Offset Management Plan, Attachment 7, Section 3)), implementation of approved low-intensity block burns and establishment of access for follow-up control works.	Cherish	
1.04	Undertake progressive weed control works within treatment segments, with priority given to Lantana (Lantana camara) infestations, utilising treatment methods and adaptive management measures in accordance with the Woolshed Offset Management Plan (and supporting Woolshed Biosecurity Management Plan (Woolshed Offset Management Plan, Attachment 6) and Woolshed Fire Management Plan (Woolshed Offset Management Plan, Attachment 7)).	Cherish	
1.05	Following burning and/or initial treatment works, undertake mandatory herbicide application and follow-up treatment to control regrowth and emerging infestations.	Cherish	
1.06	Undertake follow-up inspections, monitoring and retreatment of treated areas at intervals not exceeding two (2) to three (3) months, with monitoring outcomes used to evaluate treatment effectiveness and inform adaptive management actions.	Cherish/ 28 South	
1.07	Continue weed treatment, monitoring, annual reviews and adaptive management until target weed reduction outcomes are achieved and the understorey is suitable for revegetation.	Cherish/ 28 South	
1.08	Undertake assisted natural regeneration, reconstruction planting and revegetation works within areas where understorey weed control has been achieved. Revegetation may be implemented progressively as treatment areas become suitable, with infill planting not to occur until adequate understorey control has been established. This stage 1.08 represents the commencement of Year 1.	Cherish	
2.00	Maintenance Period Years 1 - 5 (commencing from the year of planting)		
2.01	At 3 month intervals, manage the work within each planted unit in accordance with the SEQ Ecological Restoration Manual, including: - Carry out monthly progress site inspections; - Manage the reduction of all non-invasive and environmental weeds; - Manage planting to promote their health and vigour, Irrigation if required; - Replace dead and dying plants as soon as possible; - Infill planting to ANR areas that have not achieved requires KPIs - Top up mulch where required; - Remove plant protection where required; and - Remove litter from rehabilitation areas.	Cherish	
2.02	Submit a progress report assessed against success criteria at 6 monthly intervals (this is not annual reporting materials, it is internal reporting amongst all parties to scrutnse the day to day implementation of the plan - reports can be used to inform annual reporting if deemed nessecary) identifying: - Estimate number of plants that have died or are dying - Confirm number and species of replacement plants installed - Estimate percentage of weed coverage in the ANR areas - Estimate the quantity of natural regeneration in the ANR areas. - Supporting photographic evidence from pre-determined photo monitoring locations	Cherish	
	Ongoing Maintenance Period - Year 6 onwards		
2.03	Manage the works in accordance with the SEQ Ecological Restoration Manual, including: - Carry out site inspections; - Manage the reduction of all non-invasive and environmental weeds; - Manage planting to promote their health and vigour, Irrigation if required; - Replace dead and dying plants as soon as possible; - Infill planting to ANR areas that have not achieved requires KPIs - Top up mulch where required; - Remove plant protection where required; and - Remove litter from rehabilitation areas.	Cherish	
2.04	Submit a progress report assessed against success criteria at 12 monthly intervals (this is not annual reporting materials, it is internal reports amongst all parties to scrutnse the day to day implementation of the plan - reports can be used to inform annual reporting if deemed nessecary) identifying : - Estimate number of plants that have died or are dying - Confirm number and species of replacement plants installed - Estimate percentage of weed coverage in the ANR areas - Estimate the quantity of natural regeneration in the ANR areas. - Supporting photographic evidence from pre-determined photo monitoring locations	Cherish	
2.05	Results of annual monitroing (defined in Section 6.8 of the Woolshed Offset Management Plan), which determines progress towards achieving a 95% reduction in WoNS and Restricted Matters relative to baseline conditions by Year 15, and achievement of the interim habitat quality gains defined in the Woolshed Offset Management Plan should be considered each year. This will assist in determining compliance with the planting success criteria described within this plan (more specifically - establishing 1 native plant per 10m2 at the canopy stratum, 1 native plant per 10m2 at the sub-canopy stratum, 1 native plant per 5m2 at the shrub stratum and 1 native plant per 1m2 at the ground stratum, and achieving a 90% survival rate of planted tube stock). For the avoidance of doubt, if it is determined that the nominated success criteria have not been achieved or will not be achived, revegetation procedue will be reconsidered if such negative evidence is retrieved and the establishment/maintenance periods will continue until such the success criteria is satisfied.	Cherish	
2.06	If required, carry-out any rectification works as identified from the inspection.	Cherish/ 28 South	

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B	15.07.26	OMP VERSION	CP
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Client:
SUTGOLD

Contact Name:
Client Address:

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Project:
**2019-100e
WOOLSHED - RMP
OFFSET SITE 1**

	Designed by: CM	Drawn by: JC	Checked: CP
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Drawing Title:
WEED MANAGEMENT SCHEDULE

Issue Detail:
OMP VERSION

Sheet No.:
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Issue:
C

PLANT SCHEDULES

Note:
Planting is only required in area's where weed treatment does not yield significant native regeneration assessed two (2) years after initial weed treatment (see weed treatment timing within section 4.6 of the Woolshed Biosecurity Management Plan (**Woolshed Offset Management Plan, Attachment 6, Section 4.6**) and section 3 of the Woolshed Fire Management Plan (**Woolshed Offset Management Plan, Attachment 7, Section 3**). If natural regeneration is not occurring, actual planting areas will be identified in-situ with planting cells established such that planting area is understood. Planting will be undertaken in order to achieve the Success Criteria.

Planting is only required where no natural regeneration occurs. Densities indicated in the plant schedules are maximum densities per meter sqaure if required.

Planting Schedule						
Project Name:	Wbolshed Creek Offset Area Management Plan					
Project Number:	2019-100e					
Revision:	C					
Date:	18/08/2026					
			Container Size			Density/m2
Code	Botanical Name	Common Name				
ANR-1a - RE 12.9-10.2			Total Area:	32218 m2		1.5
Trees - Total of 5% mix proportion, mix species evenly across area						
ANGlei	Angophora leiocarpa	Broad Leaf Apple	tube			0.50%
BRApop	Brachychiton populneus	Brown Kurrajong	tube			0.50%
CORcit	Corymbia citridora subsp. Variegata	Spotted Gum	tube			1.00%
CORtes	Blakella tessellaris	Moreton Bay Ash	tube			0.50%
EJCcre	Eucalyptus crebra	Narrow Leaf Ironbark	tube			0.50%
EJCMol	Eucalyptus mollucana	Grey Box	tube			0.50%
EJCSid	Eucalyptus siderophloia	Northern Grey Ironbark	tube			0.50%
EJCter	Eucalyptus tereticornis	Forest Red Gum	tube			1.00%
						5.00%
Shrubs - Total of 25% mix proportion, mix species evenly across area						
ACAdis	Acacia disparrima subsp. disparrima	Black Wattle	tube			2.00%
ACAfal	Acacia falcata	Sckle Wattle	tube			2.00%
ACAfim	Acacia fimbriata	Golden Wattle	tube			2.00%
ACAlai	Acacia leiocalyx	Black Wattle	tube			1.00%
ACAmi	Acacia maidenii	Maiden Wattle	tube			2.00%
ALLlit	Allocasuarina littoralis	Black She Oak	tube			2.00%
ALLtor	Allocasuarina torulosa	Forest She Oak	tube			2.00%
ALPexc	Alphitonia excelsa	Soap Ash	tube			2.00%
BREobl	Breynia oblongifolia	Coffee Bush	tube			1.50%
DAVuli	Davesia ulicifolia	Coarse Bitter Pea	tube			1.50%
DODtriq	Dodonaea triquetra	Forest Hop Bush	tube			1.50%
HOClor	Hovea lorata	Purple Pea	tube			1.00%
INDaus	Indigofera australis	Indigofera	tube			1.00%
JACsco	Jacksonia scoparia	Dogwood	tube			1.50%
LOPcon	Lophostemon confertus	Brush Box	tube			2.00%
						25.00%
Groundcovers - Total of 70% mix proportion, mix species evenly across area						
CYMref	Cymbopogon refractus	Barbed Wire Grass	tube			10.00%
DIAcae	Dianella caerulea	Flax Lily	tube			5.00%
GAHasp	Gahnia aspera	Saw Sedge	tube			5.00%
GOOhed	Goodenia hederacea	Goodenia	tube			1.00%
HARvio	Hardenbergia violacea	Native Sarsaparilla	tube			2.00%
HETcon	Heteropogon contortus	Black Spear Grass	tube			10.00%
IMPcyl	Imperata cylindrica	Blady Grass	tube			5.00%
LEP1at	Lepidosperma laterale	Variablke Sword Sedge	tube			5.00%
LOMlon	Lomandra longifolia	Mat Rush	tube			10.00%
LOMmul	Lomandra multiflora	Many Flowered Mat Rush	tube			5.00%
MYOmon	Myoporum montanum	Boobialla	tube			2.00%
THEtri	Themeda triandra	Kangaroo Grass	tube			10.00%
						70.00%
ANR-1c - RE 12.9-10.2			Total Area:	359930 m2		1.5
Trees - Total of 5% mix proportion, mix species evenly across area						
ANGlei	Angophora leiocarpa	Broad Leaf Apple	tube			0.50%
BRApop	Brachychiton populneus	Brown Kurrajong	tube			0.50%
CORcit	Corymbia citridora subsp. Variegata	Spotted Gum	tube			1.00%
CORtes	Blakella tessellaris	Moreton Bay Ash	tube			0.50%
EJCcre	Eucalyptus crebra	Narrow Leaf Ironbark	tube			0.50%
EJCMol	Eucalyptus mollucana	Grey Box	tube			0.50%
EJCSid	Eucalyptus siderophloia	Northern Grey Ironbark	tube			0.50%
EJCter	Eucalyptus tereticornis	Forest Red Gum	tube			1.00%
						5.00%
Shrubs - Total of 25% mix proportion, mix species evenly across area						
ACAdis	Acacia disparrima subsp. disparrima	Black Wattle	tube			2.00%
ACAfal	Acacia falcata	Sckle Wattle	tube			2.00%
ACAfim	Acacia fimbriata	Golden Wattle	tube			2.00%
ACAlai	Acacia leiocalyx	Black Wattle	tube			1.00%
ACAmi	Acacia maidenii	Maiden Wattle	tube			2.00%
ALLlit	Allocasuarina littoralis	Black She Oak	tube			2.00%
ALLtor	Allocasuarina torulosa	Forest She Oak	tube			2.00%
ALPexc	Alphitonia excelsa	Soap Ash	tube			2.00%
BREobl	Breynia oblongifolia	Coffee Bush	tube			1.50%
DAVuli	Davesia ulicifolia	Coarse Bitter Pea	tube			1.50%
DODtriq	Dodonaea triquetra	Forest Hop Bush	tube			1.50%
HOClor	Hovea lorata	Purple Pea	tube			1.00%
INDaus	Indigofera australis	Indigofera	tube			1.00%
JACsco	Jacksonia scoparia	Dogwood	tube			1.50%
LOPcon	Lophostemon confertus	Brush Box	tube			2.00%
						25.00%
Groundcovers - Total of 70% mix proportion, mix species evenly across area						
CYMref	Cymbopogon refractus	Barbed Wire Grass	tube			10.00%
DIAcae	Dianella caerulea	Flax Lily	tube			5.00%
GAHasp	Gahnia aspera	Saw Sedge	tube			5.00%
GOOhed	Goodenia hederacea	Goodenia	tube			1.00%
HARvio	Hardenbergia violacea	Native Sarsaparilla	tube			2.00%
HETcon	Heteropogon contortus	Black Spear Grass	tube			10.00%
IMPcyl	Imperata cylindrica	Blady Grass	tube			5.00%
LEP1at	Lepidosperma laterale	Variablke Sword Sedge	tube			5.00%
LOMlon	Lomandra longifolia	Mat Rush	tube			10.00%
LOMmul	Lomandra multiflora	Many Flowered Mat Rush	tube			5.00%
MYOmon	Myoporum montanum	Boobialla	tube			2.00%
THEtri	Themeda triandra	Kangaroo Grass	tube			10.00%
						70.00%

			Container Size			Density/m2
Code	Botanical Name	Common Name				
ANR- 2c - RE 12.9-10.2			Total Area:	184184 m2		1.5
Trees - Total of 5% mix proportion, mix species evenly across area						
ANGlei	Angophora leiocarpa	Broad Leaf Apple	tube			0.50%
BRApop	Brachychiton populneus	Brown Kurrajong	tube			0.50%
CORcit	Corymbia citridora subsp. Variegata	Spotted Gum	tube			1.00%
CORtes	Blakella tessellaris	Moreton Bay Ash	tube			0.50%
EJCcre	Eucalyptus crebra	Narrow Leaf Ironbark	tube			0.50%
EJCMol	Eucalyptus mollucana	Grey Box	tube			0.50%
EJCSid	Eucalyptus siderophloia	Northern Grey Ironbark	tube			0.50%
EJCter	Eucalyptus tereticornis	Forest Red Gum	tube			1.00%
						5.00%
Shrubs - Total of 25% mix proportion, mix species evenly across area						
ACAdis	Acacia disparrima subsp. disparrima	Black Wattle	tube			2.00%
ACAfal	Acacia falcata	Sckle Wattle	tube			2.00%
ACAfim	Acacia fimbriata	Golden Wattle	tube			2.00%
ACAlai	Acacia leiocalyx	Black Wattle	tube			1.00%
ACAmi	Acacia maidenii	Maiden Wattle	tube			2.00%
ALLlit	Allocasuarina littoralis	Black She Oak	tube			2.00%
ALLtor	Allocasuarina torulosa	Forest She Oak	tube			2.00%
ALPexc	Alphitonia excelsa	Soap Ash	tube			2.00%
BREobl	Breynia oblongifolia	Coffee Bush	tube			1.50%
DAVuli	Davesia ulicifolia	Coarse Bitter Pea	tube			1.50%
DODtriq	Dodonaea triquetra	Forest Hop Bush	tube			1.50%
HOClor	Hovea lorata	Purple Pea	tube			1.00%
INDaus	Indigofera australis	Indigofera	tube			1.00%
JACsco	Jacksonia scoparia	Dogwood	tube			1.50%
LOPcon	Lophostemon confertus	Brush Box	tube			2.00%
						25.00%
Groundcovers - Total of 70% mix proportion, mix species evenly across area						
CYMref	Cymbopogon refractus	Barbed Wire Grass	tube			10.00%
DIAcae	Dianella caerulea	Flax Lily	tube			5.00%
GAHasp	Gahnia aspera	Saw Sedge	tube			5.00%
GOOhed	Goodenia hederacea	Goodenia	tube			1.00%
HARvio	Hardenbergia violacea	Native Sarsaparilla	tube			2.00%
HETcon	Heteropogon contortus	Black Spear Grass	tube			10.00%
IMPcyl	Imperata cylindrica	Blady Grass	tube			5.00%
LEP1at	Lepidosperma laterale	Variablke Sword Sedge	tube			5.00%
LOMlon	Lomandra longifolia	Mat Rush	tube			10.00%
LOMmul	Lomandra multiflora	Many Flowered Mat Rush	tube			5.00%
MYOmon	Myoporum montanum	Boobialla	tube			2.00%
THEtri	Themeda triandra	Kangaroo Grass	tube			10.00%
						70.00%
ANR-3c - RE 12.9-10.2			Total Area:	51933 m2		1.5
Trees - Total of 5% mix proportion, mix species evenly across area						
ANGlei	Angophora leiocarpa	Broad Leaf Apple	tube			0.50%
BRApop	Brachychiton populneus	Brown Kurrajong	tube			0.50%
CORcit	Corymbia citridora subsp. Variegata	Spotted Gum	tube			1.00%
CORtes	Blakella tessellaris	Moreton Bay Ash	tube			0.50%
EJCcre	Eucalyptus crebra	Narrow Leaf Ironbark	tube			0.50%
EJCMol	Eucalyptus mollucana	Grey Box	tube			0.50%
EJCSid	Eucalyptus siderophloia	Northern Grey Ironbark	tube			0.50%
EJCter	Eucalyptus tereticornis	Forest Red Gum	tube			1.00%
						5.00%
Shrubs - Total of 25% mix proportion, mix species evenly across area						
ACAdis	Acacia disparrima subsp. disparrima	Black Wattle	tube			2.00%
ACAfal	Acacia falcata	Sckle Wattle	tube			2.00%
ACAfim	Acacia fimbriata	Golden Wattle	tube			2.00%
ACAlai	Acacia leiocalyx	Black Wattle	tube			1.00%
ACAmi	Acacia maidenii	Maiden Wattle	tube			2.00%
ALLlit	Allocasuarina littoralis	Black She Oak	tube			2.00%
ALLtor	Allocasuarina torulosa	Forest She Oak	tube			2.00%
ALPexc	Alphitonia excelsa	Soap Ash	tube			2.00%
BREobl	Breynia oblongifolia	Coffee Bush	tube			1.50%
DAVuli	Davesia ulicifolia	Coarse Bitter Pea	tube			1.50%
DODtriq	Dodonaea triquetra	Forest Hop Bush	tube			1.50%
HOClor	Hovea lorata	Purple Pea	tube			1.00%
INDaus	Indigofera australis	Indigofera	tube			1.00%
JACsco	Jacksonia scoparia	Dogwood	tube			1.50%
LOPcon	Lophostemon confertus	Brush Box	tube			2.00%
						25.00%
Groundcovers - Total of 70% mix proportion, mix species evenly across area						
CYMref	Cymbopogon refractus	Barbed Wire Grass	tube			10.00%
DIAcae	Dianella caerulea	Flax Lily	tube			5.00%
GAHasp	Gahnia aspera	Saw Sedge	tube			5.00%
GOOhed	Goodenia hederacea	Goodenia	tube			1.00%
HARvio	Hardenbergia violacea	Native Sarsaparilla	tube			2.00%
HETcon	Heteropogon contortus	Black Spear Grass	tube			10.00%
IMPcyl	Imperata cylindrica	Blady Grass	tube			5.00%
LEP1at	Lepidosperma laterale	Variablke Sword Sedge	tube			5.00%
LOMlon	Lomandra longifolia	Mat Rush	tube			10.00%
LOMmul	Lomandra multiflora	Many Flowered Mat Rush	tube			5.00%
MYOmon	Myoporum montanum	Boobialla	tube			2.00%
THEtri	Themeda triandra	Kangaroo Grass	tube			10.00%
						70.00%

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Issue	Date	Details	Approved
A	24.03.26	FOR REVIEW	CP
B	15.07.26	OMP VERSION	CP
C	18.0826	OMP VERSION	CP

Client:
SUTGOLD

Contact Name:
Client Address:

Consultants:

A L2, Cameron House 354 Brunswick Street,
Fortitude Valley, QLD 4006
E projects@28South.com.au



Project:
2019-100e
WOOLSHED - RMP
OFFSET SITE 1

	Designed by: CM	Drawn by: JC	Checked: CP
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DrawingTitle:
PLANT SCHEDULE

Issue Detail:
OMP VERSION

Sheet No.:
Page 7

Issue:
C

PLANT SCHEDULES

			Container Size				Density/m2
Code	Botanical Name	Common Name					
ANR-1b - RE 12.8.17			Total Area:	211280	m2		1.5
Trees - Total of 15% mix proportion, mix species evenly across area							
BJCmel	<i>Eucalyptus melanophloia</i>	Silver leaved Ironbark	tube				1.50%
BLAtes	<i>Blakella tessellaris</i>	Moreton Bay Ash	tube				2.00%
BRApop	<i>Brachychiton Polulneus</i>	Brown Kurrajong	tube				1.00%
CORint	<i>Corymbia intermedia</i>	Boodwood	tube				1.00%
BJCcre	<i>Eucalyptus crebra</i>	Narrow Leaf Ironbark	tube				4.00%
BJCmel	<i>Eucalyptus melliodora</i>	Yellow Box	tube				3.00%
MALphil	<i>Mallotus philippinensis</i>	Red Kamala	tube				0.50%
BJCter	<i>Eucalyptus tereticornis</i>	Forest Red Gum	tube				2.00%
							15.00%
Shrubs - Total of 15% mix proportion, mix species evenly across area							
ACAfim	<i>Acacia fimbriata</i>	Brisbane Wattle	tube				3.00%
ACAmal	<i>Acacia maidenii</i>	Maiden Wattle	tube				2.00%
ACAsal	<i>Acacia salicina</i>	Sally Wattle	tube				1.00%
BREobl	<i>Breynia oblongifolia</i>	Coffee Bush	tube				1.00%
DODvis	<i>Dodonea viscosa</i>	Hop Bush	tube				5.00%
HOVlan	<i>Hovea lanceolata</i>	Purple Pea	tube				2.00%
JACsco	<i>Jacksonia scoparia</i>	Dog Wood	tube				1.00%
							15.00%
Groundcovers - Total of 70% mix proportion, mix species evenly across area							
BOTdec	<i>Bothriochloa decipiens</i>	Pitted Blue Grass	tube				5.00%
CYMref	<i>Cymbopogon refractus</i>	Barb Wire Grass	tube				10.00%
DICser	<i>Dichanthium sericeum</i>	Silky Blue Grass	tube				5.00%
GAHasp	<i>Gahnia aspera</i>	Red fruited Sword Sedge	tube				5.00%
HETcon	<i>Heteropogon confertus</i>	Black Spear Grass	tube				10.00%
Lomlon	<i>Lomandra longifolia</i>	Mat Rush	tube				10.00%
POAsie	<i>Poa sieberiana</i>	Poa	tube				15.00%
THEtri	<i>Themenda triandra</i>	Kangaroo Grass	tube				10.00%
							70.00%
ANR-1d - RE 12.8.24			Total Area:	68146	m2		1.5
Trees - Total of 15% mix proportion, mix species evenly across area							
BRIlei	<i>Bridelia leichhardtii</i>	Scrub Ironwood	tube				1.00%
BLAtes	<i>Blakella tessellaris</i>	Moreton Bay Ash	tube				1.00%
BRApop	<i>Brachychiton Polulneus</i>	Brown Kurrajong	tube				1.00%
CORcit	<i>Corymbia citridora</i>	Spotted Gum	tube				3.00%
MALphil	<i>Mallotus philippinensis</i>	Red Kamala	tube				0.50%
CORint	<i>Corymbia intermedia</i>	Boodwood	tube				1.00%
BJCcre	<i>Eucalyptus crebra</i>	Narrow Leaf Ironbark	tube				2.50%
BJCmel	<i>Eucalyptus melanophloia</i>	Silver leaved Ironbark	tube				2.00%
BJCter	<i>Eucalyptus tereticornis</i>	Forest Red Gum	tube				1.00%
LOPcon	<i>Lophostemon confertus</i>	Brush Box	tube				2.00%
							15.00%
Shrubs - Total of 15% mix proportion, mix species evenly across area							
ACAmal	<i>Acacia maidenii</i>	Maiden Wattle	tube				2.00%
ACAdis	<i>Acacia disparrima</i>	Hkory Wattle	tube				1.00%
ACAiro	<i>Acacia irorata</i>	Green Wattle	tube				1.00%
ALPexc	<i>Alphitonia excelsa</i>	Soap Ash	tube				3.00%
BREobl	<i>Breynia oblongifolia</i>	Coffee Bush	tube				3.00%
BURspi	<i>Bursaria spinosa</i> subs. <i>Spinosa</i>	Backthorn	tube				1.00%
DODvis	<i>Dodonea viscosa</i>	Hop Bush	tube				4.00%
							15.00%
Groundcovers - Total of 70% mix proportion, mix species evenly across area							
AJUaus	<i>Ayuga australis</i>	Australian Bugle	tube				5.00%
CYMref	<i>Cymbopogon refractus</i>	Barb Wire Grass	tube				15.00%
DIAcae	<i>Dianella caerulea</i>	Dianella	tube				5.00%
DICser	<i>Dichanthium sericeum</i>	Silky Blue Grass	tube				5.00%
GAHasp	<i>Gahnia aspera</i>	Red fruited Sword Sedge	tube				5.00%
Harvio	<i>Hardenbergia violacea</i>	False Sarsaprilla	tube				5.00%
HETcon	<i>Heteropogon confertus</i>	Black Spear Grass	tube				10.00%
IMPcyl	<i>Imperata cylindrica</i>	Bady Grass	tube				10.00%
Lomlon	<i>Lomandra longifolia</i>	Mat Rush	tube				10.00%
							70.00%
NOTES							
1. Ensure crowns of grasses are free from mulch to prevent crown rot.							
2. Ensure tree trunks are free from mulch min 50mm to prevent collar rot.							
3. Infill planting to ANRareas to occur where required and not sufficient canopy exists or ground conditions do require infill planting.							
4. Extent of species suitable to environmental conditions to be confirmed on site.							
5. Plant numbers are a total maximum allowance.							
6. Trees and Shrubs should be planted initially and groudcovers added in once weeds are suppressed.							
7. Rootbound plant stock is to be rejected. Shall rootbound stock be planed and fail, the contractor is to replace at their own cost.							

Note:
Planting is only required in area's where weed treatment does not yield significant native regeneration assessed two (2) years after initial weed treatment (see weed treatment timing within section 4.6 of the Woolshed Biosecurity Management Plan (**Woolshed Offset Management Plan, Attachment 6, Section 4.6**) and section 3 of the Woolshed Fire Management Plan (**Woolshed Offset Management Plan, Attachment 7, Section 3**)). If natural regeneration is not occurring, actual planting areas will be identified in-situ with planting cells established such that planting area is understood. Planting will be undertaken in order to achieve the Success Criteria.

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Issue	Date	Details	Approved
A	24.03.26	FOR REVIEW	CP
B	15.07.26	OMP VERSION	CP
C	18.08.26	OMP VERSION	CP

Client:
SUTGOLD

Contact Name:
Client Address:

Consultants:

A L2, Cameron House 354 Brunswick Street,
Fortitude Valley, QLD 4006
E projects@28South.com.au



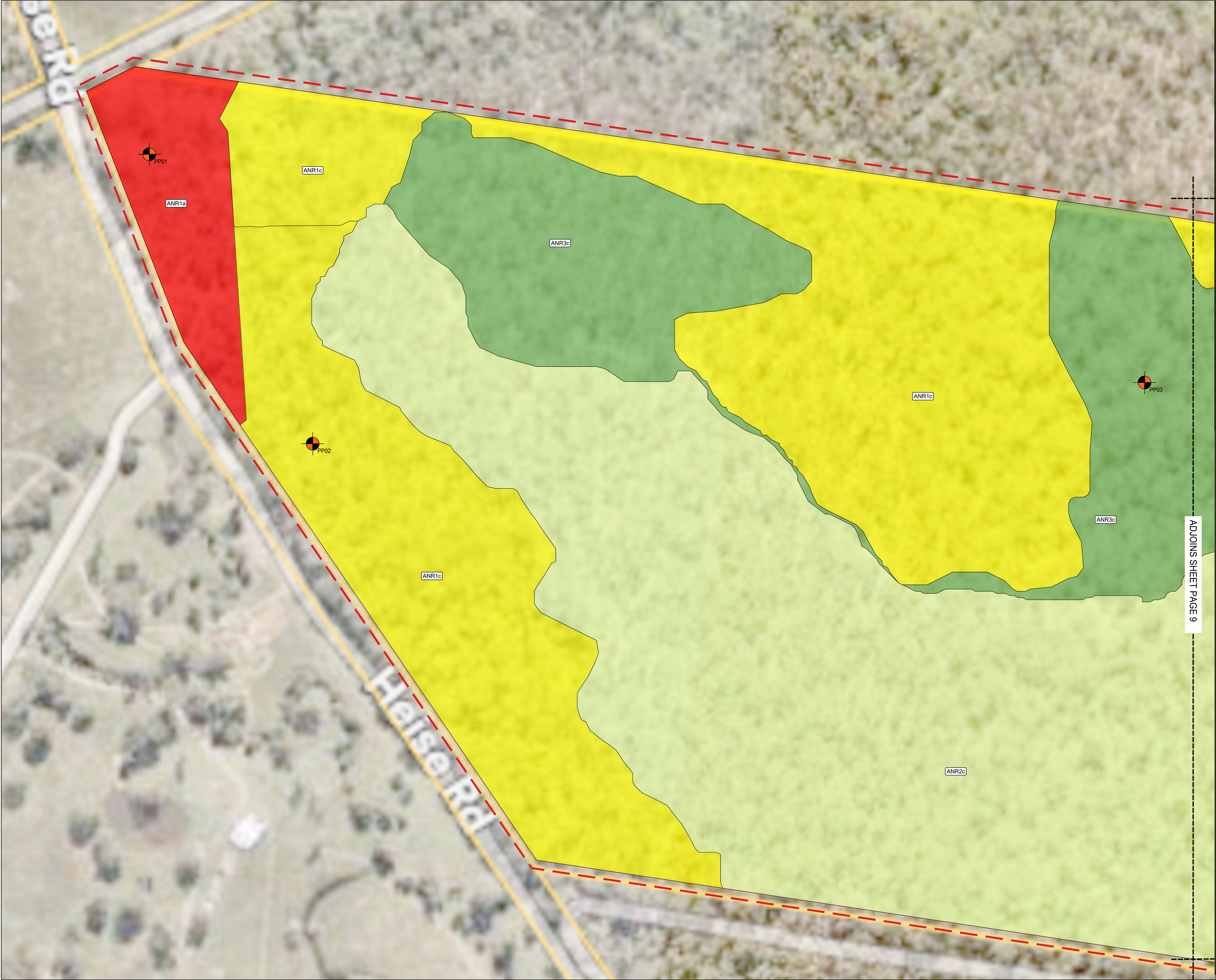
Project:
**2019-100e
WOOLSHED - RMP
OFFSET SITE 1**

	Designed by: CM	Drawn by: JC	Checked: CP
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DrawingTitle:
PLANT SCHEDULE

Issue Detail:
OMP VERSION

Sheet No.: Page 8	Issue: C
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- LEGEND
- EXTENT OF WORKS
- ANR1a

ASSISTED NATURAL REGENERATION - TYPE 1a
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR1b

ASSISTED NATURAL REGENERATION - TYPE 1b
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR1c

ASSISTED NATURAL REGENERATION - TYPE 1c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR1d

ASSISTED NATURAL REGENERATION - TYPE 1d
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR2c

ASSISTED NATURAL REGENERATION - TYPE 2c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR3c

ASSISTED NATURAL REGENERATION - TYPE 3c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE

PP##

PHOTO MONITORING POINT LOCATION

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Issue	Date	Details	Approved
A	24.03.26	FOR REVIEW	CP
B	15.07.26	OMP VERSION	CP

Client:
SUTGOLD

Contact Name:
Client Address:

Consultants:

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28°S
ENVIRONMENTAL

Project:
2019-100e
WOOLSHED - RMP
OFFSET SITE 1

	Designed by: CM	Drawn by: JC	Checked: CP
Drawing Title: REHABILITATION MANAGEMENT PLAN			
Issue Detail: OMP VERSION			
Sheet No.: Page 8			Issue: B



LEGEND

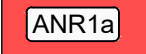
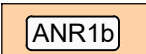
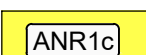
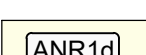
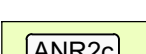
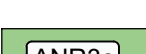
-  EXTENT OF WORKS
-  ASSISTED NATURAL REGENERATION - TYPE 1a
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 1b
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 1c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 1d
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 2c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
-  ASSISTED NATURAL REGENERATION - TYPE 3c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE

 PHOTO MONITORING POINT LOCATION
PP##

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Issue	Date	Details	Approved
A	24.03.26	FOR REVIEW	CP
B	15.07.26	OMP VERSION	CP

Client:
SUTGOLD

Contact Name:
Client Address:

Consultants:

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Fortitude Valley, QLD 4006
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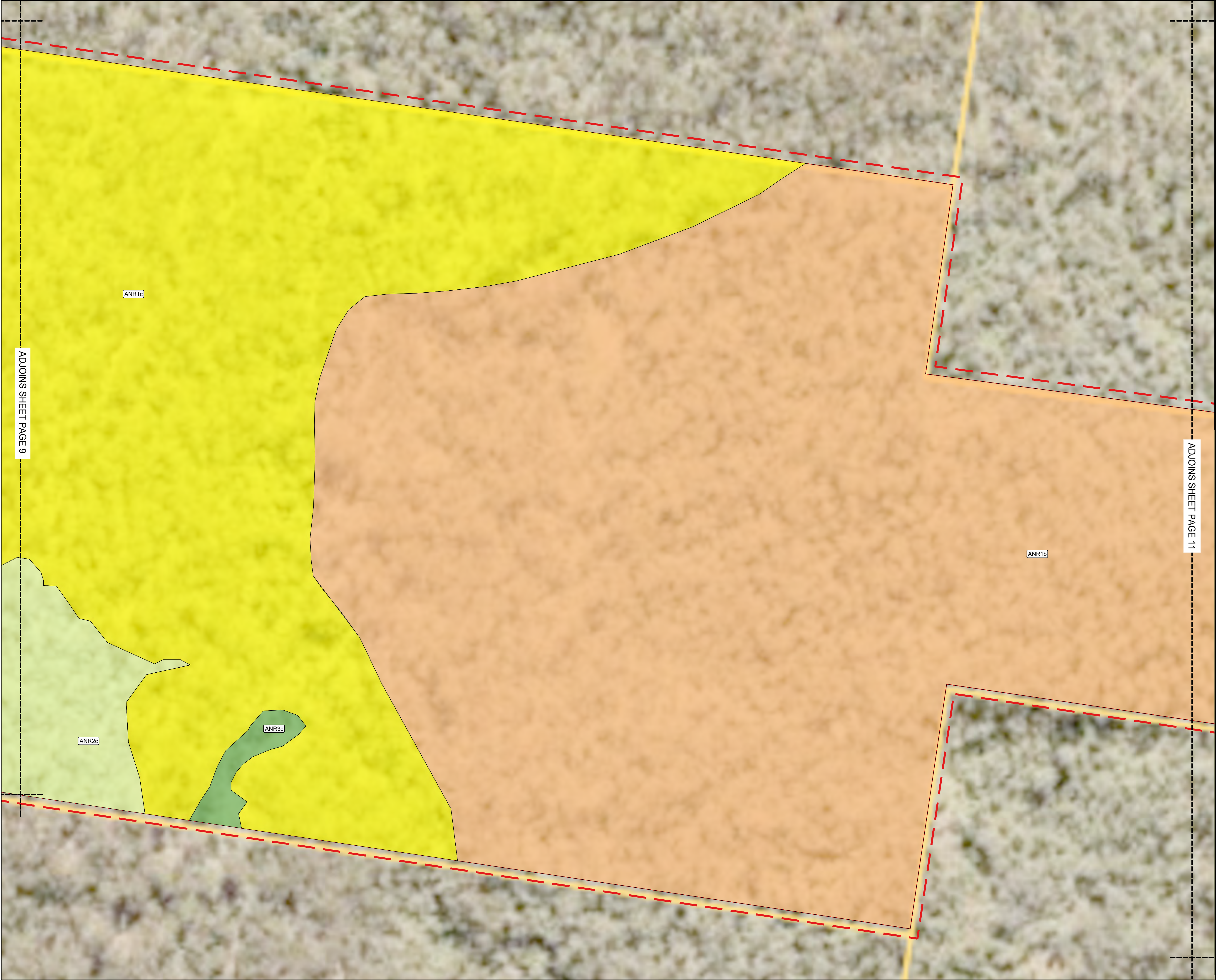
Project:
**2019-100e
WOOLSHED - RMP
OFFSET SITE 1**

	Designed by: CM	Drawn by: JC	Checked: CP
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Drawing Title:
**REHABILITATION MANAGEMENT
PLAN**

Issue Detail:
OMP VERSION

Sheet No.: Page 9	Issue: B
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LEGEND

- EXTENT OF WORKS
- ANR1a

ASSISTED NATURAL REGENERATION - TYPE 1a
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR1b

ASSISTED NATURAL REGENERATION - TYPE 1b
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR1c

ASSISTED NATURAL REGENERATION - TYPE 1c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR1d

ASSISTED NATURAL REGENERATION - TYPE 1d
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR2c

ASSISTED NATURAL REGENERATION - TYPE 2c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR3c

ASSISTED NATURAL REGENERATION - TYPE 3c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- PHOTO MONITORING POINT LOCATION

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A	24.03.26	FOR REVIEW	CP
B	15.07.26	OMP VERSION	CP

Client:
SUTGOLD

Contact Name:
Client Address:

Consultants:

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28°S
ENVIRONMENTAL

Project:
**2019-100e
WOOLSHED - RMP
OFFSET SITE 1**

Designed by:	Drawn by:	Checked:
CM	JC	CP

Drawing Title:
**REHABILITATION MANAGEMENT
PLAN**

Issue Detail:
OMP PLAN

Sheet No.: Page 10	Issue: B
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ADJOINS SHEET PAGE 10

LEGEND

- EXTENT OF WORKS
- ANR1a

ASSISTED NATURAL REGENERATION - TYPE 1a
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR1b

ASSISTED NATURAL REGENERATION - TYPE 1b
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR1c

ASSISTED NATURAL REGENERATION - TYPE 1c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR1d

ASSISTED NATURAL REGENERATION - TYPE 1d
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR2c

ASSISTED NATURAL REGENERATION - TYPE 2c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- ANR3c

ASSISTED NATURAL REGENERATION - TYPE 3c
REFER TO TYPICAL DETAIL AND REHAB SCHEDULE
- PHOTO MONITORING POINT LOCATION

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Use figured dimensions in preference to scaled. Notify the Ecologist/ Ecological Designer before proceeding if any anomaly is found between this drawing and conditions on site. Location of existing services are indicative only, verify on site prior to commencing works.

Issue	Date	Details	Approved
A	24.03.26	FOR REVIEW	CP
b	15.07.26	OMP VERSION	CP

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SUTGOLD

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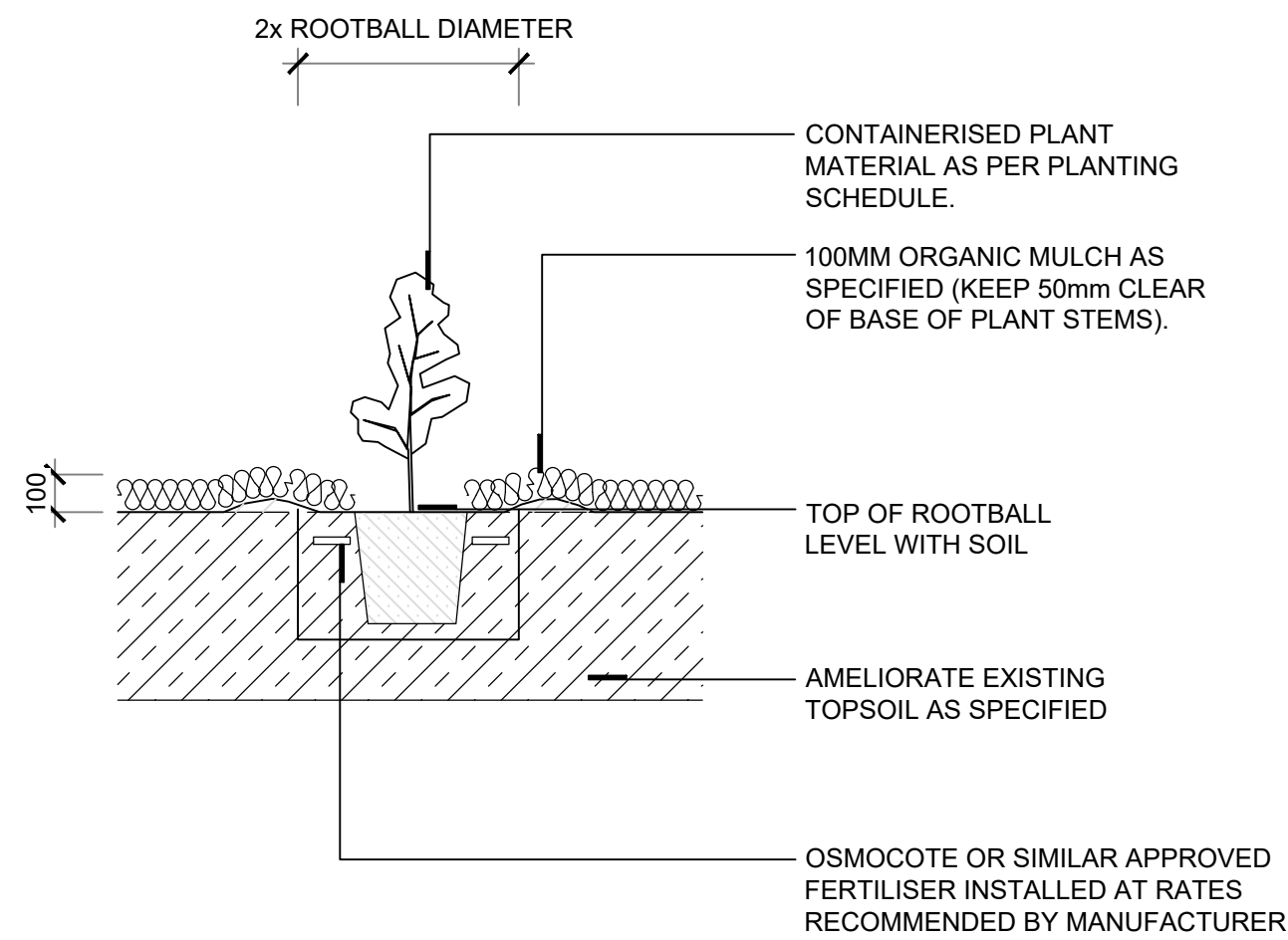
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Project:
**2019-100e
WOOLSHED - RMP
OFFSET SITE 1**

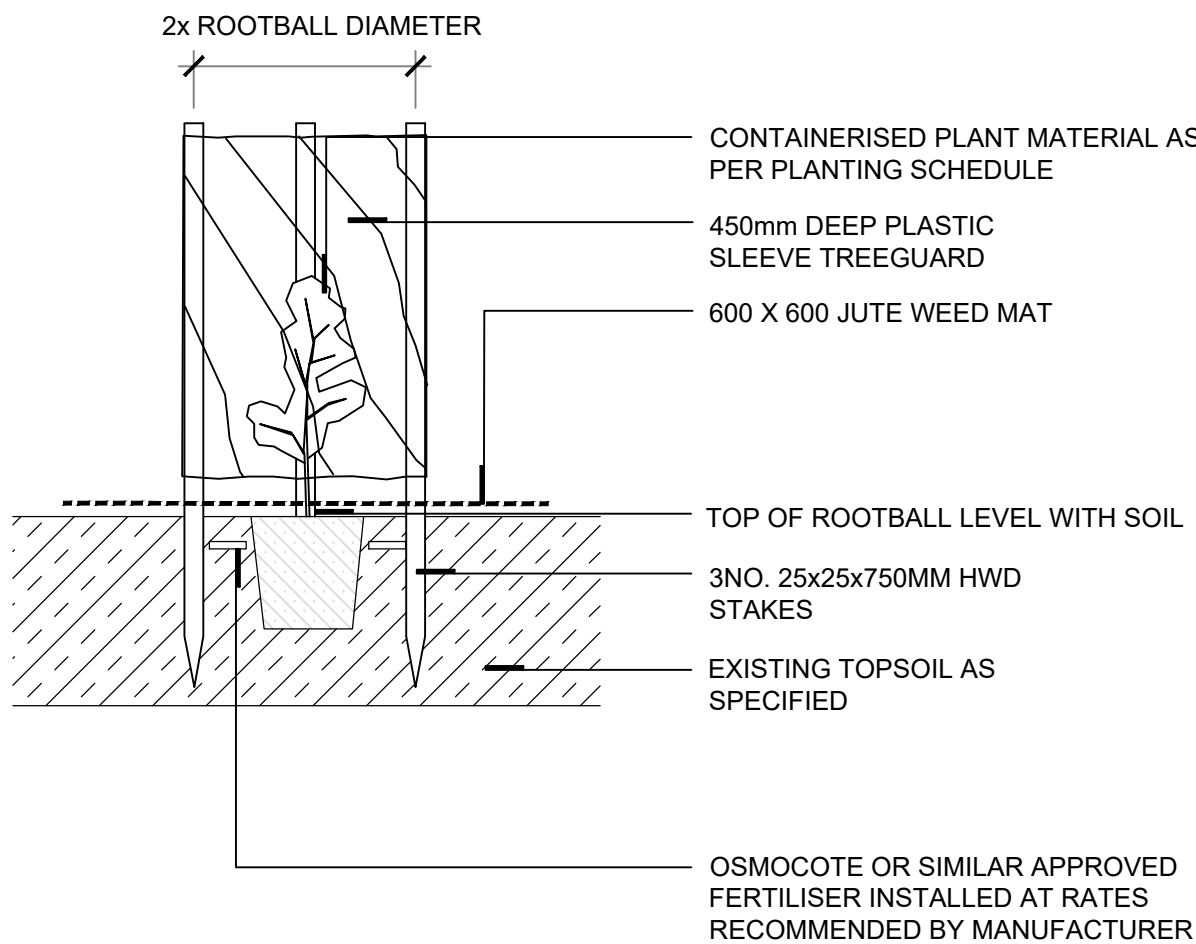
	Designed by: CM	Drawn by: JC	Checked: CP
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Drawing Title:
**REHABILITATION MANAGEMENT
PLAN**

Issue Detail: OMP VERSION		Issue: B
Sheet No.: Page 11		



- PLANTING METHODOLOGY
1. PREPARE AND CULTIVATE TOPSOIL
 2. PLACE ORGANIC MULCH
 3. EXCAVATE PLANTING HOLE 2 x DIAMETER THE SIZE OF THE ROOTBALL
 4. REMOVE PLANT CAREFULLY FROM POT
 5. CHECK FOR QUALITY (HEALTHY, NO SPIRAL ROOTING OR ROOT BOUND)
 6. PLACE PLANT INTO HOLE AND BACKFILL WITH TOPSOIL AND PLACE 2 TABLETS OSMOCOTE SLOW RELEASE FERTILIZER
 7. WATER IN SUFFICIENTLY WITH MIN 5L PER PLANT



ASSISTED NATURAL
REHABILITATION PLANTING - TYPICAL DETAIL

The spatial data referenced has been obtained from a variety of verified and licenced sources as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DOR repositories Qimagery and QGlobe.

Use figured dimensions in preference to scaled. Notify the Ecologist/ Ecological Designer before proceeding if any anomaly is found between this drawing and conditions on site. Location of existing services are indicative only, verify on site prior to commencing works.

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WOOLSHED - RMP
OFFSET SITE 1**

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Drawing Title:
DETAIL

Issue Detail:
OMP VERSION

Sheet No.:
Page 12

Issue:
B

Attachment 5 – Vertebrate Pest Management Plan



Double Jump Road Residential Development

Woolshed – Vertebrate Pest Management Plan

EPBC 2024/09825

29 July 2026

Document Control

Project No: 2019-100e

Project: Double Jump Road Residential Development

Document: Integrated Vertebrate Pest Management Plan

Client: Sutgold Pty Ltd

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Document History and Status

Revision	Date	Description	By	Review
0.1	01.03.2026	Draft for Review	GM	NC
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Approval for Issue

Name	Position	Date
Andrew Dickinson	Technical Director, Ecology	29 July 2026

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1. Introduction

1.1 Background

This Vertebrate Pest Management Plan (**VPMP**) has been prepared by 28 South Environmental Pty Ltd (**28 South**) on behalf of Sutgold Pty Ltd (the **Applicant**) to support the development of a master planned residential community known as Double Jump Road Residential Development (**Proposed Action**) (EPBC Referral Number 2024/09825) – Woolshed Offset Area Offset Management Plan (**OMP**). The Woolshed Offset Area subject of the VPMP is located at 528-530 Woolshed Creek Road, Woolshed, QLD 4340 or more formally described as Lot 236 on CH312334. The total size of the Woolshed Offset Area is 88.63 ha.

The Offset is provided in response to the loss of 32.57 ha of Koala (*Phascolarctos cinereus*) habitat and 32.57 ha Grey-headed Flying-fox (*Pteropus poliocephalus*) at the site of the Proposed Action (**Project Area**) at 42-44, 48, 50, 52, 56 Double Jump Road, Victoria Point, Queensland (**Impact Site**). The Impact Site is located within Redland City Council (**RCC**), whilst the Woolshed Offset Area is located within Ipswich City Council (**ICC**).

The strategies and procedures implemented within this VPMP will be subject to monitoring, with the results to be provided within the Annual Compliance Report (**ACR**) per the OMP. The ACR is to be prepared on the 12-month anniversary of the approval.

2. Legislative Framework

The *Biosecurity Act 2014* (Qld) (**Biosecurity Act**) commenced on the 1 July 2016. The Biosecurity Act imposes an overarching General Biosecurity Obligation (**GBO**) which requires reasonable and practical measures to prevent or manage biosecurity risks and not to exacerbate already present effects. This preventative approach relies on a common duty of care owed by all Queensland residents and implementing measures to prevent or minimise biosecurity risks, such as problems caused by pest plants and animals.

A further requirement of the GBO is the management of high-priority pest animals in line with restricted matter obligations prescribed by the Biosecurity Act.

Restricted matters include pest plants and animals that have established populations in Queensland and have a significant impact on human health, social amenity, the economy or the environment. The State has allocated specific actions (seven categories) to regulate encounters with restricted matters on public or private land and minimise the spread and adverse impacts of the matter (**Table 1**). The Biosecurity Act will allocate an invasive species a particular category (or categories) that should influence any management initiative implemented by a party who encounters them (see Table 1).

These actions form the foundation of obligations associated with interaction of prohibited and restricted matters. Subject to the circumstances, a person may be required to take other reasonable and practical measures to reduce or mitigate biosecurity risks e.g. undertaking weed or pest animal control activities on land they occupy.

Table 1: Restricted Matter Specific Condition Categories - *Biosecurity Act 2014* (Qld)

Restricted Matter Categories (summary provided by (BCC, 2022))
Category 1 – must be reported to a Queensland Government inspector within 24 hours.
Category 2 – must be reported to a Queensland Government inspector or a local government authorised officer.
Category 3 – must not be distributed. This means it must not be released into the environment unless the distribution or disposal is authorised in a regulation or under a permit.
Category 4 – must not be moved.
Category 5 – must not be possessed or kept (unless there is a permit issued in accordance with the Act or another act)
Category 6 – must not be fed except for the purpose of preparing for or undertaking a control program.
Category 7 - must be destroyed and disposed of in accordance with Queensland Government requirements as soon as practicable.

The *Pest Management Act 2001* (Qld) controls the use of toxins for pest management in Queensland and requires any use to be carried out by persons with a Pest Management Technician License. The *Animal Care and Protection Act 2001* (Qld) requires all persons to ensure animal welfare, consequently imposing a duty of care on all parties associated to this VPMP to ensure the humane management of pests on the Woolshed Offset Area. With implementation of routine shooting initiatives to manage pest vertebrates onsite, all obligations under the *Weapons Act 1990* (Qld) and *PestSmart National Standard Operating Procedures* will be followed and incorporated into this VPMP. The *PestSmart National Standard Operating Procedures* will inform all trapping initiatives implemented.

3. Target Species

3.1 Summary

The OMP identified a number of vertebrate pest species that posed a threat to the establishment and quality of the offset and / or the MNES for which the offset was required. Species known to be present¹, or suspected of being present² were included in the OMP (**Section 4**; and Action 1 – Vertebrate Pest Management Plan). The OMP identified **six target species** to be subject of specific management. These species and their allocated restricted matter category under the Biosecurity Act are outlined in Table 2.

Table 2: Target Species

Common Name	Binomial Name (species)	Restricted Matter Category	Risk to rehabilitation success
Rabbit	<i>Oryctolagus cuniculus</i>	3, 4, 5 and 6	Nil
Fox	<i>Vulpes vulpes</i>	3, 4, 5 and 6	Nil
Wild/Feral Dog	<i>Canis familiaris</i> ; <i>Canis familiaris dingol</i> ; <i>Canis lupus familiaris</i> ; <i>Canis lupus dingo</i>	3, 4 and 6	Nil
Feral Cat	<i>Felis catus</i>	3, 4 and 6	Ringbarking, grazing and browsing, and preventing regeneration of seedlings
Feral Pig	<i>Sus scrofa</i>	3, 4 and 6	Ringbarking, grazing and browsing, and preventing regeneration of seedlings
Feral Rusa Deer	<i>Dama</i> sp.; <i>Cervus</i> sp.; <i>Rusa</i> sp.; <i>Axis</i> sp.	3, 4 and 6	Grazing and browsing, and preventing regeneration of seedlings

3.2 Baseline Monitoring

The OMP outlined the need for a detailed baseline assessment of Vertebrate Pest distribution and abundance. Presence has been identified through a number of techniques including:

- Incidental observation – observation of presence by site personnel whilst undertaking other offset specific actions.
- Indirect observation – observation of tracks, scats, warrens and other traces whilst undertaking other offset specific actions by targeted searches (e.g. for warrens) and incidental observation.
- Camera trapping – total of 16 trail cameras were deployed between 17 January 2025 and 3 February 2025.

3.2.1 Incidental and Indirect Observation

There have been no incidental or indirect observations made by field personnel.

¹ Based on observation by 28 South ecologists, reports of presence by landowners and discussions with ICC personnel

² Based on records of regional presence identified by database inspections of Atlas of Living Australia and WildNet

3.2.2 Camera Trapping

The full technical memo outlining the assessment is attached (**Attachment 1 of OMP**).

3.2.2.1 Survey Conditions

Survey weather data was gathered from the Amberley meteorological station (station 040004) located ~20 km east of the Woolshed Offset Area. Maximum daily temperatures were 29.3–37.3°C (average 32.5°C). Minimum overnight temperatures were 15.2–22.1°C (average 19.9°C). A total of 28.2 mm of rain fell during the survey period, of which 23 mm fell on a single day, 19 January 2025.

3.2.2.2 Survey Effort

This assessment consisted exclusively of a camera trap survey. A total of 16 trail cameras were deployed in a semi-regular grid across the project area, encompassing all assessment units (**Inset 1**). Cameras were deployed on 17 January 2025 and collected on 3 February 2025 (17 consecutive nights). The total survey effort was 260 camera trap-nights. All cameras were set on trees at ~50 cm above the ground. Camera trap locations within **Attachment 1 of OMP**.

3.2.2.3 Results

Target and other vertebrate pest species recorded by Camera Trapping are outlined in **Table 3**. All fauna species identified by camera traps during the survey are identified as **Attachment 1 of OMP**.

Table 3: Baseline Recording of Target Species – Camera Traps

Common Name	Binomial Name (species)	Camera Trap Location	Number of records
European Fox	<i>Vulpes vulpes</i>	14, 16	2
Wild/Feral Dog ¹	<i>Canis familiaris</i> ; <i>Canis familiaris dingo</i> ; <i>Canis lupus familiaris</i> ; <i>Canis lupus dingo</i>	2, 3, 15, 16	4
European Rabbit	<i>Oryctolagus cuniculus</i>	7	1

Note: While these animals are identified here as wild dogs, some authorities will likely consider them to be true dingoes (*Canis dingo*) following in-depth genetic analysis of over 5000 “wild dogs” (including 356 from Queensland) which showed >98% of animals tested comprised at least 50% dingo ancestry (Cairns et al. 2022).

3.3 Discussion

In relation to the Target Vertebrate Pest Species, no direct or indirect observation was made of Deer, Feral Cat and Feral Pig. This does not rule these species out of potential site presence meaning control should be catered to these species, as well as those identified through survey efforts.

4. Management Strategies

Pest management techniques and strategies which have been adopted are designed to utilise techniques reactive to the current condition of the Woolshed Offset Area and the surrounding areas. A variety of techniques will be utilised to create an integrated approach to pest management. These techniques are, in most circumstances are suitable for, or adaptable to necessary management of species identified in Table 2.

These strategies should be implemented with other fencing, access and signage measures empowered via the OMP (despite not being prescribed within this plan).

Sections 4.1 to 4.5 are prepared to inform the intensive phase of offset management (Years 1-10). At Year 10 (for implementation in Years 11 – 20), these measures should be contemporised (unless deemed not necessary) to reflect the improved conditions of the Woolshed Offset Area. It is recommended that these strategies should underpin all pest management (in some capacity) for the duration of Offset delivery.

The ultimate goal, which will be tracked through camera trap surveying (see locations at **Attachment 1 of OMP**) (as well as the results of shooting will be to observe a 10% reduction in camera trap recordings species by Year 10)

4.1 Monitoring

Pest management throughout the course of offset delivery will be adaptive, and measures implemented will be subject to routine monitoring of the Woolshed Offset Area, to ensure measures appropriately address pest vertebrates. Consequently, monitoring of pest species over the 20-year offset period will be carried out to review the progress of pest management and evaluate whether strategy adjustments are required.

Monitoring will replicate the assessments methods described herein (camera trapping, incidental observation, indirect observation) and results will be compared with the baseline and preceding years to detect trends in occupancy. Monitoring will take place during Spring (September to November), as this period facilitates peak fauna activity and would provide the best insight of the true extent of pest presence within the Woolshed Offset Area.

Monitoring will be defined by:

- 1- Dedicated pest abundance monitoring
- 2- Results from management (i.e. observed pest destruction)

This monitoring is described below in Table 4.

Table 4: Monitoring Schedule

Monitoring	Method/Indicator	Occurrence
Camera trap	Camera trap monitoring will be undertaken each spring to inform annual compliance reporting.	During Spring (September to November) This will be undertaken: - Each Year 1 to Year 10 - Every second year after Year 11
Observed pest destruction	Pest abundance/management success will be observed throughout the course of each year. Shooting/baiting activities can provide ongoing data via: - Baits taken - Pests shot	At all times
Corrective Actions		
Event	Action	
Monitoring identifies an increase in pest presence from baseline monitoring results	- Contact ICC, investigate if increase has been observed within the region. - Investigate matters that may have led to this increase. This would determine the intensity of correction.	

Results of monitoring and management will be provided within the ACR. The ACR must be submitted within 30 days of each 12-month anniversary of the commencement of this Action.

The Offset Area will be monitored for vertebrate pest animal activity to respond to *Management Action 1– integrated vertebrate pest management* (Section 4.2).

Vertebrate pest monitoring will be undertaken to inform species composition, species' habitat preference, and rate of activity throughout the Offset Area. Monitoring activities will be reported as a Memorandum and attached to the Annual Compliance Report.

The following survey approach has been employed to inform the *Baseline Vertebrate Pest Assessment Memorandum (OMP, Attachment 1)* and will be repeated in general accordance with the monitoring schedule in Table 4. Spatial location data concerning the placement of each camera trap is provided in the Memorandum to allow for the accurate repetition of survey and subsequent comparative platform for species' activity index.

4.1.1.1 Camera Trap Survey

Camera trap data will be analysed to record each encounter with a target vertebrate pest fauna species. A single encounter (or trigger) is defined as the series of photographs programmed to result from motion detection. The rate of encounter does not inform population dynamics in terms of population measures of abundance or density, nor is the data statistically robust. Instead, the results demonstrate a rate of species-specific *activity* which allows for a comparative platform between monitoring events. The resulting rate of activity can be compared between monitoring events under the following methodology assumptions:

- i) The rate of species-specific activity, represented by the rate of encounter, will change in response to species population density;
- ii) Where animal management has been undertaken, it is expected that this will be reflected in reduced species activity across the Offset Area; and

- iii) Where animal management is insufficient, this will be reflected in relatively unchanged or increased activity scores.

The rate of vertebrate pest fauna activity will be used as the measurable and comparable index to inform management actions and success between monitoring years. The activity index will be categorised into an activity scale, as detailed in **Table 5** below.

Table 5: Vertebrate pest fauna activity index – scoring scale

Scaled score	Activity index range
Absent	0
Very low	1-10
Low	11-30
Medium	31-80
High	81-150
Very high	>150

Survey timing, conditions, method, data analysis, and results reporting style will be adopted from the *Baseline Vertebrate Pest Assessment Memorandum (OMP, Attachment 1)*. The Memorandum contained in **Attachment 1** of the OMP will be updated following each monitoring event to form and guide pest management efforts. The Memorandum will be submitted to the proponent and relevant contractors as necessary.

4.1.1.2 Opportunistic observation

Both direct and indirect (tracks, scats, and other traces) observations of vertebrate pest fauna will be captured throughout all Offset Area site visits. This may include the following events:

- Targeted fauna survey – spotlight survey
- Baits taken
- Pests destroyed via shooting events
- Vegetation survey
- Site inspections

Observations of vertebrate pest fauna will be compiled and reported in the Annual Compliance Report and may inform adaptive management processes.

4.1.2 Communication & Engagement

In conjunction with monitoring, ongoing communication with surrounding landowners and ICC representatives will be carried out to further inform pest management strategies. To align with monitoring, communication with surrounding landowners must occur at least annually, or upon identification of an extreme increase in a particular pest species. These surrounding properties are likely to be the most appropriate to gather information regarding pest management. The Offset Holder (the Applicant/Approval Holder) and the Offset Manager (Cherish the Environment Foundation Limited) will undertake regular spoken communication with adjoining landholder whereby weed and vertebrate pest management and bushfire management are discussed.

4.2 Baiting

A baiting program will be investigated during Year 1 of offset delivery, with direct management to focus on shooting in the meantime whilst other procedures are established.

4.3 Trapping

Species specific trapping initiatives are sometimes employed to control pest animals. Padded-jaw traps and cage traps are commonly used to manage the species targeted by this VPMP. However, on account of cause inhumane suffering and distress to not only pest species but also native fauna, livestock and domestic pets, padded jaw traps **will not be used** at the Woolshed Offset Area. Cage traps may be deployed for Feral Cat's, European Fox and Feral Pigs in areas that monitoring has identified to be of high usage by target species (should these be detected). **Table 6** outlines application strategies to effectively establish traps.

On the basis of the baseline assessment, presently trapping is not proposed.

Table 6: Trapping Procedures

Strategy	Discussion	Timing
Suitable Location	The risks of traps causing suffering and death to non-target species is high. Traps should only be established in locations where there is high activity of the target species.	At all times. The establishment of traps should be well informed and justified at all times
Suitable Trap Selection	To reduce suffering of trapped species, suitable trap types for each species should be selected. Any use of jaw traps must ensure that the jaws have rubber padding. - European Fox: Cage trap - Feral Cat: Cage Trap - Feral Pig: Cage Trap	At all times
Frequent Trap Monitoring	To reduce the time of suffering for a trapped animal, traps if established will be monitored daily.	Daily

4.4 Shooting

Shooting is a time and costs effective means of destroying species targeted by this VPMP. Shooting can be a humane means of pest control, as destruction is fast.

Experienced and skilled marksman will be employed as a minimum quarterly or at greater intensity during periods of high pest activity if reported by personnel working on the site. Specific procedures for pest shooting are provided in Table 7. Despite Wild Dogs being the pest of particular focus of shooting initiatives, all target species may be addressed by this method of control. All Marksmen engaged will be suitably skilled and qualified (*AHCPMG304 – Use firearms to humanely destroy animals*).

Table 7: Shooting Procedures

Strategy	Discussion	Timing
Adaptive Shooting Schedules	Shooting quarterly will assist in maintaining pest populations within the Woolshed Offset Area. It will also provide frequent review of pest populations onsite. Marksmen will alert if there is increased presence of pest or signs of pest.	Quarterly Shooting will occur nominally in the months January-March-June-September. These months are based on breeding cycles of target species. However, the months provided in this plan are nominal and may vary.
Avoid shooting of pests with dependant young.	Marksmen will be informed before shooting periods to avoid destruction of pests with dependant young. If adult with dependent young are destroyed, searches for dependant young must be carried out to reduce suffering.	At all times.
Shooting of animal should only occur when marksmen is sure the pest will be killed with one shot	Marksmen must have clear vision and be satisfied that they will euthanise the pest with one shot. Head (brain) and Chest (lung/heart) should be the only locations of a pest's body targeted.	At all times.
Assurance that animal is dead before moving onto the next target	Marksmen must be sure all shot pests are dead. They must locate and euthanise wounded pests.	At all times.
Record of Pests Euthanised	Records must be kept of Pest Shooting. This reporting must coincide with monitoring results and act as an audit against recorded pests. Records will supplement annual ACR, to inform of pest presence onsite.	At all times.
Use of appropriate firearm calibre to humanely euthanise	Rabbit: .22 rimfire. Centre-fire rifles e.g. .22 Hornet, .223 Rem, could be used in areas where long shots are required. Hollow-point or soft-nosed ammunition should be used.	At all times.
	European Fox, Wild Feral Dog, Feral Cat: .22-250, .22 Hornet, .222 Remington, .223 or .243 Winchester. Hollow-point or soft-nosed ammunition should always be used.	
	Feral Pig: Large calibre, high-powered rifles (at least equal to .243 performance), fitted with a telescopic sight are recommended. Hollow-point or soft-nosed (minimum 80 grain) ammunition should be used.	
	Feral Rusa Deer: .270, .308	
All procedures have been informed by the <i>PestSmart National Standard Operating Procedures</i> .		

4.5 Overall Management

Table 8 provides an overall schedule of how the strategies discussed in this section should be implemented.

Table 8: Overall Management Procedures

Action	Locations	Technique	Timing	Discussion
Monitoring	Across the entirety of the Woolshed Offset Area. Previous monitoring efforts should inform allocation of resources for future monitoring.	Baited Camera Trapping - (Rabbit, Wild Dog, Feral Pig, Feral Cat, Feral Rusa Deer) Inspection of Scat, Soil Disruption and Signs of Predation. - (Rabbit, Wild Dog, Feral Pig, Feral Cat, Feral Rusa Deer)	During Spring (September to November) This will be undertaken: - Each Year 1 to Year 10 - Every second year after Year 11	Monitoring informs all initiatives to manage pests for the entirety of the offset delivery period.
Communication & Engagement	Surrounding properties	Must reach out to surrounding landowners to discuss pest prevalence on surrounding properties. Ongoing communication must be maintained with ICC to keep informed with baiting and trapping initiatives.	In conjunction with Monitoring. Ongoing communication with ICC.	Communication must be recorded.
Baiting	Will be arranged in Year 1.	Application of 1080 targeted at Wild Dogs, but its application will vicariously manage other targeted pest species.	Will be arranged in Year 1.	Will be investigated in Year 1. Whilst arranging baiting, shooting will be implemented within Year 1.
Shooting	Across the Site.	Carried out in accordance with the details provided in Table 7. In general, any shooting that occurs must be humane and take all precautions necessary to reduce suffering of pests.	Quarterly for two-week intervals. Will occur nominally in: January-March-June-September	All Marksmen engaged will be suitably skilled and qualified.

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Attachment 6 – Biosecurity Management Plan



Double Jump Road Residential Development

Woolshed - Biosecurity Management Plan

EPBC 2024/09825

21 August 2026

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Project: Double Jump Road Residential Development
Document: Biosecurity Management Plan
Client: Sutgold Pty Ltd

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1. Introduction

1.1 General

This Biosecurity Management Plan (**BMP**) has been prepared by 28 South Environmental Pty Ltd (**28 South**) on behalf of Sutgold Pty Ltd (**the Proponent**) to support the Action 2 of the Double Jump Road Residential Development – Woolshed Offset Management Plan (**OMP**).

The Offset Area subject of the BMP is located at 528-530 Woolshed Creek Road, Woolshed QLD, more formally described as 236 on CH312334. The total size of the Offset Area is 88.63 ha. The Offset Area is shown as **Figure 1**. The offset is provided in response to the loss of 32.57 ha of Koala (*Phascolarctos cinereus*) habitat and 32.57 ha Grey-headed flying-fox (*Pteropus poliocephalus*) at the Site of the Double Jump Road Residential Development (**Proposed Action**) (EPBC Number 2024/09825) at 42-44, 48, 50, 52, 56 Double Jump Road, Victoria Point, Queensland (**Project Area**). The Project Area located within Redland City Council (**RCC**), whilst the Woolshed Offset Area is located within Ipswich City Council (**ICC**).

The strategies and procedures implemented within this BMP will be subject to monitoring, with the results to be provided within Annual Compliance Reporting (**ACR**) as described in the OMP.

1.2 Management Approach

Weed management within the Offset will be carried out in accordance with a general management approach. This approach is formed around three main principles which will guide not only this BMP, but future management as well. Principles are outlined in **Table 1**. Using this approach to influence all weed management initiatives within the Offset Area will ensure control methods are adaptive, appropriate and consequently effective.

Table 1: Management Approach

Principle	Discussion
■ Monitoring & Identification	The Offset Area will be monitored to gauge the presence of weed species onsite. This stage will inform all current and future weed management, as it will monitor not only the progress of implemented weed management but identify and assess emerging threats.
■ Specific Control Measures for Target Species	After assessing the presence of weeds on site and their statutory demands, reasonable control measures are to be applied. Weed control will include any of the following: ■ Physical control (through physical, mechanical and chemical removal) ■ Utilisation of controlled cool burns in line with Action 4 (section 6.4) of the OMP.
■ Implementation of General Site-specific Hygiene (Biosecurity) Controls	General procedures will be established not tailored for specific weed species, but to reduce the potential for increased weed impacts

All matters described within the BMP must be implemented in conjunction with other actions supporting the OMP, such as habitat creation fire management (described under **Action 4 – section 6.4 of the OMP**) and (described under **Action 7 – section 6.7 of the OMP**). These actions inform weed control by; 1) – providing detailed rehabilitation procedures (Action 7); and 2) - provision of controlled cool burns targeted at dense weed infestations (Action 4).

2. Legislative Framework

Biosecurity matters are dealt with at both the Commonwealth and State levels under a range of instruments.

2.1 Commonwealth

2.1.1 Australian Weed Strategy

The Australian Weed Strategy (**AWS**) is a federal guideline for the management of weeds to reduce their impacts on agriculture and the environment. The AWS is a framework that establishes matters of priority for the management of weeds. In particular Appendix B of the AWS sets out 32 Weeds of National Significance (**WoNS**), designated based on their spreading potential, invasiveness and the social, economic and environmental impacts they cause. The identification of a WoNS species on a site should inform particular management strategies and requires management.

2.2 Queensland

2.2.1 *Biosecurity Act 2014* (Qld)

The *Biosecurity Act 2014* (Qld) (**Biosecurity Act**) commenced on 1 July 2016. The Act imposes an overarching General Biosecurity Obligation (**GBO**) which requires reasonable and practical measures to prevent or manage biosecurity risks and not to exacerbate already present effects. This preventative approach relies on a common duty of care owed by all Queensland residents and implementing measures to prevent or minimise biosecurity risks, such as problems caused by pest plants and animals. The GBO applies to all invasive plants, not just prohibited or restricted species under the Biosecurity Act.

Restricted matters include pest plants that have established populations in Queensland and have a significant impact on human health, social amenity, the economy or the environment. There are seven categories which inform the level of attention a weed species should demand under the Biosecurity Act. The State has allocated specific actions to regulate encounters with restricted matters on public or private land and minimise the spread and adverse impacts of the matter. The Act will allocate an invasive species a particular category (or categories) that should influence any management initiative implemented by a party who encounters them.

These actions form the foundation of obligations associated with interaction with restricted matters. Subject to the circumstances, a person may be required to take other reasonable and practical measures to reduce or mitigate biosecurity risks.

In general, any identification of a species that is designated as a restricted matter under the Biosecurity Act requires management.

2.2.1.1 *Other*

The category of other weeds refers to undeclared invasive environmental weeds as described by (Batianoff & Butler, 2003) identified during the assessment, and then further refined to determine species considered a threat to the integrity and quality of restoration, and those that are background (lower priority) weeds presently higher in abundance, but which would be shaded out as revegetation continued. Weeds within this category are woody species which have the ability to suppress regeneration.

3. Results of Baseline Weed Survey

This BMP is informed by baseline weed assessment that took place during January 2025. The baseline surveying identified weeds onsite through random meandering with use of GPS systems to map the full extent of weed presence within the Offset Area. Baseline data has been supplemented with incidental observations of weeds encountered whilst undertaking other specific offset activities. In the field, weed diversity and abundance was assessed by a meandering traverse of the Site, making informed estimates of such abundance.

As the Offset Area was heavily constrained by Lantana** (*Lantana camara*), stem counts were not possible because not all of the site was traversable. As such, the mapping produced for the Offset Area can only be considered representative, and it does not purport to capture all instances of presence for the weeds identified by this management plan (especially those that are WoNS or Restricted matters). See **Attachment 2** of OMP for details of the assessment.

The species listed below (**Table 2**) are weeds that require specific management under this BMP. Some of these have attributes of environmental weeds but are of a lesser threat to the Offset and will be shaded out to lower densities as the offset advances. Treatment of these species may be necessary on an as needs basis if they become problematic (demonstrate smothering or blanketing properties).

Table 2: Weed Survey Results

Species	Common Name	Status	
		Comm.	State
<i>Asparagus africanus</i>	Ornamental Asparagus*	-	Restricted
<i>Baccharis halmifolia</i>	Groundsel Bush*	-	Restricted
<i>Bryophyllum delagoense</i>	Mother-of-Millions*	-	Restricted
<i>Cardiospermum Grandiflorum</i>	Balloon Vine*	-	Restricted
<i>Lantana camara</i>	Lantana*	WoNS	Restricted
<i>Lantana montevidensis</i>	Creeping Lantana*	-	Restricted
<i>Melinis repens</i>	Red Natal Grass*	-	Restricted
<i>Ligustrum sinense</i>	Chinese Privet*	-	Restricted
<i>Opuntia tomentosa</i>	Velvety Tree Pear*	WoNS	Restricted
<i>Senecio madagascarensis</i>	Fireweed*	WoNS	Restricted
<i>Tecoma stans</i>	Tecoma*	-	Restricted

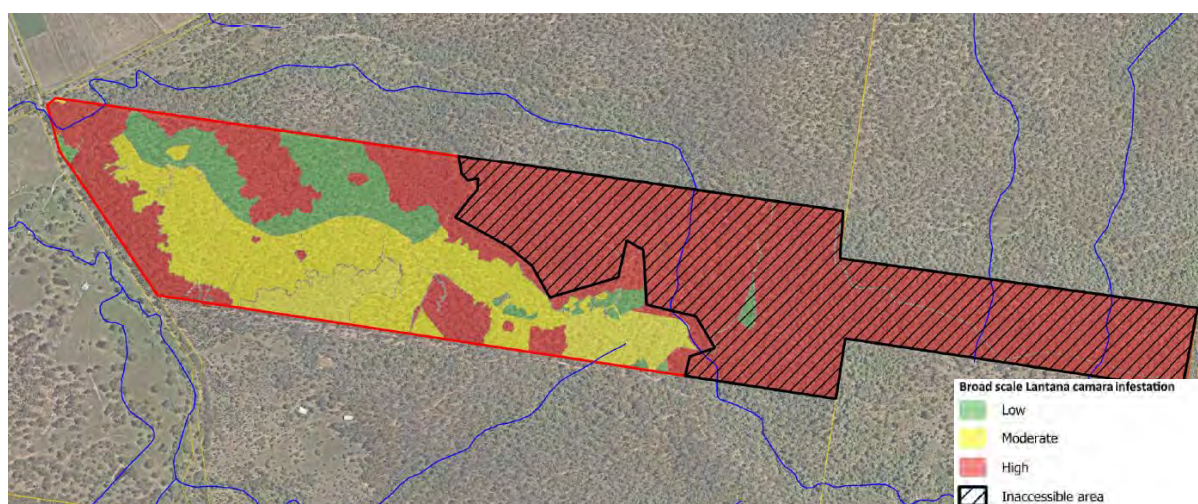
* Exotic, naturalised species

3.1 Lantana

Lantana* (*Lantana camara*) poses the single greatest threat at the Woolshed site, through enhanced bushfire risk, suppression of ecological function and transformation of vegetation community structure to an ecosystem dominated by Lantana* (*Lantana camara*) and indirect impacts on the utility of the site for foraging, shelter, breeding and social interaction by Koala (*Phascolarctos cinereus*).

The extent of Lantana* (*Lantana camara*) has been assessed and reported upon in two separate instances (Baseline reporting (**Attachment 2 of OMP**) and the dedicated Lantana* (*Lantana camara*) technical paper prepared following extensive on-site analysis of Lantana* (*Lantana camara*) condition, density and extent undertaken by cutting access tracks through the thickets (**Attachment 3 of OMP**). In addition to detailing Lantana* (*Lantana camara*) extent the technical paper undertook further assessment of the ecological effects, both on relict vegetation communities (suppression of recruitment and increased fire threat), a literature review of Commonwealth and State funded restoration projects where Lantana* (*Lantana camara*) eradication was cited as the primary mechanism for achieving ecological gains through threat reduction and an assessment of the utility of the site for Koala (*Phascolarctos cinereus*) in the context of the availability of forage habitat, suppression of movement and social interaction, and increased threat (**Attachment 3 of OMP**). This latter report was supported by comments by Dr Bill Ellis. In preparation for the field work associated with the condition assessment technical paper, an extensive drone LiDAR assessment was utilised to chart terrain and analyse the various vegetation strata, especially the 0-5 m layer containing Lantana* (*Lantana camara*). This assessment validated the finding of the earlier (2025) assessment of weeds (**Attachment 2 of OMP**) and facilitated identification of target locations for the supplementary assessment (**Attachment 3 of OMP**).

Generally, Lantana* (*Lantana camara*) is the dominant midstory species throughout the areas identified as high-density infestation (see **Inset 1**) (majority of the Offset Area), which correlates with lower slopes, protected gullies, and areas with basalt-derived soils in the east (or colluvial wash from these areas). The extent and intensity of the weed through the Offset Area suffocates regeneration and impedes ground traversal opportunity. This condition inhibits natural forest recovery and compromises habitat function for koalas in part by obstructing access to preferred canopy species. Further, this dense understorey also increases fuel load and in turn, the risk of bushfire. Each of these consequences compromise the viability of this site being Koala habitat. If Lantana* (*Lantana camara*) is left uncontrolled, canopy recruitment will be suppressed (in turn, food availability), the site can become a movement barrier, bushfire intensity will increase and the weed will impart such impacts to surrounding areas offsite.



Inset 1 – Lantana* Densities

Hygiene controls, movement tracing and weed management will be adaptive and always subject to the results of the monitoring procedures discussed in **Section 5**.

4. Weed Management Action Priority

4.1 Prioritised Targeting

Prioritisation of weed removal is based upon the status / invasiveness attributes of the weed. WoNS and Restricted Category 3 weeds have the highest Action priority. The second tier of priority will be the environmental weeds:

Tier 1 (WoNS)

- Lantana* (*Lantana camara*)

Tier 2 (Category 3 weeds under the Biosecurity Act)

- Groundsel Bush* (*Baccharis halmifolia*)
- Mother-of-Millions* (*Bryophyllum delagoense*)
- Balloon Vine* (*Cardiospermum grandiflorum*)
- Creeping Lantana* (*Lantana montevidensis*)
- Red Natal Grass* (*Melinis repens*)
- Chinese Privet* (*Ligustrum sinense*)
- Velvety Tree Pear* (*Opuntia tomentosa*) – (WoNS as well, but not priority at the outset of Offset)
- Fireweed* (*Senecio madagascarensis*) – (WoNS as well, but not priority at the outset of Offset)
- Tecoma* (*Tecoma stans*).

The Action Priority schedule does not preclude concurrent action on both Tier 1 and Tier 2 weeds; it is reflective of i). the importance of controlling the weed and preventing its spread under the GBO, ii). its persistence and relative effort required in eradication efforts and iii). priority for passive and formal monitoring. In many instances, early knock down of Tier 2 weeds (which also occur in lower numbers), will reduce the risk of these species becoming longer term problems. Woody Tier 2 species may be addressed at the same time as woody Tier 1 species.

It is anticipated that with the ongoing suppression and eradication of Lantana* (*Lantana camara*) other weeds will rapidly germinate to exploit its absence. Therefore, several supplementary rounds of reamendment would be required to not only 'mop-up' Lantana* (*Lantana camara*) regeneration, but other weeds as well.

4.2 Weed Management

Weed Management within the establishing years of Offset delivery should and will focus on the suppression and eradication of Lantana* (*Lantana camara*). This document therefore focusses significantly on Lantana* (*Lantana camara*) and is required to enable revegetation of the Offset Area (see the overarching OMP) and reinstate ground traversal opportunities for native fauna, most notably Koala as well as natural canopy/mid-layer regeneration. This does not in any way, diminish requirements or responsibility for the treatment of other WoNS / Restricted matters.

Generally, Tier 2 species listed above, will be controlled vicariously through the control of Lantana* (*Lantana camara*), but control of Lantana* (*Lantana camara*) is crucial to ensuring the net-gains necessary to arrest ecosystem collapse and reinstate viable habitat.

Weed control is to be undertaken in line with management methods and progressions outlined within the Woolshed Rehabilitation Management Plan (**RMP**) (**OMP, Attachment 4**) and the Fire Management Plan (**OMP, Attachment 7**). This RMP divides the Offset Area into separate Management Units (**MU**), each subject to differencing management actions. For the purposes of this BMP, MUs from the RMP will be used to inform weed control timing and objectives. Weed control will also be undertaken via Action 4 of the OMP, which sets out procedure for weed control via cool burns.

Control of Lantana* (*Lantana camara*) (under this BMP – noting proposed fire management may/will be implemented concurrently) will be carried out in a segmented (cell based) approach, focussing on initial control within concentrated spaces progressively, proceeded by monitoring and secondary controls (follow up control).

Segments will be established, utilising pole-mounted chainsaws to cut tracks (and transects) as such an arrangement can be utilised to effectively reach over Lantana* (*Lantana camara*) canes. This will allow tracks to be cut into the thickets to establish workspaces for management of Lantana* (*Lantana camara*). Each segment will be numbered and treatments applied and effectiveness recorded against each so that adaptive decision making will be reportable and transparent.

These tracks will not be uniform; except they will appropriately interact with the topography of the Offset Area. The only requirement of these tracks is that they are spaced approximately 50m apart to allow for safe maintenance of each transect. **Figure 2** illustrates segment design, though, on ground conditions should dictate final layout of these tracks, ensuring safe maintenance reflective of the topography.

Tracks will not be for vehicles, but instead they are to be appropriately sized for maintenance staff to access with appropriate equipment and work from safely. Cutting these tracks is the first priority of weed management.

Segment design will be detailed within Year 1 of Offset delivery by the Offset Provider (Cherish the Environment Foundation Limited), but generally, segments will be cut at distances where opportunities to control Lantana* (*Lantana camara*) is made more accessible, safer and easier. The first priority will be restabilising existing tracks throughout the Offset Area. Track cutting will be:

1. Clear and open existing tracks or new main tracks This will enable primary access across the site.
2. Cut tracks off the main tracks to establish segments and enable spaying and maintenance access.

From those tracks targeted spraying and slashing can be carried out with either hand methods or machinery such as track slashers and side by side vehicles (where conditions permit).

Lantana* (*Lantana camara*) control within each cell will be dictated by actual on-ground conditions revealed by track establishment. The majority of Lantana* (*Lantana camara*) control will involve:

- In certain circumstances such conditions present in the western extent of the Offset Area physical removal by chaining¹ will occur (at sites of Assisted Natural Regeneration (**ANR**) - ANR1b & ANR1d). Care will be taken to ensure this method does not impact native woody vegetation. This will be followed up with chemical treatment of regenerating Lantana* (*Lantana camara*).
- Where favourable ground conditions are present from a health and safety perspective, mechanical cutting, followed by chemical treatment of regenerating Lantana* (*Lantana camara*). This will involve a number of follow-up treatments. This is the preferred approach as:
 - This results in the knock-down of Lantana* (*Lantana camara*) canes reducing the perching structure for small passerine bird species which might otherwise spread Lantana* (*Lantana camara*) seed.
 - A more targeted approach of chemical treatment will reduce the likelihood of non-target plant impacts that would be otherwise be experienced by broad scale foliar herbicide application.
- Where thickets are large and expansive or steep terrain is present and complete slashing (mechanical cutting) is not possible, foliar application (chemical treatment) may be undertaken (ANR1b, ANR1d & ANR 1c). This can be followed up with further foliar spray (chemical treatment).
- Controlled burns will also be utilised. This is to be undertaken in line with **Action 4 (section 6.4) of the OMP**.

The key performance indicator for Year 1 is to have established all segments within the entire Offset Area and to have undertaken initial treatment in at least MUs (those that make up the western areas of the Offset Area):

- ANR1b
- ANR1d

¹ Chain attached to a 4WD or tractor, with chain wrapped around target thicket.

- ANR1c

Refer to **Section 4.6** for more details.

4.3 Hierarchy of Controls

Species identified by this BMP will be managed through a combination of physical, mechanical and chemical controls, in that order of preference as summarised by **Table 3** (noting that weed control will be undertaken via controlled burns concurrently (see **Action 4 (section 6.4) of OMP**)). Preference is based on the levels of skill and training required (from least to most), material inputs, permits and record keeping. Conversely each method represents and decreasing level of labour input.

Table 3: Hierarchy of Control Methods

Control Method	Timing
1. Physical / Hand Removal	Upon contact with isolated individuals. All removed individuals to be bagged to contain seeds / propagules. Follow-up inspections for reestablishment from vegetative material will be necessary and follow up controls as appropriate, required.
2. Mechanical	Mechanical control is desirable and necessary where dense swards / thickets are present and chemical control is not desirable on account of overspray / sensitive environments are present. This is only to occur where environment is safe to operate within. Mechanical control will be followed by spot herbicide application.
3. Chemical (based nominally on contents of <i>South East Queensland Restoration Framework (2012) – Manual – Appendix C</i>)	Upon contact with larger concentrations of species or in areas where terrain does not permit safe mechanical removal. Foliar application will be undertaken either by: ■ Spray ○ Best for dense, easily accessible Lantana* (<i>Lantana camara</i>) infestations under 2 meters in height where native plants are absent. ○ Mixed with water at a relatively dilute rate and sprayed to achieve thorough coverage of the Lantana* (<i>Lantana camara</i>) leaves and green stems. ■ Splatter gun ○ Ideal for steep, hard-to-access terrain. ○ Mixed at a much higher concentration and applied as large, widely spaced droplets to the Lantana* (<i>Lantana camara</i>) canopy, requiring only partial foliage coverage.
Controlled Cool Burn (location in table is non-hierarchical)	Controlled cool burns will be implemented in line the fire management plan used to support Action 4 (section 6.4) of OMP . At the outset of offset delivery (Year 1) this will occur in concurrently with management implemented via this plan.

Note: These species threaten great expansion capabilities. A control method that would best achieve the overall initiative to eradicate these species from the offset must be chosen in all circumstances.

Physical removal will be prioritised in all circumstances with physical weed removal being most effective after rain, when the soil is soft (Business Queensland, 2018). Consequently, weather should inform physical removal efforts, prioritising weed removal after rain events. Physical removal ensures that the entire weed is removed, without opportunity to reestablish. However, the technique is of limited benefit when the plant has seeded as physical

removal has the potential to result in seed spread. All pulled weeds other than Lantana* (*Lantana camara*) will be solarised and composted on site. This method will not be appropriate through majority of the Offset Area.

Mechanical removal is to be undertaken through denser infestations of Lantana* (*Lantana camara*), deeply rooted shrub that cannot be removed by hand (e.g. Opuntia) or trees (e.g. Cadaghi). Mechanical removal should involve cutting (once segments discussed above have been established), followed by chemical control (spraying) once cutting has exposed the thickets. This is the most effective and least time-consuming means of removing these thickets. Use of herbicide should be undertaken by trained individuals possessing an *Agricultural Chemicals Distribution Control Act 1966* (Qld) licence or in accordance with manufacturer recommendations or label instructions. There are specific record keeping requirements associated with this method (see **Section 4.3.2**).

Suitability of all controls and herbicide application rates and methods for each species is identified in **Addenda 1**. Constant awareness of these species must be maintained, and controls should occur upon contact with the species, where practical.

4.3.1 Adaptive Management

Most importantly, control is to be adaptive throughout initial years of Offset Delivery. Within Year 1 of the Offset, a range of methods will be trialled:

- Trial spraying
- Trial cutting and spraying
- Physical removal
- Mechanical removal
- Controlled cool burns (see **Action 4 (section 6.4) of the OMP**)

Weed monitoring (see overarching OMP) will inform the viability of weed control methods. However, treatment success is to also be monitored throughout the day-to-day operation of the Offset. If the methods listed above prove to be unsuccessful, all parties involved with offset delivery should review and consider implementing different controls.

4.3.2 Chemical Records

A detailed and ongoing record of chemicals applied to manage weed species onsite must be maintained, to inform interested parties of chemical usage within the Offset Area. Records must be prepared after all chemical use to manage weeds, and they must be submitted as part of the ACR. Such records should include details regarding:

- Date
- Name, Signature and Company Name
- Contact Phone Number
- Location of Activity
- Target Species
- Chemical Application Method
- Chemical and the Amount of Chemical Used
- Weather conditions (rain & wind).

4.4 Incidental Recording of Weeds

Where a previously unrecorded WoNS / Restricted matter is detected or suspected, the location of the weed should be recorded by GPS, flagged with marker spray / tape or identified on a plan. Information must be provided to the Offset Manager.

4.5 Scheduled Revision of the Biosecurity Management Plan

This Biosecurity Management Plan will be reassessed following Year 2 weed monitoring.

This will assess the viability of segmented weed control. Such success will be gauged upon:

- If weed removal is not being undertaken in line with the timings proposed in Section 4.6 (note that if weather prevents work, this would potentially be the cause of this, and no changes will be made if evidence (weed monitoring results) suggests no change is required).
- Baseline weed levels increase.
- Establishment of new weeds after dense understory is controlled.

If such events occur, there will be a reevaluation of management strategy and/or intensity of works. However, such failures are not envisaged for Year 1, and management will be focused on Year 1 success in line with this plan.

This plan will remain in place if there is no apparent need to adjust management focus after Year 1 monitoring.

4.6 Timeline for Treatment

The target treatment steps are outlined below in **Table 4** where the matters described within this section will be outlined. This table also outlines, initial treatment pathways (i.e. adaptive management) and provides a general estimate as to when, revegetation can be undertaken once the exotic understorey of the Offset is dealt with. **Table 5** outlines the timing for these steps.

Table 4. Lantana* (*Lantana camara*) Treatment Steps

Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Initial cutting of maintenance tracks and reestablishment of internal existing tracks (all of the Offset Area) using pole-attached chainsaws and/or brush cutter (or any other reasonable method). To be undertaken concurrently with later steps (i.e. should not cut tracks across the entire Site then undertake control, cut multiple preliminary tracks, and maintain relevant segments)	Undertake control/treatment, progressively, in the segments dissected by maintenance tracks cut as a part of step 1. Treatment methods should be trialled and investigated (refer Section 4.2). However, Lantana* (<i>Lantana camara</i>) is the priority of these works, and any method should be tailored to control such infestations. These works should be followed up by treatment after cutting/removal occurs.	At a minimum, within two (2) -three (3) months after step 2 though ideally more frequently, follow-up inspection and treatment of works undertaken in step 2 should occur. The regeneration rate of Lantana* (<i>Lantana camara</i>) observed during this rate should inform whether the trialled treatment solution is viable (if so, continue and implement elsewhere – if not, adapt management).	Continue Step 2-3. Adapt management approach as necessary, implement such adaptations. Undertake the monitoring described in Step 3.	Complete Annual monitoring and Investigation whether adaptations are required.	Continue Steps 2-6 until understory is ready for revegetation. Undertake revegetation in line with overarching OMP. It is however critical that the understory is controlled before infill planting is undertaken. Revegetation can be undertaken in areas cleared of revegetation (i.e. where weed control should occur in Year 1 – ANR1b, ANR1d & ANR 1c). By Year 15, an measurable 95% reduction in WoNs and Category 3 Restricted Matters combined across all segments, though revegetation can occur gradually, as weed removal progresses.
Note that these are to be implemented in tandem with weed control measures proposed through controlled burns. See Action 4 (section 6.4) of the OMP. ▪ Phase 1 — Knockdown (approx. Years 1–3) ○ Systematic low-intensity burning of High and Moderate density infestations Lantana* (<i>Lantana camara</i>), each burn coupled to mandatory herbicide follow-up. ▪ Phase 2 — Consolidation (approx. Years 3–12) ○ Continued low-intensity mosaic burning on the Herbarium interval to hold Lantana regeneration low while the native understory recovers and closes. ▪ Phase 3 — Long-term maintenance (approx. Year 10 onward, continuing beyond the offset period) ○ Fire retained as an ecological maintenance tool: low-intensity mosaic burns to maintain open forest structure, limit fuel accumulation and wildfire risk, sustain the fire-age mosaic for fauna, and keep residual Lantana* (<i>Lantana camara</i>) regeneration low. ○ By this phase the recovered understory shades the interior, so fire is a maintenance tool rather than a weed-control necessity.					
Monitoring					

- Once segments have been established (Step 1), and assigned a unique identifier, each segment will be measured for Lantana* (<i>Lantana camara</i>) density. - For other weeds that do not occur in high densities (WoNS, Restricted Matters that are not Lantana* (<i>Lantana camara</i>)), stem counts will be measured within each segment. - These segments will be monitored to track removal progress – with reductions in each segment being combined to provide a final percentage of weed removal progress for that reporting period. - The goal of the monitoring methods described above is to determine progress towards achieving a combined 95% reduction in WoNS and Category 3 Restricted Matters by Year 15 across all segments and whether management adaptations are required to achieve such Year 15 standards.
General – at all times
- Undertake monitoring of weed presence (at the very least annually in line with reporting obligations, but ideally more frequently through the day-to-day operation of the offset) and based on the results of monitoring undertake follow up control. - All measures described within this Table, like this offset as a whole should, be adaptable and subject to continuous scrutiny.

Table 5. Lantana* (*Lantana camara*) Timeline for Treatment

Action	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 – Year 15	Year 16 - 20
Access Tracks (Step 1 in Table 4)	Yes - Whole Offset	no	no	no	no	no	no
Segmenting Site (Step 1 in Table 4)	Yes -Whole Offset	Yes - Whole Offset	no	no	no	no	no
Initial Targeted Weed Control (Step 2 in Table 4)	Yes - Commence ANR1b, ANR1d & western areas of ANR 1c	Yes - Continue ANR1b, ANR1d & ANR 1c. Continue ANR 3c & ANR2c (western extent)	Yes - Continue central portions of ANR1c & ANR2c. Commence western ANR1a areas	Yes - Continue ANR1c & ANR2c. Commence ANR3c.	Yes - Continue ANR1c, ANR2c, ANR3c & ANR1a	N/A	no
Follow up control after initial treatment (Step 3 in Table 4)	Yes	Yes	Yes	Yes	Yes	Yes	no

Action	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 – Year 15	Year 16 - 20
Planting/ Revegetation (Step 6 in Table 4)	no	no	Yes - Commence Revegetation of Year 1 and Year 2 weed treatment areas.	Yes	Yes	Yes	no
Ongoing Maintenance (Step 6 in Table 4)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controlled Cool Burns	Implement Action 4 (Section 6.4) of the OMP at all times						
Adapt Management when required	At all times						
Phasing	Initial Phase		Follow Up Phase				

5. Managing Biosecurity

Multiple general controls will be implemented to manage weed presence onsite. Many of these strategies are pre-emptive measures to reduce the risk of introducing new weed threats to the Offset Area.

5.1 Controlled Entrances

Entrance to the Offset Area will be controlled, and only available under authorisation. Multiple strategies will be implemented to control access to the Offset Area.

5.1.1 Signage

Measures will be established to prevent unauthorised access into the Offset Area and reduce biosecurity risks arising from uncontrolled vehicle access and spread of weeds. Fencing will screen the proximity of the Offset Area to reduce access. In conjunction with fencing, signage will be established that will adequately inform potential trespassers of the significance of the Offset Area's land use and the ramifications of unauthorised access under the Biosecurity Act and other relevant provisions (**Inset 2**).

Access to the Offset Area will be controlled by provision of padlocks on all gates and registration of site access either through physical logs stored at gates or through a sign-in app (see **Section 5.1.3**).

Signage along the fence line of the Offset Area will outline to the public that the site is an offset area. The signage established along fence lines of the Offset Area is outlined in **Inset 3**.

As the condition of signage will be routinely monitored through the day-to-day management of the Offset Area as well overall monitoring obligations, if a sign is missing, damaged or non-legible, the issue must be reported as soon as practically possible and replaced within 30 business days.



Inset 2 - Biosecurity Visitor Sign (or similar)



Inset 3 - Offset Area 'No Unauthorised Entry' Signage

5.1.2 Gates

Gates will facilitate all entry and exit from the Offset Area. The gates will be managed by the Property Manager. The gates must remain closed / locked to assist in ensuring no unauthorised access to the Offset Area occurs. The gates will be frequently monitored for improper closing and/or damage. Any damage to a gate must be reported for expedient repair. The gates will be fixed with the signage discussed in **Section 5.1.1** and must not be opened unless the contents of **Section 5.1.3** have been fulfilled.

5.1.3 Registration of Personnel

Records will be maintained that will detail all visitation into the Offset Area. This will allow for the source of any biosecurity outbreak onsite to be traced. Being able to trace the source of an outbreak, will assist to inform the correct management procedures to implement.

6. Monitoring, Review and Identification

6.1 Follow-up Monitoring

Follow-up monitoring is integral to inform effective treatment strategies of weeds, determine when follow up treatment is necessary and determine whether adaption is necessary.

This BMP is underpinned by SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) management principles, where the measures and timelines described above will be continually reviewed. The combined operation **Table 4** and

Table 5 capture these principles and will subject any management timeline to continuous scrutiny and have them available for adaption.

All works described above should be supported by follow-up monitoring and treatment (based on the results of such monitoring).

After the occurrence of initial treatment (slashing, cutting, or any other method), such treated areas:

- Will be monitored for reshooting Lantana* (*Lantana camara*), and re-treated.
- After this, such areas will be re-inspected at a maximum of two (2) months (as it is unlikely for such regeneration to occur during drier months) and re-treated.
- Two (2) – three (3) months is a deadline, but ideally, monitoring, and appropriate retreatment will occur as much as possible through the day-to-day operation of the offset.
- Once retreatment has occurred, revegetation in line with the RMP can occur.

Monitoring described within this section (Section 6.1) is not the same as monitoring associated with Monitoring programs aligned with compliance obligations. The purpose of this monitoring is to ensure follow up treatment of Lantana* (*Lantana camara*) occurs before such weeds can reestablish.

6.2 Annual Compliance Monitoring Procedure

Monitoring is the systematic collection, recording and analysis of observations over time (Auld, 2009). It provides a means of checking if the intended outcome of a management program is being achieved. Even after apparently successful weed control, reinvasion by weeds from buried seeds or other underground organs may occur before any native plant species occupy the area (Auld, 2009). Regular systematic monitoring is required to assess the effectiveness of the weed management on the Offset Area and verify the expected recovery of native vegetation following weed removal or suppression. Without monitoring, it is not possible to demonstrate the effectiveness or otherwise of the weed management program, or how it might be modified to improve results (i.e. adaptive management).

The results of previous surveys will inform target locations of monitoring, as surveys will involve the reinvestigation of weed communities outlined in baseline surveying to assess the results of management actions. Monitoring will require assessment of both density and extent of known weed infestations and will provide the same data for new infestations discovered or orchestrate further surveying for that discovered infestation. The results of annual monitoring will make up part of the ACR.

6.2.1 Monitoring Methods & Performance Criteria

Monitoring will be undertaken using methodologies consistent with those applied during the baseline assessment to ensure that results are directly comparable and capable of demonstrating temporal changes in weed richness, abundance and spatial extent across the Offset Area relative to the baseline assessment completed in January 2025.

Monitoring results will be directly compared against the baseline results to evaluate the effectiveness of management actions, identify emerging infestations, and quantify changes in the extent and density of WoNS and restricted matters within the Offset Area.

Monitoring surveys will be undertaken by suitably qualified botanists during seasonally appropriate conditions to facilitate accurate species identification through the presence of diagnostic flowering and fruiting structures where available.

Field assessment will utilise the same informed random meander assessment technique following Cropper (1993)² to ensure consistency with the baseline survey and enable direct comparison of monitoring results. During surveys, weed species encountered within the Offset Area will be spatially recorded using a GPS and assigned abundance categories consistent with the baseline assessment. Adoption of the same methodology will provide a repeatable assessment framework for evaluating changes in weed population dynamics and maintaining an inventory of invasive species present within the Offset Area. Monitoring meanders will, where practicable, follow similar traverses to those undertaken during the baseline assessment.

Where dense infestations limit site access, the edges of infestations will be mapped using GPS points and/or polygons. Existing access tracks, fire trails and other traversable corridors will be utilised to assess the extent and condition of infestations within these areas. Field observations, post-processing of spatial data and remote sensing analysis within the project GIS will be used to refine infestation boundaries and update abundance mapping. Comparison of mapped polygons with baseline mapping will be undertaken to identify increases, decreases or stability in infestation extent.

During monitoring surveys, infestations of Lantana (*Lantana camara*) will be mapped and categorised using the same abundance classes applied during the baseline assessment:

- **Low** – fewer than 10 stems within a patch of Lantana (*Lantana camara*), with a sparse distribution;
- **Moderate** – more than 10 stems of Lantana (*Lantana camara*) with a patchy and disconnected distribution; and
- **High** – large continuous patches, often forming an impenetrable wall of vegetation.

Monitoring results will be compared against baseline abundance categories and mapped extents to determine changes in infestation density and distribution.

Other WoNS species occurring within the Offset Area, including velvet tree pear (*Opuntia tomentosa*) and fireweed (*Senecio madagascariensis*), will be recorded when encountered and assigned to the following abundance classes:

- **Low** – 0–5 stems;
- **Moderate** – 5–20 stems; and
- **High** – 20 or more stems.

These species will continue to be recorded as point locations within the mapping area, unless infestations have expanded sufficiently to warrant polygon mapping. Monitoring data will be compared with baseline records to determine changes in abundance, occupancy and distribution.

Where Category 3 restricted matters under the Biosecurity Act are observed during monitoring, a data point will be collected documenting species identity and infestation density. Density assessments will be assigned using the same criteria applied during the baseline survey:

- **Low** – 0–5 stems;
- **Moderate** – 5–20 stems; and
- **High** – 20 or more stems.

² The random meander technique described by Cropper, 1993 (Cropper SC 1993, Management of Endangered Plants, CSIRO Publications Victoria). It is noted that although the technique was derived for identifying threatened plants in the field across a range of habitat types, the underlying assessment approach is useful for weed assessments.

Comparisons with baseline records will be undertaken to determine whether infestations have increased, decreased, remained stable, or been eradicated.

Where infestations of Lantana* (*Lantana camara*) are too dense to traverse safely, existing tracks and accessible corridors will be used to survey infestation boundaries. Consistent with the baseline assessment approach, infestations will be assumed to extend to observable boundaries where direct access is not possible. Any changes in the extent of these infestations will be assessed through comparison with baseline mapping and supporting GIS analysis.

6.2.1.1 Performance Criteria

These methods will be utilised to assess progression towards achieving a final 95% reduction in WoNS and Restricted Matters across the Offset Area by Year 15 in comparison to baseline weed monitoring results.

It is envisaged that through the concurrent implementation of this BMP and the Fire Management Plan supporting **Action 4 (Section 6.4) of the OMP** will achieve a 95% reduction in target weeds (see section 4.1) in comparison to baseline results because:

- Intensive (during initial years) and follow-up control will ensure that:
 - 1- Lantana* (*Lantana camara*) will cease the production of seeds; and
 - 2- In-situ seed bank of Lantana* (*Lantana camara*) will be largely exhausted by Year 10-12, and rehabilitation will close up understory with native groundcovers.

As such, through the monitoring described above, progress towards achieving a 95% reduction in weed abundance (i.e. observed reduction in low, medium and high abundance classes (see **Attachment 2 of OMP**)) across the Offset Area.

It is consequently envisaged that management through Years 16-20 will consist primarily of monitoring, and on-going maintenance to ensure the desired 95% reduction in WoNs and Restricted Matters is achieved and maintained through to Year 20 and beyond.

Monitoring will be carried out through botanical surveying in accordance with the procedures set out in **Table 6**.

Table 6: Monitoring Procedures

Monitoring Frequency	Carrying out of Monitoring	Monitoring Procedures
Mandatory Monitoring / Action		
▪ <u>Monitoring will occur Annually in Years 1-10 and every second year in Years 11-20.</u> ▪ Weed monitoring should coincide with other monitoring initiatives implemented across the OMP. This will reduce human presence on sight, limiting chances to disturb native fauna.	▪ Always a Suitably Qualified Person¹ ▪ Monitoring of all offset infrastructure and restoration areas ▪ Results assessed against baseline and previous results to determine trends in diversity and numbers, and, effectiveness of actions, and to identify emerging weed issues	Monitoring replicating the baseline assessment (or any other method deemed more effective once dense understory is controlled) ▪ There should be no increase in weed abundance that is left uncontrolled. ▪ Revegetation will be undertaken alongside the progressive removal of weeds (i.e. when weeds are cleared in an area, revegetation follows.) ○ If monitoring identifies any increase, or threat to revegetation timelines, immediate action is required.

Monitoring Frequency	Carrying out of Monitoring	Monitoring Procedures
		Monthly formal inspection of: ▪ Weed presence ▪ Condition of signs, fencing and gates. ▪ Access and egress logs of persons entering the Offset Area to be conducted and assessed for compliance.
▪ Through the day-to-day operation of the Offset Area	▪ All persons entering the Offset ▪ Offset Area Manager	Constant awareness of biosecurity matters that interact with the Offset Area. General monitoring should nominally include informal inspection of ² : ▪ Condition of signs, fencing and gates ▪ Weed presence All relevant matters should be recorded and reported as soon as reasonably possible to Offset Delivery Managers for control.
Reactionary Monitoring		
▪ Specific weed monitoring should occur if communication (discussed at below) with surrounding landholders, ICC representatives disclose the potential of a weed outbreak.	▪ Always a Suitable Qualified Person¹	▪ Targeted supplementary assessment as necessary ▪ Informal monitoring during presence within the Offset Area.

Notes:

1. Assessments under the supervision of a tertiary trained ecologist or environmental scientist with a minimum of 5 years industry experience.
2. The GBO obligates all personnel to implement passive / informal weed monitoring through the day-to-day operations within the Offset Area and to report any suspected new incursions of weeds. Awareness for weed spread (existing species) and weed establishment (new species) must be maintained. Monitoring should inform all weed control initiatives.

6.3 Communication and Emerging Threat Detection

Ongoing communication with surrounding landholders and Stakeholders (ICC) is integral to the management of weeds within the Offset Area. Understanding weed presence on surrounding properties and in the greater area will inform management of the Offset Area to focus management on arising weed problems, even if the weed is not yet present within the Offset Area.

Ongoing communication and awareness monitoring with landholders and Stakeholders is essential to understand emerging weed risks in the region.

Reports of conversation and correspondence with the above are to be maintained by the Site Manager and / or the Proponent and supplied to the entity preparing the ACR. Any communication which identifies new matters that may materially affect weed control methods and management strategies, result in significant infestations of a WoNS / Restricted matter should be immediately brought to the attention of 1) The entity undertaking control / monitoring and; 2) The author of the Biosecurity Management Plan for action.

6.4 Review and Reporting

Annually prepare a report outlining weed surveys and weed management control activities undertaken within the Offset Area. Activities conducted in the reporting period are to be included in the Annual Compliance Report.

The report will include a data comparison between each previous years weed survey data and the baseline dataset. Each year's Annual Compliance Report will include an analysis of trends in weed diversity and abundance, emergence of any new invasive species actually present on site and proposed adaptive amendments to the Biosecurity Management Plan for future years. The Biosecurity Management Plan will be reviewed in light of the above findings.

6.5 Summary Reporting Schedule

Table 10 provides a summary of monitoring and reporting activities to be undertaken as a part of this BMP.

Table 7: Monitoring and Reporting Commitments

Year	Action / Report	Responsibility	Timing of Result Production
1	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
2	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
3	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
4	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
5	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
6	■ Implement BMP ■ Monitoring and Compliance Report	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR.

Year	Action / Report	Responsibility	Timing of Result Production
	○ Late spring – early summer (October to November)		■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
7	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
8	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
9	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
10	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
11	■ Implement BMP ■ Monitoring and Compliance Report ■ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
12	■ Implement BMP	Offset Provider and the Suitably Qualified Ecologist	■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
13	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
14	■ Implement BMP	Offset Provider and the Suitably Qualified Ecologist	■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
15	■ Implement BMP ■ Monitoring and Compliance Report	Offset Provider and the Suitably Qualified Ecologist	■ Provide evidence of works undertaken within

Year	Action / Report	Responsibility	Timing of Result Production
	○ Late spring – early summer (October to November)		year/demonstration of compliance within ACR.
16	■ Implement BMP	Offset Provider and the Suitably Qualified Ecologist	■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
17	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
18	■ Implement BMP	Offset Provider and the Suitably Qualified Ecologist	■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
19	■ Implement BMP ■ Monitoring and Compliance Report ○ Late spring – early summer (October to November)	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.
20	■ Implement BMP ■ Final Monitoring and Compliance Report	Offset Provider and the Suitably Qualified Ecologist	■ Produce weed monitoring results in ACR. ■ Provide evidence of works undertaken within year/demonstration of compliance within ACR.

6.6 Corrective Actions and Tracking

Table 11 outlines a number of triggers and corrective actions and timing which are to be implemented in instances of non-compliance or the lack of success toward the gradual achievement of a 95% reduction in WoNS and restricted matters by Year 15.

Table 8: Risk triggers, Corrective Actions and Timeframes

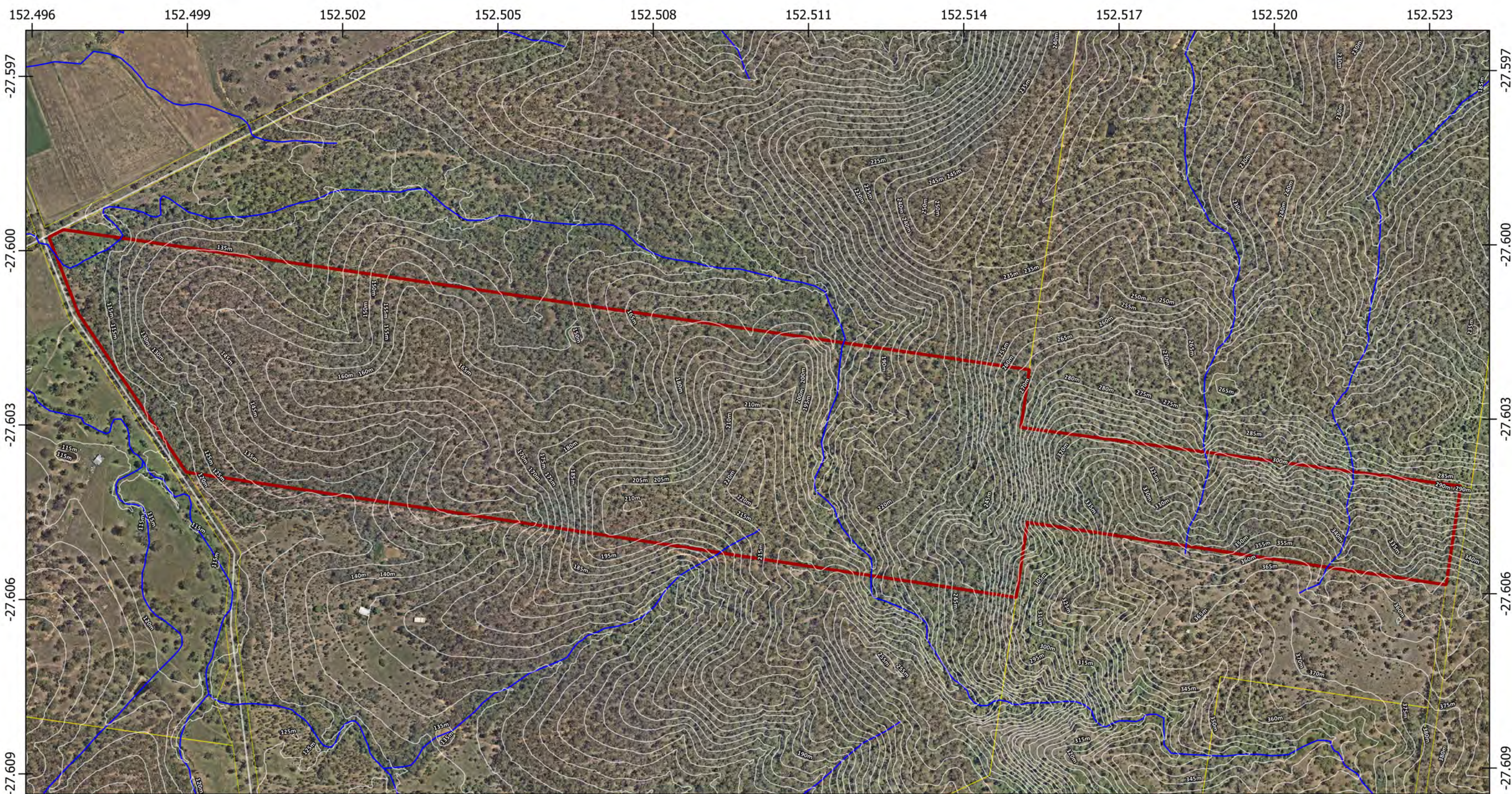
Triggers	Corrective Actions	Timeframes
Weed re-establishment	■ Immediately treat all WoNs with delicate methods to avoid impacts to restoration works (mechanically or chemically dependent on circumstances) ■ Undertake an investigation of the potential source point of seeding ■ Additional treatment and removal works are to be followed up during the next potential growth period (prior	■ Within three months of detection, noting that treatment during non-growth periods may be ineffective and are best targeted during growth periods for greater effectiveness (depending on the target weed species). ■ Within three months of detection ■ Within six months of initial detection

Triggers	Corrective Actions	Timeframes
	to flowering) to avoid any regeneration and potential seeding events	
Monitoring alludes that weed removal is not achieving desired timeline	Review of this plan and underlying weed removal strategy	Review of strategy and plan update must be undertaken within 6 months of monitoring

7. References

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FIGURES



Double Jump Road BMP

Legend

Figure 1 - Woolshed Site Features

- ▬ Woolshed Offset Area Boundary
- ▬ Property Boundaries
- ▬ Road
- ▬ Waterway/overland flow path
- ▬ Contour (5m)

28 South Project Ref: 2019-100e

Source: C:\Users\Mitchell\Dropbox\Projects\2019\2019-100e (Sutgold - EPBC Woodbury Precincts)\Data\GIS\Woodbury EPBC Referral (GDA2020).qgz

The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

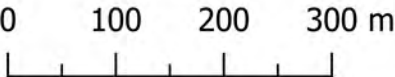
28°S
ENVIRONMENTAL

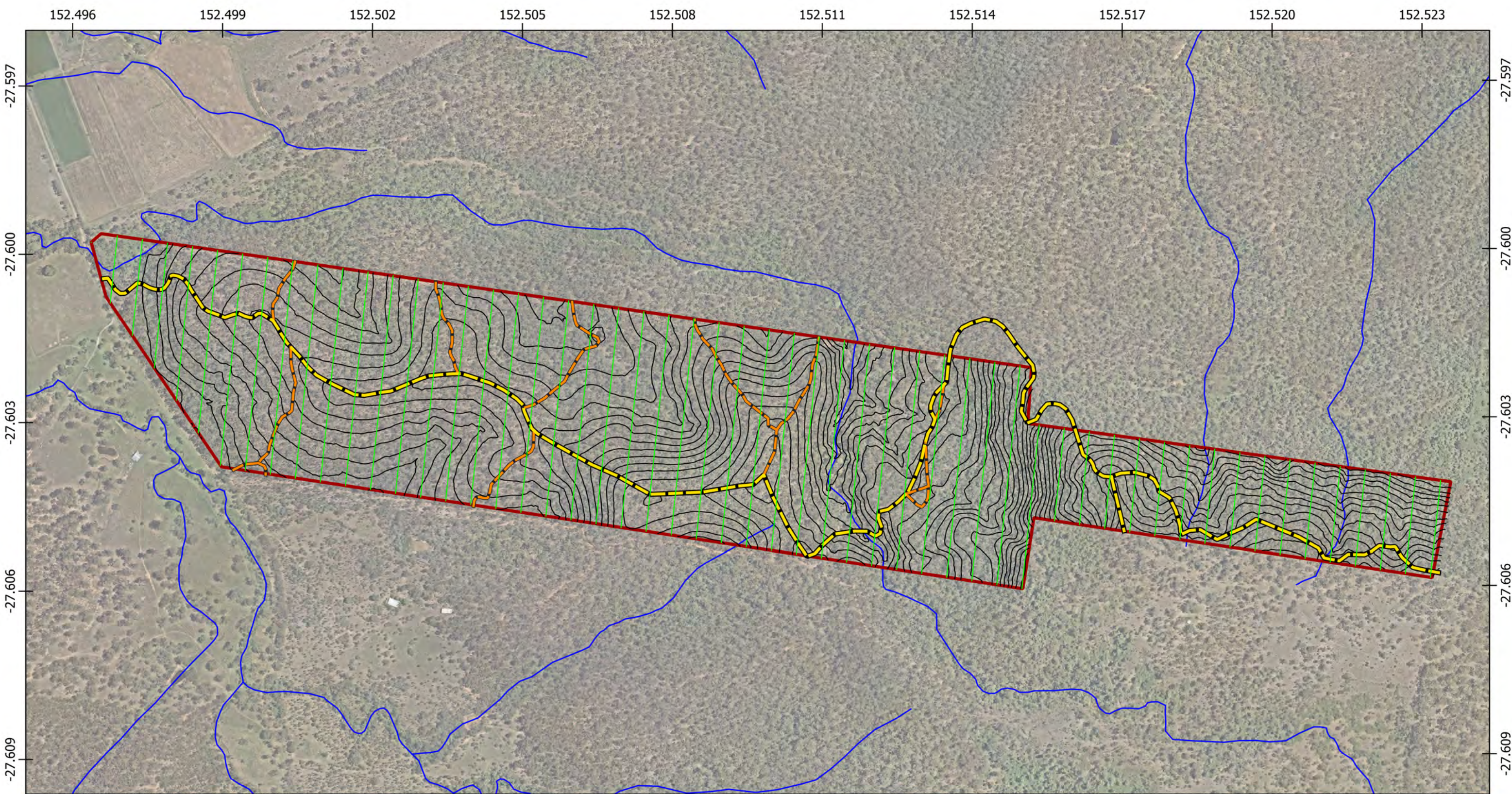
Links to data sources can be provided upon request.

Issue Date	Dwg No.	Author
16-04-2026		MO
Approved	Revision Note	
AD		

GDA2020 MGA 56

1:7,000





Double Jump Road BMP

Legend

**Figure 2 - Maintenance Track /
Transect Design**

28 South Project Ref: 2019-100e

Source: C:\Users\Mitchell\Dropbox\Projects\2019\2019-100e (Sutgold - EPBC Woodbury Precincts)\Data\GIS\Woodbury EPBC Referral (GDA2020).qgz

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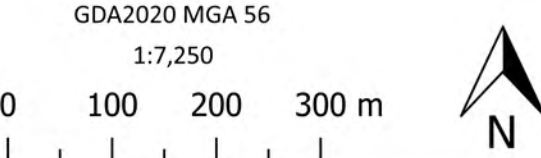
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-  Woolshed Offset Area Boundary
-  Waterway/overland flow path
-  Woolshed 50m transects
-  Contours (5m)

Access Tracks and Firebreaks

-  Track
-  Fire break

Issue Date	Dwg No.	Author
16-04-2026		CMMO
Approved	Revision Note	
AD		



Addenda 1: Herbicide Use Log

HERBICIDE USE LOG

[illegible]

HERBICIDE USE LOG

[illegible]

HERBICIDE USE LOG

[illegible]

Attachment 7 – Fire Management Plan

FIRE MANAGEMENT PLAN

Woolshed Creek Road Offset Site

RE 12.9-10.2 & RE 12.9-10.7 | EPBC Referral 2024-09825 | FY2027 Burn Season and Long-Term Regime

Document title	Fire Management Plan — Woolshed Creek Road Offset Site
Property	528–530 Woolshed Creek Road, Woolshed QLD 4340 Lot 236 CH312334 88.63 ha (43 ha V-Dec area)
EPBC Referral	2024-09825 (Fiteni Group / Double Jump Road development)
Regional Ecosystems	RE 12.9-10.2 — <i>Corymbia citriodora</i> subsp. <i>variegata</i> / <i>Eucalyptus crebra</i> open forest (Least Concern); RE 12.9-10.7 — <i>Eucalyptus crebra</i> / <i>Corymbia tessellaris</i> woodland (Of Concern)
Prepared for	Cherish the Environment Foundation Ltd (CTE)
Prepared by	Cherish Habitat Services Pty Ltd (CHS)
Date	July 2026
Version	FMP_WoolshedCreek_2027 v6.0
Related documents	SOP-FIRE-001 v1.2 Prescribed Burn Standard Operating Procedure (operational procedure); Rehabilitation & Weed Management Plans (weed control detail)
Status	For QFES Rural Fire Warden endorsement and DCCEEW submission

Scope of this plan: This Fire Management Plan sets the fire strategy, prescription envelope, and long-term regime for the site. Operational burn procedure — go/no-go thresholds, pre-ignition checklist, ignition, mop-up and the herbicide follow-up schedule — is held in SOP-FIRE-001 and is not reproduced here. Weed-control and revegetation detail is held in the site Rehabilitation and Weed Management Plans; this plan addresses those matters only to the extent fire interacts with them.

1. Site Overview

1.1 Property and Offset Area

The Woolshed Creek Road offset site is located at 528–530 Woolshed Creek Road, Woolshed, approximately 7 km north of Grandchester Township and 33 km west of Ipswich. The freehold property (Lot 236 CH312334, 88.63 ha) is owned by CTE. The V-Dec offset area covers 43 hectares. The site adjoins ICC's Mt Grandchester Conservation Estate on the southern boundary, forming part of the Little Liverpool Range Bioregional Corridor.

1.2 Topography and Site Geometry

The property occupies a north-western flank of the Little Liverpool Range, approximately 2.7 km east–west and up to 420 m wide. Two distinct topographic and geological zones are separated by a central north–south drainage gully (stream order 1). The West Zone sits on Koukandowie Formation sandstone (Land zone 9) at 110–220 m elevation. The East Zone rises steeply to approximately 360 m elevation on Cainozoic igneous rocks (Land zone 8).

The southern boundary adjoins the ICC Mt Grandchester Conservation Estate (a managed conservation neighbour); the remaining boundaries adjoin freehold land. This geometry — a long perimeter against unmanaged freehold — shapes both the wildfire-interface and boundary provisions of this plan.

1.3 Regional Ecosystems

RE 12.9-10.2 (Least Concern): *Corymbia citriodora* subsp. *variegata* open forest or woodland with *Eucalyptus crebra*. Known koala habitat. Pre-clearing 220,000 ha; 2021 remnant 86,000 ha.

RE 12.9-10.7 (Of Concern): *Eucalyptus crebra* +/- *E. tereticornis*, *Corymbia tessellaris*, *Angophora leiocarpa* woodland. Known koala habitat; potential habitat for NCA-listed threatened plant species including *Melaleuca irbyana*. Pre-clearing 245,000 ha; 2021 remnant 40,000 ha — less than 20% of pre-clearing extent remaining.

Both REs are naturally open forest and woodland communities that are fire-adapted and, in the Herbarium's assessment, fire-dependent: fire exclusion leads to structural decline and weed invasion. The fire regime in this plan is set accordingly.

1.4 Koala and Threatened Species Values

Both dominant REs are mapped as Core Koala Habitat in ICC's Nature Conservation Strategy and as essential habitat for Koala, Powerful Owl, and Glossy Black Cockatoo under the VMA. *E. tereticornis* and *E. moluccana* — key Ipswich-region koala food trees — occur within both dominant REs. Fauna values constrain burn timing, intensity and mop-up (Sections 6 and 8).

1.5 Lantana Distribution and the Appendix A Map

The 28 South Lantana camara Density and Track Network Map (Project 2019-100e, 11 November 2025, v3) — reproduced at Appendix A — is the primary spatial reference for burn planning. Lantana density determines burn-block priority; the existing track network determines burn-block boundaries and access. The map elements relevant to fire planning are:

Map element	Relevance to fire planning
Pink / High density	Priority burn blocks — targeted first in the knockdown phase.
Yellow / Moderate density	Secondary burn blocks — burned progressively as access improves.

Map element	Relevance to fire planning
Green / Low density	Lower priority — generally spot-treated; burned only where contiguous with priority blocks.
Cross-hatched overlay	Survey-inaccessible at time of mapping; contain High density Lantana and are priority blocks. Not a fire exclusion.
Red / orange lines — tracks & breaks	Existing access and break network — the burn-block boundary and control-line framework (Section 4).
Green dashed — cutting tracks	Hand-cut transect lines used as narrow access; form part of the control-line framework where needed.
Blue lines — waterways	Drainage network. 20 m no-burn, no-disturbance buffer each side.

2. Technical Basis for the Fire Regime

2.1 Fire, light and Lantana suppression

Lantana camara is a light-demanding invader: its seed requires high light to germinate and its flowering is suppressed under shade. Australian experimental work found that the effect of low-intensity fire on Lantana invasion was produced primarily by the increase in light it created, and concluded that shading by an intact canopy is the most effective barrier against invasion (Duggin & Gentle 1998; Day et al. 2003). Two points follow for fire planning: broad, bare, high-light disturbance favours Lantana, so the control-line network is kept to a minimum footprint (Section 4); and as the burnt understorey recovers and closes, ground-level light falls and Lantana recruitment is progressively suppressed.

2.2 Single versus repeated fire

A single burn transiently opens the canopy and can trigger a Lantana germination flush — which is why every burn in this plan is coupled to herbicide follow-up under SOP-FIRE-001. The long-term evidence is that it is the repeated regime that suppresses Lantana: in a Queensland dry eucalypt forest monitored 1959–2007, repeated annual and triennial burning decreased Lantana regeneration, whereas unburnt areas followed a rise-then-decline trajectory (Debus & Lewis 2014, Qld DPI). Frequent low-intensity fire in these forests did not harm tree recruitment and favoured E. tereticornis and Corymbia citriodora (Lewis et al. 2020), both present on site.

2.3 Queensland Herbarium Fire Management Guidelines

The Queensland Herbarium Regional Ecosystem Fire Management Guidelines (May 2024) are the primary technical reference. Both REs present carry the same settings:

RE	VMA status	Season	Intensity	Interval (yrs)	Strategy / weeds
12.9-10.2	Least Concern	Summer–winter	Low–moderate	4–25	40–60% mosaic; spot ignition; burn with soil moisture. Weed control (incl. Lantana camara) with fire may be required; Macrozamia decline if interval >6 yrs.
12.9-10.7	Of Concern	Summer–winter	Low–moderate	4–25	40–60% mosaic; spot ignition; burn with soil moisture. Weed control (incl. Lantana camara) with fire may be required.

Both guidelines name Lantana camara among the weeds whose control with fire may be required, and set a 4–25 year interval with a 40–60% mosaic. This supports prescribed fire both

as the first-stage knockdown tool and as a retained long-term regime (Section 3), and directs the maintenance of a mosaic of grassy and shrubby understoreys.

2.4 Wildfire versus prescribed burning

The OMP requirement that 'fire is to be, where possible, excluded from the area' refers to uncontrolled, high-intensity wildfire causing canopy mortality, hollow loss and fauna mortality. Prescribed low-intensity burning is the tool used to prevent that outcome by reducing fuel loads and maintaining structure. The two are complementary, achieved through the same control network, cooperative arrangements with ICC, and a documented burn program lodged with QFES.

3. Fire Regime — Phased Approach

Fire is applied across the offset period in three phases. Its role shifts from broad-scale biomass reduction in the knockdown phase to a low-intensity ecological maintenance burn in the mature phase.

Trigger for burn-block selection. In Phase 1 the trigger for selecting and prioritising burn blocks is Lantana density (per the Appendix A density map) — not fuel load. Blocks are selected to knock down the densest Lantana infestations first and open access for follow-up. From Phase 2 onward, as the infestation is drawn down, block selection reverts to the conventional drivers — fuel load (hazard reduction) and ecological recovery requirements (maintaining the Herbarium mosaic and fire-age diversity). This shift in the selection trigger is deliberate and is reflected in the objectives, the burn-block register and the monitoring in Sections 5, 4.2 and 10.

Phase 1 — Knockdown (approx. Years 1–3)

- **Block selection driven by Lantana density (Appendix A), not fuel load:** systematic low-intensity burning of High and Moderate density blocks first, each burn coupled to mandatory herbicide follow-up (SOP-FIRE-001).
- Establishment of the minimum-footprint control-line and access network (Section 4).

Phase 2 — Consolidation (approx. Years 3–12)

- **Block-selection trigger reverts to fuel load and ecological recovery:** as Lantana density falls, block selection is driven by fuel-hazard reduction and ecological recovery (maintaining the Herbarium mosaic and fire-age diversity) rather than by Lantana density.
- Continued low-intensity mosaic burning on the Herbarium interval to hold Lantana regeneration low while the native understorey recovers and closes (Debus & Lewis 2014).
- Progressive reduction of the control-line footprint as blocks stabilise; temporary access revegetated (weed and revegetation detail in the Rehabilitation Plan).

Phase 3 — Long-term maintenance (approx. Year 10 onward, continuing beyond the offset period)

- **Fire retained as an ecological maintenance tool, selection driven by fuel load and ecological recovery:** low-intensity mosaic burns on the Herbarium 4–25 year interval (40–60% of manageable area per cycle) maintain open-forest structure, limit fuel accumulation and wildfire risk, sustain the fire-age mosaic for fauna, and keep residual Lantana regeneration low.

- By this phase the recovered understorey shades the interior, so fire is a maintenance tool rather than a Lantana-control necessity. Residual boundary risk is addressed in Section 6.4.

4. Control-Line and Access Network

4.1 Design principle

Because broad, bare, high-light corridors favour Lantana (Section 2.1) and reduce habitat area, the control network is kept to the minimum footprint required for safe burn control. The default is a narrow, grassed, canopy-retained light-vehicle trail; bare earth is used only at defined ignition/containment points, for the burn season, and is then allowed to grass over. Detailed set-out, widths and revegetation are addressed in operational planning and the Rehabilitation Plan; this plan sets the standard and intent.

Feature	Standard
Existing tracks (red lines)	Primary light-vehicle access and burn-block boundaries. Maintained as grassed, canopy-retained trails (slashed/mown, not bladed to bare earth) except at defined control points.
Existing breaks (orange lines)	External boundary control lines and cross-breaks. Bare earth only where required as an ignition/containment line for an adjacent burn; otherwise held as low grassed break.
Bare-earth control points	Localised, established only adjacent to a block being burned, for the burn season, then grassed over. Extent recorded in the burn record (SOP-FIRE-001).
Drainage buffers	No burning or mechanical disturbance within 20 m of any waterway or overland flow path (blue lines, Appendix A).

For offset-area purposes, only permanent, canopy-free bare-earth control lines are treated as excluded from the habitat area; grassed, canopy-retained trails continue to provide dispersal and foraging function. The total area of permanent bare-earth control lines is stated in the burn-block register.

4.2 Burn-block register — FY2027 season

The burn-block register is completed by the CHS ecologist once the network is set out, based on Appendix A and GPS-recorded alignments. All High density blocks with confirmed control-line perimeters are designated for FY2027 burning.

[BURN BLOCK REGISTER TO BE INSERTED — Block ID | Location | Area (ha) | RE | Lantana density | Perimeter control-line status | Permanent/temporary/seasonal | FY2027 status | Ignition direction — completed prior to QFES permit lodgement]

5. Fire Management Objectives

- Reduce Lantana biomass across High density blocks through systematic low-intensity burning — with Phase 1 block selection driven by Lantana density (Appendix A) rather than fuel load — each burn coupled to mandatory herbicide follow-up.
- Restore and maintain an ecologically appropriate fire regime consistent with the Herbarium 4–25 year interval and 40–60% mosaic, retained long-term.
- Maintain a minimum-footprint, predominantly grassed and canopy-retained control network.
- Prevent uncontrolled wildfire entering or spreading within the offset area through the maintained control network and a cooperative FMP with ICC.

- Manage smoke to protect neighbours, roads and sensitive receptors (Section 6.3).
- Protect koala food trees, hollow-bearing trees and drainage buffers through pre-burn fauna sweeps and exclusion buffers.
- Build the fire management record for EPBC Referral 2024-09825 reporting.

6. Wildfire Prevention, Smoke and the Boundary

6.1 Control network maintenance

The access network doubles as the burn-block control network, maintained predominantly as grassed, canopy-retained trails, with bare-earth ignition/containment lines established only seasonally where a burn requires them. Pre-season maintenance is completed in May–June each year before burn permits are sought.

6.2 Cooperative arrangements — ICC and adjoining landholders

The southern boundary adjoins the ICC Mt Grandchester Conservation Estate; CHS uses the Council fire-trail network on this shared boundary rather than duplicating breaks, and formalises an annual pre-season meeting, emergency contact exchange, 48-hour burn notification and coordinated first-response with ICC bushland management. Adjoining freehold landholders on the remaining boundaries are notified of planned burns not less than 48 hours in advance, with contact details held by the Burn Controller.

6.3 Smoke management

Smoke is managed to protect the Woolshed Creek Road corridor, adjoining dwellings and any sensitive receptors. Burns are conducted under conditions that promote good smoke dispersal and lift, avoiding temperature inversions and periods of poor dispersion; nearby roads and neighbours are considered in scheduling; and burns are not lit where forecast wind direction would carry smoke onto a road or dwelling in a manner likely to create a hazard. Go/no-go dispersal conditions are applied operationally under SOP-FIRE-001, and the QFES notification and Form 9 process applies.

6.4 The boundary margin

Once the understorey has recovered, shading suppresses Lantana across the interior, but seed continues to arrive from adjoining Lantana-infested land onto the narrow, naturally-lit margin at the property line. Managing that margin is ordinary boundary maintenance under CTE's general biosecurity obligation for Lantana (a restricted matter) under the Biosecurity Act 2014, which applies independently of the offset. It is not a rolling offset action and does not bear on the self-sustaining status of the interior gain.

7. Prescribed Burn Prescription

All prescribed burns are low-intensity cool burns using backing fire or spot ignition, consistent with the Herbarium prescribed intensity for both REs. This plan sets the prescription envelope below; real-time go/no-go conditions, the pre-ignition checklist and ignition procedure are applied under SOP-FIRE-001 and are not reproduced here.

Burn type / intensity	Prescribed cool burn — low intensity (Byram's fireline intensity < 500 kW/m); backing fire or spot ignition; no head fire
Weather envelope	Low temperature, moderate–high humidity, light steady winds, adequate soil and fuel moisture — detailed go/no-go thresholds per SOP-FIRE-001

Season	Early dry season (June–August preferred), burning with soil moisture; variability in season and intensity per Herbarium guidance
Interval & extent	4–25 year interval per block; 40–60% of manageable area in any 12-month period; mosaic maintained
Exclusion zones	Drainage buffers (20 m each side); flagged hollow-bearing trees (20 m); dense intact RE 12.9-10.7 in good condition; recovered edge zones once closed
Mandatory follow-up	Herbicide follow-up scheduled and confirmed before ignition; applied post-burn per the schedule in SOP-FIRE-001. Non-negotiable — controls the post-burn germination flush.

8. Risk Management

Risk	Likelihood	Consequence	Mitigation
Wildfire entering site from external source	Medium	Very High	Maintained control network; cooperative FMP with ICC; QFES notification; long-term fuel reduction via maintenance burns
Prescribed burn escape	Medium	High	Seasonal control lines confirmed adjacent to each block; burn only within prescription; go/no-go and abort criteria per SOP-FIRE-001
Smoke impact on road/neighbours	Medium	Medium	Burn under good dispersal conditions; avoid inversions; consider wind direction relative to road and dwellings; 48-hour neighbour notification
Lantana re-establishment without follow-up	Medium	Medium	Herbicide follow-up mandatory and scheduled before ignition (SOP-FIRE-001); tracked in CHS compliance records
Control line acting as Lantana corridor	Medium	Low	Trails held grassed and canopy-retained; bare earth minimised and seasonal
Burn entering drainage buffer	Low	High	Blue lines marked in field; 20 m no-burn buffer; ignition set back
Canopy/hollow damage to fauna trees	Low	High	Pre-burn fauna sweep; 20 m buffer around flagged trees; low-intensity prescription
Wind change driving escape	Medium	High	Burn only under stable conditions; abort criteria per SOP-FIRE-001

9. Roles and Program Administration

Detailed roles, checklists and equipment are set out in SOP-FIRE-001. In summary:

- **Burn Controller (CHS):** a suitably qualified person nominated by CHS holds the Form 9 permit, confirms prescription and go/no-go, directs the burn, and signs off mop-up.
- **On-ground delivery — appointed contractor:** a suitably qualified fire contractor appointed for each fire season undertakes ignition, edge patrol, water unit, mop-up and herbicide follow-up.
- **Ecologist — independent contractor:** an appointed independent ecologist undertakes fauna sweeps, ecological clearance, and post-burn and recovery monitoring.

9.1 Pre-season (May–June, annual)

- Annual fire planning meeting; schedule burn windows and confirm follow-up dates.
- Maintain the grassed access network; prepare seasonal control lines only for blocks to be burned.
- Assess block-selection drivers for the season (Lantana density in the knockdown phase; fuel load and ecological recovery from Phase 2 onward); finalise burn-block register; lodge Form 9 applications.

10. Monitoring and Reporting

Operational post-burn actions (mop-up, burn-record completion, photo points, herbicide follow-up schedule and fauna surveys) are conducted under SOP-FIRE-001. This plan sets the fire-regime monitoring and reporting that feeds EPBC compliance.

10.1 Regime and recovery monitoring

- Fire history maintained per block (date, area, intensity class, mosaic achieved) against the Herbarium interval.
- Post-burn understorey recovery and Lantana response assessed against the Appendix A baseline; results inform the next season's block selection (Lantana density while knockdown continues; fuel load and ecological recovery thereafter).
- Newly accessible areas assessed after each burn and added to the register and Appendix A annually.

10.2 EPBC reporting

Fire history, control-line records, herbicide-treatment records (from SOP-FIRE-001) and recovery monitoring are compiled for EPBC Referral 2024-09825 reporting and provided to Fiteni Group under the Services Agreement milestone framework.

11. Compliance and References

- Environmental Protection and Biodiversity Conservation Act 1999 (Cth) — EPBC Referral 2024-09825
- Vegetation Management Act 1999 (Qld); Fire and Emergency Services Act 1990 (Qld); Nature Conservation Act 1992 (Qld); Biosecurity Act 2014 (Qld)
- Queensland Herbarium (2024) Regional Ecosystem Fire Management Guidelines, May 2024. DES, Brisbane
- Queensland Fire and Biodiversity Consortium — Living with Fire: Recommended Fire Regimes for SEQ; Ecological Guidelines
- DETSI (2005) SEQ Bioregional Planned Burn Guidelines; AFAC Bushfire Glossary (2012)
- Duggin, J.A. & Gentle, C.B. (1998) Experimental evidence on the importance of disturbance intensity for invasion of *Lantana camara* L. in dry rainforest–open forest ecotones in north-eastern NSW. *Forest Ecology and Management* 109: 279–292
- Debusse, V.J. & Lewis, T. (2014) Long-term repeated burning reduces *Lantana camara* regeneration in a dry eucalypt forest. *Biological Invasions* 16(12): 2697–2711 (Qld DPI)
- Lewis, T. et al. (2020) Very frequent burning encourages tree growth in sub-tropical Australian eucalypt forest. *Forest Ecology and Management*
- Day, M.D. et al. (2003) *Lantana: Current Management Status and Future Prospects*. ACIAR Monograph 102
- 28 South Environmental (2025) *Lantana camara* Density & Track Network Map — Double Jump Road OMS, Project 2019-100e v3, 11 November 2025. Reproduced at Appendix A
- SOP-FIRE-001 — Prescribed Burn Standard Operating Procedure, Cherish Habitat Services Pty Ltd (July 2026)
- DCCEEW — EPBC Act Offset Compliance Guidelines

Appendix A — Lantana camara Density & Track Network Map

Source: 28 South Environmental (2025), Project 2019-100e, GDA2020 MGA56, Scale 1:7,000, Rev v3 (11 Nov 2025). © 28 South Environmental 2025, reproduced with permission. Fire-planning interpretation at Section 1.5.

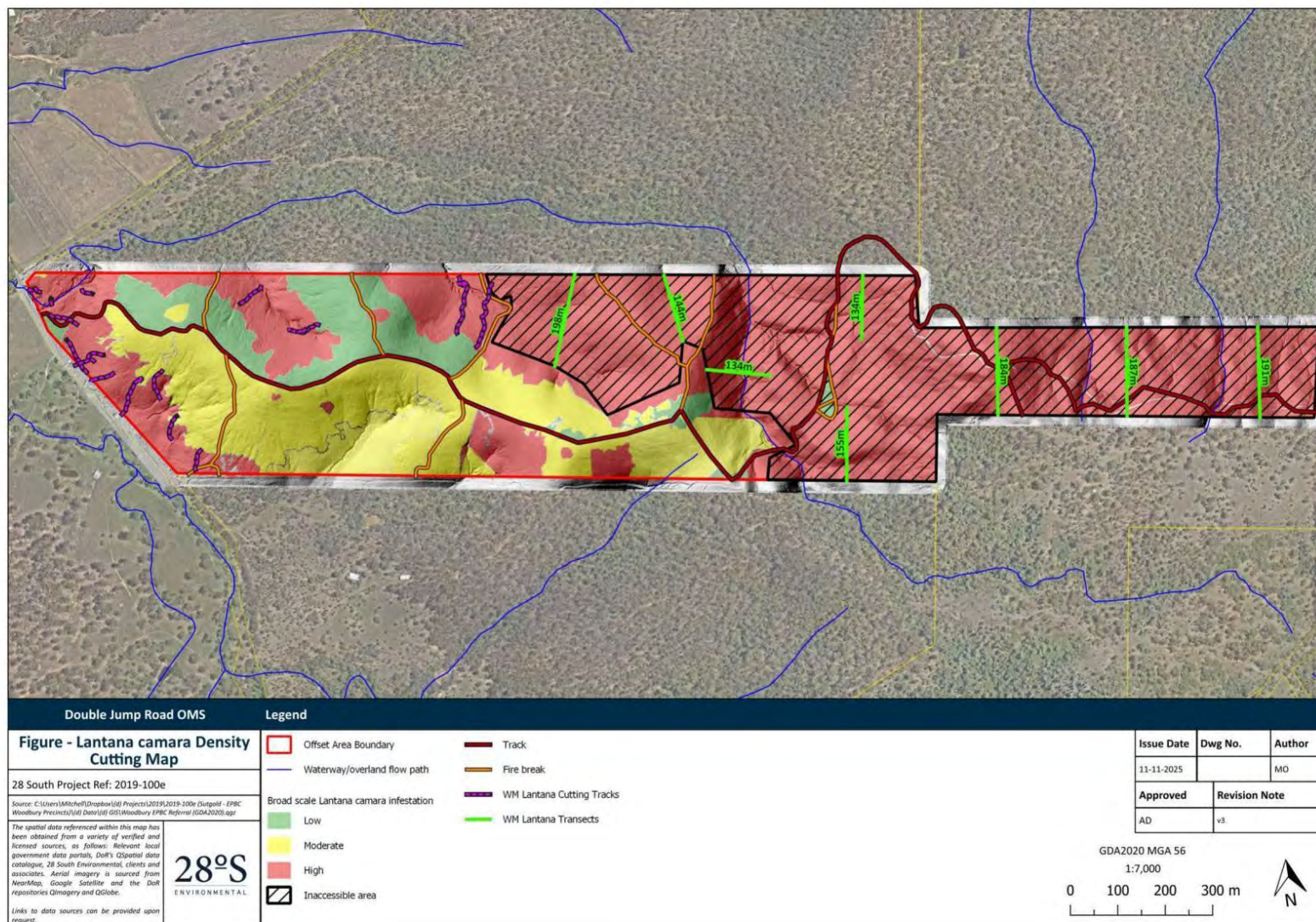


Figure A1 — Lantana camara density and track network, Woolshed Creek Road offset site (Lot 236 CH312334).

DRAFT

Prescribed Burn Standard Operating Procedure

CHS Offset Portfolio — Jeebropilly/Thagoona | Lanefield | Woolshed Creek Road

Document number	SOP-FIRE-001
Document title	Prescribed Burn Standard Operating Procedure — CHS Offset Portfolio
Applies to	Jeebropilly/Thagoona Offset Site (EPBC 2013/6941) Lanefield Offset Site (EPBC 2022/9304) Woolshed Creek Road Offset Site (EPBC Referral 2024-09825)
Prepared by	Cherish Habitat Services Pty Ltd (CHS)
Burn Controller	Burn Controller (CHS)
On-ground delivery	Appointed on-ground fire contractor appointed contractor [contractor contact — insert each season] [contractor address — insert each season]
Version	1.2
Date	July 2026
Review date	July 2027 (annual review) or following any significant incident
Status	Operative — applies to all CHS prescribed burn operations

This SOP establishes the standard procedures, roles, responsibilities, and checklists governing all prescribed burn operations conducted by Cherish Habitat Services Pty Ltd across its offset property portfolio. It is to be read in conjunction with the site-specific Fire Management Plan (FMP) for each offset site (for Woolshed Creek Road, read with FMP_WoolshedCreek_2027 v6.0). In the event of any inconsistency between this SOP and a site FMP, the more conservative requirement applies.

⚠ This SOP does not authorise burning. A QFES Permit to Light Fire (Form 9) must be obtained from the local Rural Fire Warden before any burn is commenced. Burning without a permit is an offence under the Fire and Emergency Services Act 1990 (Qld).

1. Purpose and Scope

This SOP establishes a consistent operational standard for all prescribed burn activities undertaken by CHS across its offset property portfolio. Its purposes are:

- To ensure all burn operations are conducted safely, lawfully, and in accordance with the relevant Fire Management Plan and QFES permit conditions
- To protect offset habitat values — including koala food trees, hollow-bearing trees, and Of Concern regional ecosystems — from both prescribed burn damage and uncontrolled wildfire
- To provide clear role definitions and decision authorities for the Burn Controller, on-ground crew, and appointed ecologist
- To establish mandatory abort criteria and emergency response procedures
- To create a consistent record of burn activities that supports EPBC annual compliance reporting to DCCEEW

This SOP applies to all prescribed cool burns, hazard reduction burns, and Lantana control burns conducted on CHS-managed offset properties. It does not apply to emergency wildfire suppression operations, which are to be managed under QFES incident command protocols.

2. Definitions

The following definitions are used throughout this SOP, sourced from the AFAC Bushfire Glossary (2012) and the Australasian Fire and Emergency Service Authorities Council unless otherwise noted.

Prescribed burn	The controlled application of fire under specified environmental conditions to a predetermined area and at the time, intensity, and rate of spread required to attain planned resource management objectives. (AFAC 2012)
Backing fire	The part of a fire which is burning back against the wind or down slope, where the flame height and rate of spread are reduced. (AFAC 2009/2012) — the standard ignition technique used in CHS prescribed burns; preferred over head fire for all operations in this portfolio.
Head fire	The part of a fire where the rate of spread, flame height, and fire intensity are greatest — burning with and in the same direction as the wind. Head fire is not prescribed for CHS offset burn operations unless specifically authorised in a site FMP.
Wildfire	Any unplanned fire in grassland, woodland, heathland or forest. Wildfire prevention is the primary risk management objective of this SOP and the associated FMPs; prescribed burning is the primary tool used to achieve this objective.
Backburn	A fire started intentionally ahead of a wildfire front to remove fuels between a control line and the advancing wildfire. This is a wildfire suppression tactic, not a prescribed burn. It is a major strategic decision, to be made only by the QFES Incident Controller. CHS personnel do not conduct backburning operations. (AFAC 2012)
Burn Controller	The person responsible for the overall management of the prescribed burn operation from pre-ignition through to post-burn mop-up sign-off. CHS nominates the Burn Controller for all CHS offset burn operations.
Fireline intensity	A measure of the rate of heat release per unit length of fire front (kW/m). Low intensity = < 500 kW/m. All CHS prescribed burns target low fireline intensity.
Fuel hazard rating	A 1–6 scale assessing the combustibility and hazard of fine fuels, as per the QFES Fuel Hazard Assessment Guide. Rating ≥4 triggers active fuel management under this SOP.
Mop-up	Post-burn operations to extinguish or isolate residual burning material — smouldering logs, stumps, edges — to prevent re-ignition or escape. Mop-up is mandatory before crew demobilisation.
Exclusion zone	A designated area within or adjacent to a burn block from which fire is to be excluded — including riparian buffers, known hollow-bearing tree clusters, Of Concern RE patches, and monitoring infrastructure.
Form 9	Application for Permit to Light Fire — the QFES document required before any open fire is lit in Queensland. The FMP and this SOP are provided to the Fire Warden with the Form 9 application. (Fire and Emergency Services Act 1990 (Qld))

3. Roles and Responsibilities

3.1 Burn Controller — CHS

The Burn Controller has overall authority and responsibility for the burn operation. No burn may commence without the Burn Controller's explicit authorisation on the day.

- Obtain and hold the QFES Permit to Light Fire (Form 9) for each burn operation
- Make the go/no-go decision on the day of the burn based on prescription conditions
- Hold authority to abort or suspend the burn at any time — this authority cannot be delegated
- Confirm ecological clearances with the appointed ecologist prior to ignition
- Notify QFES communications centre and adjoining landholders on burn day
- Sign off on post-burn mop-up completion before crew demobilisation
- Complete and retain the burn record

3.2 On-Ground Crew — Appointed Contractor

The appointed contractor provides the on-ground delivery team under the direction of the Burn Controller. Contractor responsibilities include:

- Pre-burn preparation: control line establishment (mechanical slashing and earthworks where required), water trailer deployment, equipment checks
- Ignition operations: drip torch operation using backing fire or spot ignition technique as directed by the Burn Controller
- Edge patrol: continuous patrol of burn block perimeter throughout the active burn phase
- Mop-up: extinguishing all smouldering material within the burn block before demobilisation
- Post-burn follow-up: herbicide application to Lantana and other weed re-sprouts within 4–6 weeks of each burn, as scheduled by the Burn Controller
- All on-ground crew operating on burn activities must hold a current QFES Rural Fire Brigade training certificate or equivalent

3.3 Ecologist — Independent Contractor

- Annual pre-season fuel hazard and Lantana density assessment across all sites
- Pre-burn block assessment: confirm burn block boundaries do not encroach on exclusion zones; identify and flag hollow-bearing trees and koala use trees within 50 m of active blocks; confirm no active fauna in distress within the block
- Fauna sweep of each selected burn block immediately prior to ignition
- Post-burn ecological monitoring: photo points, vegetation recovery, fauna survey, weed re-sprout mapping
- Provision of monitoring data for EPBC annual compliance reporting

3.4 CTE (Landowner)

- CTE as landowner grants access to CHS and the appointed contractor for burn operations on CTE-held properties
- CTE retains responsibility for EPBC compliance obligations under the applicable approval or referral
- Burn records and monitoring data generated under this SOP are held by CHS and provided to CTE for incorporation into EPBC annual compliance reports

4. Pre-Season Planning (Annual — May)

4.1 Annual Fire Planning Meeting

In May of each year, prior to the dry season, the Burn Controller convenes a pre-season planning meeting with the appointed ecologist and the contractor to:

- Review the previous season's burn records and monitoring outcomes for all three sites

- Confirm block selection for the coming season based on time-since-fire, fuel load assessment, Lantana density, and ecological monitoring data
- Review and update site FMPs if required
- Confirm equipment serviceability and crew training currency
- Schedule burn windows and herbicide follow-up dates
- Initiate neighbour notification and cooperative FMP coordination (ICC for Woolshed Creek Road; adjoining landholders for Jeebropilly and Lanefield)

4.2 Annual Fuel Hazard Assessment

The appointed ecologist conducts a fuel hazard assessment across all three sites in May, producing a written report for each site covering:

- Fuel hazard rating (QFES 1–6 scale) for each designated burn block and fire break margin
- Lantana density mapping (low / medium / high) across each block
- Hollow-bearing tree locations updated in GIS
- Recommended block selection for the coming season, with ecological justification
- Any adaptive management recommendations arising from previous season monitoring

4.3 Form 9 Applications

The Burn Controller lodges a Form 9 application with the local QFES Rural Fire Warden for each site and season, accompanied by:

- The current site-specific FMP
- A map of the proposed burn blocks for the season
- This SOP
- A completed equipment and crew declaration

The Form 9 is not submitted until the ecological assessment is complete and the Burn Controller is satisfied the planned blocks are consistent with the FMP and this SOP.

5. Day-of-Burn Procedure

5.1 Go/No-Go Decision

The Burn Controller makes the go/no-go decision no earlier than 2 hours before planned ignition. The decision is based on real-time weather instrument readings taken on-site, not forecast data alone. All of the following conditions must be met to proceed:

Temperature	< 25°C (< 22°C for Lantana-dominant blocks or Woolshed Creek Road first season)
Relative humidity	> 40% (> 50% for Lantana-dominant blocks)
Wind speed	5–15 km/h; light, steady — no gusts exceeding 20 km/h
Wind direction	Consistent with planned ignition approach and smoke dispersal direction in FMP
Soil moisture	Moderate to high — not following a 10-day dry period without rainfall
Fine fuel moisture	15–25% (measured or estimated using Campbell-Byram tables)
Weather forecast	No wind change forecast within 4 hours of planned ignition; no thunderstorm risk
Fire danger rating	Not a Total Fire Ban day; fire danger rating no greater than 'High'
Permit	Form 9 permit current and held by Burn Controller on site

Crew	Minimum 4 personnel on site: Burn Controller, drip torch operator, 1 edge patrol, 1 water unit operator
Equipment	All equipment checked and operational per Section 5.2 checklist

⚠ If ANY go/no-go condition is not met, the burn is ABORTED. The Burn Controller records the reason and reschedules. Partial compliance is not acceptable — all conditions must be simultaneously met.

5.2 Pre-Ignition Checklist

The following checklist is to be completed and signed by the Burn Controller before ignition. All items must be confirmed.

✓	Pre-Ignition Item	Initials	Time
☐	Form 9 permit current — held by Burn Controller on site		
☐	QFES communications centre notified — incident number recorded		
☐	All adjoining landholders notified (minimum 48 hours prior — confirmation held)		
☐	ICC notified (Woolshed Creek Road only)		
☐	Go/no-go weather conditions confirmed with on-site instruments		
☐	BoM forecast checked — no wind change within 4 hours; no Total Fire Ban		
☐	Appointed ecologist — ecological clearance received — exclusion zones confirmed, no fauna in block		
☐	Fauna sweep of active burn blocks completed — hollow-bearing trees flagged		
☐	Control lines on all block boundaries inspected and confirmed passable by vehicles		
☐	Minimum 20 m hand-clear buffer around all flagged hollow-bearing trees confirmed		
☐	Water trailer #1 deployed and operational at block entry point		
☐	Water trailer #2 / slip-on unit deployed and operational		
☐	Drip torches filled and tested		
☐	Thermal drone charged and operational		
☐	UHF radio comms checked — all crew on channel, receiving		
☐	Rakes, rakehoes, fire blowers, knapsack sprayers on site		
☐	First aid kit on site and accessible		
☐	Crew briefed: exclusion zones, escape routes, abort signal, muster point		
☐	Herbicide follow-up date confirmed and scheduled (4–6 weeks from today)		
☐	Burn record form prepared		

5.3 Ignition Procedure

Step	Action	Responsible	Record
1	Burn Controller confirms all pre-ignition checklist items complete and signed	Burn Controller	Checklist signed
2	Burn Controller gives verbal go authorisation to drip torch operator	Burn Controller	Burn record: ignition time
3	Ignition commences at downwind edge of block using backing fire technique — torch operator ignites along the downwind control line, moving perpendicular to wind direction	Contractor — torch operator	—
4	Edge patrol takes position on upwind boundary and flank boundaries; water unit stationed at block entry	Contractor — patrol team	—
5	Burn Controller monitors fire behaviour from elevated position or designated observer point; maintains radio contact with all crew	Burn Controller	Ongoing
6	If fire behaviour is as expected and remains within prescription, burning continues progressively across block	Burn Controller / Contractor	—
7	Burn Controller records actual weather conditions, ignition time, and initial fire behaviour observations	Burn Controller	Burn record
8	Burn Controller maintains continuous weather watch — if conditions deteriorate toward abort thresholds, immediate suspension order is issued	Burn Controller	Burn record if abort

⚠ ABORT IMMEDIATELY if any of the following occur: wind speed exceeds 20 km/h or shifts direction by more than 30°; relative humidity drops below 30%; fire begins to crown or produce spotting ahead of the front; fire escapes control line on any boundary; any crew member reports fire threatening exclusion zone. ABORT SIGNAL: three short horn blasts. All crew fall back to muster point.

5.4 Active Burn Monitoring

During the active burn phase the Burn Controller maintains oversight of:

- Fire behaviour: flame height (target < 2 m), rate of spread (target slow/backing), fireline intensity (target low)
- Control line integrity: all boundaries patrolled continuously by edge patrol team
- Weather instruments: re-checked every 30 minutes; continuous monitoring of wind speed and direction
- Exclusion zones: Burn Controller or designated crew member monitors proximity of fire to all flagged hollow-bearing trees and RE exclusion zones
- Thermal drone: deployed to monitor burn progress and identify any spotting or escape risk, particularly in Lantana blocks where fire behaviour is less predictable

5.5 Ignition Techniques

Backing Fire

The standard ignition technique for all CHS prescribed burns. The drip torch operator ignites along the downwind edge of the block, moving perpendicular to the wind direction. Fire burns back into the wind, producing low flame height, slow rate of spread, and low fireline intensity. This technique is consistent with the AFAC definition of a backing fire and with the QFBC's recommended approach for long-unburnt SEQ open woodlands.

Spot Ignition

An alternative technique consistent with the Queensland Herbarium's prescribed strategy for RE 12.9-10.2 and RE 12.9-10.7. Small individual ignition points are set within the block, allowing each small fire to back against the wind before the next point is ignited. Spot ignition creates the within-block patchiness that the Herbarium strategy specifies, leaving small unburned patches that provide immediate post-fire refugia. Suitable for blocks where complete combustion of the block is less important than maximising structural heterogeneity.

Head Fire — Not Prescribed

Head fire (fire burning in the same direction as the wind) is not prescribed for any block in the CHS portfolio. Head fire produces higher flame heights, faster rate of spread, and greater fireline intensity, increasing the risk of canopy scorch, spotting beyond control lines, and damage to retained native trees. If conditions deteriorate to a point where backing fire is producing head fire behaviour, the burn is to be suspended immediately.

6. Post-Burn Mop-Up Procedure

⚠ No crew may demobilise from the burn site until the Burn Controller has signed off on mop-up completion. The site must be in a safe condition — no active combustion within the burn block or on any control line.

6.1 Mop-Up Steps

Step	Action	Responsible	Record
1	Active burn phase complete — fire front has consumed available fuel and self-extinguished at far control line	Contractor patrol	Burn record: completion time
2	Thermal drone survey of entire burned area — identify all residual hotspots (smouldering logs, stumps, root zones)	Contractor / Burn Controller	Drone footage retained
3	Patrol entire burned perimeter; physically check all control lines for any escape or smouldering material	Contractor patrol	—
4	Apply water to all identified hotspots; rake out smouldering logs and apply water/mineral earth	on-ground crew	—
5	Check 20 m buffer zone around all flagged hollow-bearing trees — extinguish any smouldering ground fuel	on-ground crew	—
6	Second thermal drone pass — confirm no residual heat signatures	Contractor / Burn Controller	—
7	Fauna casualty inspection across burned area — report any injured animals to SE Qld Wildlife Hospital (07 3290 0533)	the appointed ecologist / Contractor	Fauna incident record if required
8	Burn Controller conducts final walkover of control lines and exclusion zones	Burn Controller	—
9	Burn Controller signs off mop-up completion on burn record — records date/time	Burn Controller	Burn record signed
10	Crew demobilisation	All crew	—

7. Post-Burn Actions and Follow-Up

7.1 Burn Record Completion

The Burn Controller completes the full burn record within 24 hours of the burn, including: date, site, block IDs, area burned, weather conditions at ignition, ignition time, mop-up completion time, crew list, permit number, any fauna incidents, any deviations from FMP or this SOP. The burn record is retained by CHS and a copy provided to CTE.

7.2 Photo Monitoring

Within 48 hours of each burn, The appointed ecologist or on-ground crew photographs all designated permanent photo monitoring points within the burned block. Photo file names to include site code, block ID, date, and point number. Images uploaded to CHS GIS database.

7.3 Integrated Weed Follow-Up — Mandatory

⚠ Herbiicide follow-up is a mandatory component of the burn program, not optional. Burning Lantana without follow-up herbiicide treatment will not achieve durable weed suppression and may result in denser re-establishment.

The on-ground contractor conducts herbiicide treatment of re-sprouting Lantana and other target weeds within the schedule below:

Week 4–6 post-burn	The on-ground contractor assesses Lantana re-sprout density and height across burned block; applies foliar herbiicide (metsulfuron-methyl + surfactant, or triclopyr/picloram mix, as per current APVMA label) to actively growing re-sprouts at 10–50 cm height
Week 8–10 post-burn	Contractor second pass for any slow-sprouting or missed stems
Month 3 post-burn	Appointed ecologist assessment of residual Lantana cover vs baseline; records outcome in CHS GIS; advises Burn Controller whether block requires second-season treatment
Documentation	The on-ground contractor records date, product, rate, and area treated for each herbiicide application; provided to Burn Controller within 5 business days of each treatment

7.4 Ecological Monitoring

The appointed ecologist conducts post-burn ecological monitoring within 4–12 weeks:

- Re-photograph permanent photo monitoring points; document native grass germination, herb cover, weed re-sprouting, and understorey structural recovery
- Koala and fauna activity survey (spotlight or acoustic) within 4 weeks — record any koala use of recently burned vs unburned blocks
- Greater Glider hollow inspection at Lanefield — confirm integrity of flagged hollow-bearing trees
- All data entered into CHS GIS and provided to Burn Controller for EPBC reporting

7.5 EPBC Compliance Reporting

Burn records, monitoring data, herbiicide treatment records, and any fauna incident reports are collated by the Burn Controller and provided to CTE within 30 days of each burn event for incorporation into EPBC annual compliance reports to DCCEEW.

8. Emergency Procedures

8.1 Escape — Fire Breaching Control Line

1. Burn Controller issues abort signal: three short horn blasts
2. All crew fall back to designated muster point — account for all personnel
3. Burn Controller calls 000 — reports escaped fire, property address, estimated fire size and direction of spread
4. Water units deployed to threatened boundary — direct suppression if safe to do so
5. Burn Controller notifies nearest neighbours by phone
6. Burn Controller remains on site as QFES point of contact until QFES crew arrive and assume incident control
7. After incident: Burn Controller completes a written incident report within 24 hours; provides copy to CTE and CHS file

⚠ Once QFES assumes incident control, CHS crew operate under QFES direction only. The Burn Controller does not conduct backburning operations — this is a QFES Incident Controller decision only.

8.2 Crew Injury or Medical Emergency

1. Call 000 immediately
2. Administer first aid — first aid kit location confirmed during pre-burn briefing
3. Burn Controller suspends burn operations and ensures all fire is secured
4. Remain with injured crew member until emergency services arrive
5. Notify CTE/CHS management
6. Complete incident report within 24 hours

8.3 Fauna Casualty

1. Suspend ignition in affected area
2. Contact SE Qld Wildlife Hospital: (07) 3290 0533
3. Do not handle injured wildlife without guidance from the wildlife carer unless the animal is in immediate danger
4. Record species, location, condition, and time of discovery in burn record
5. Burn Controller notifies CTE and DCCEEW if species is a matter of national environmental significance (e.g. koala)

9. Equipment and Maintenance

9.1 Standard Equipment — Per Burn Operation

Water trailer	2 × trailer-mounted water units — minimum 500 L capacity each; pump operational and tested pre-burn
Slip-on units	2 × 4WD vehicles fitted with firefighting slip-on units; checked pre-burn
Tractors	2 × tractors with front-end bucket and slasher — on standby for emergency line construction
Drip torches	Minimum 2 × drip torches; fuel mix (diesel/petrol) prepared and carried
Thermal drone	1 × thermal imaging drone; battery charged; operator trained
Hand tools	Rakes (minimum 4), fire rakehoes (2), fire blowers (2), knapsack sprayers (2 × 15 L)

Radios	UHF radios — 1 per crew member; channel agreed in pre-burn briefing
Weather instruments	Thermometer, hygrometer (or sling psychrometer), anemometer — calibrated
First aid kit	Fully stocked; location confirmed in pre-burn briefing; expiry dates checked
Personal protective equipment	Nomex or equivalent flame-resistant clothing, gloves, and boots — all crew; safety glasses
Herbicide equipment	Backpack sprayer, mixing containers, registered herbicide products, PPE for mixing/application

9.2 Pre-Burn Equipment Checklist

✓	Equipment Item	Initials	Time
☐	Water trailer #1 — tank full, pump operational, hose connections tested		
☐	Water trailer #2 / slip-on #1 — tank full, pump operational		
☐	Slip-on #2 — tank full, pump operational		
☐	Tractor #1 — fuel checked, bucket operational		
☐	Tractor #2 — fuel checked, slasher operational		
☐	Drip torches (x2) — filled, ignition tested		
☐	Drip torch fuel mix correct (approx. 2:1 diesel/petrol)		
☐	Thermal drone — fully charged, test flight completed		
☐	Hand tools — rakes (x4), rakehoes (x2), blowers (x2) on site		
☐	Knapsack sprayers (x2) — filled with water for mop-up		
☐	UHF radios — all crew equipped, channel tested, batteries charged		
☐	Weather instruments — readings taken and recorded		
☐	First aid kit — on site and accessible		
☐	All crew — PPE including flame-resistant clothing, gloves, boots, eye protection		

10. Records and Document Control

Burn record	Completed by Burn Controller within 24 hours of each burn; retained by CHS; copy to CTE
Pre-ignition checklist	Signed by Burn Controller before each burn; retained with burn record
Equipment checklist	Signed by on-ground crew leader before each burn; retained with burn record
Ecological assessment report	Prepared by the appointed ecologist pre-season; retained by CHS
Fauna incident reports	Completed within 24 hours of any fauna incident; copy to CTE and DCCEEW if MNES species
Herbicide treatment records	Completed by the contractor within 5 business days of each treatment; retained by CHS

Photo monitoring records	Uploaded to CHS GIS within 48 hours of each burn; retained indefinitely
Incident reports	Completed within 24 hours of any escape or emergency; copy to CTE and insurer
SOP review record	Annual review documented; version history maintained

11. Regulatory Compliance

- Fire and Emergency Services Act 1990 (Qld) — burn permit requirements; s.69 prohibition on lighting fire without permit
- Environmental Protection and Biodiversity Conservation Act 1999 (Cth) — EPBC approvals 2013/6941 and 2022/9304; EPBC Referral 2024-09825
- Vegetation Management Act 1999 (Qld) — V-Dec conditions; Schedule 24 clearing exemptions for fire control works
- Nature Conservation Act 1992 (Qld)
- Work Health and Safety Act 2011 (Qld) — CHS's duty of care to all workers and contractors on burn operations
- AFAC Bushfire Glossary (2012) — standard terminology reference for this SOP
- Queensland Herbarium Regional Ecosystem Fire Management Guidelines (May 2024) — ecological basis for burn prescriptions
- Queensland Fire and Biodiversity Consortium — Living with Fire: Recommended Fire Regimes for SEQ; Ecological Guidelines
- DETSI SEQ Bioregional Planned Burn Guidelines
- Site-specific Fire Management Plans: FMP_JeebropillyThagoona_2026; FMP_Lanefield_2026; FMP_WoolshedCreek_2027

12. SOP Review and Version History

This SOP is to be reviewed annually in May, prior to each burn season, and updated following any significant incident, change in site conditions, or change in applicable legislation or guidelines. The Burn Controller is responsible for initiating the review.

Version 1.0 — July 2026	Initial issue — applies to all three CHS offset sites for FY27 burn season
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Appendix 1 — Burn Record Form

Date of burn**Site**☐ Jeebropilly/Thagoona ☐ Lanefield ☐ Woolshed Creek Road**Block(s) burned****Total area burned (ha)****QFES permit number (Form 9)****Burn Controller**

Burn Controller

on-ground crew on site**Ecologist on site**the appointed ecologist ☐ Yes ☐ No**Weather at ignition — Temperature
(°C)****Weather at ignition — Relative
humidity (%)****Weather at ignition — Wind speed
(km/h)****Weather at ignition — Wind
direction****Time of ignition****Ignition technique**☐ Backing fire ☐ Spot ignition**Fire behaviour — flame height (m)****Fire behaviour — rate of spread**☐ Slow ☐ Moderate ☐ Fast (abort)**Prescribed conditions maintained
throughout?**☐ Yes ☐ No — describe below**Deviations from FMP or SOP****Time of burn completion (self-
extinguished)****Mop-up completed — time****Thermal drone survey completed?**☐ Yes**Fauna casualties**☐ None ☐ Yes — describe:**Exclusion zones maintained?**☐ Yes ☐ No — describe:**Escape or incident?**☐ None ☐ Yes — incident report attached**Herbicide follow-up scheduled date****Burn Controller sign-off**

Burn Controller | Date:

Appendix 2 — Emergency Contact List

Emergency — fire / ambulance / police	000
QFES Rural Fire communications	1300 369 003
SE Qld Wildlife Hospital (fauna casualty)	(07) 3290 0533
Burn Controller — CHS	bhines@cherishtheenvironment.org.au
Contractor — appointed contractor	[contractor contact — insert each season] [contractor address — insert each season]
Ecologist — Independent Contractor	[insert mobile]
CTE / CHS office	[insert]
ICC Bushland Management (Woolshed CR Road)	[insert — for cooperative FMP notification]
Jeebropilly/Thagoona neighbouring landholders	[insert — required for 48-hour pre-burn notification]
Lanefield neighbouring landholders	[insert — required for 48-hour pre-burn notification]

Attachment 8 – ICC
Handover
Correspondence

Your reference
Our reference
Contact Officer Kaye Cavanagh
Telephone 07 3810 6666



Ipswich City Council

1 Nicholas Street
PO Box 191
IPSWICH QLD 4305

Phone (07) 3810 6666
Fax (07) 3810 6731
Email council@ipswich.qld.gov.au

ipswich.qld.gov.au

Cherish the Environment Foundation
Attn: [Mr Bryce Hines]
66 McGearys Road
THAGOONA QLD 4306

17 July 2026

Dear Mr Hines

Re: In-Principle Support for Future Transfer of Ownership – Lot 236 CH312334 (Woolshed Property)

Council provides this letter as an expression of its in-principle support for the future transfer of ownership of the Woolshed property, being **Lot 236 CH312334**, to Council as part of the long-term arrangements associated with the delivery and ongoing management of environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) 2024-09825. This position is consistent with Council's previous consideration of the property as a future conservation asset.

Council recognises the environmental significance of the property and its contribution to landscape connectivity, biodiversity conservation and the protection of environmental values within the region. The property aligns with Council's broader conservation objectives and has the potential to contribute to long-term conservation outcomes consistent with Council's strategic environmental priorities.

Council's in-principle support is provided on the understanding that:

1. The environmental offset requirements and associated management obligations are successfully established and delivered in accordance with all relevant Commonwealth and State requirements;
2. Appropriate mechanisms are implemented to secure the ongoing protection, management and conservation of the environmental values of the property;
3. The detailed terms and conditions relating to any future transfer of ownership are negotiated and agreed between the relevant parties; and

- 
4. A mutually acceptable Heads of Agreement is developed and executed to define the respective roles, responsibilities, timing, conditions and arrangements associated with any future transfer of the land.

This letter should not be interpreted as a binding commitment by Council to acquire the property. Any future transfer of ownership would remain subject to Council being satisfied with the outcomes of due diligence investigations and compliance with all relevant governance, legal, financial and statutory requirements, including any approvals or resolutions required by Council at the relevant time.

Council appreciates the opportunity to support the delivery of enduring conservation outcomes through the proposed offset arrangements and looks forward to continuing discussions regarding the future management and protection of the property.

Yours sincerely



Kaye Cavanagh
General Manager Environment and Sustainability

Attachment 9 – Site
Condition attribute
score progression
Summary Table for
Koala and Grey Headed
Flying Fox

Measureable attribute	Management, Monitoring and Interventions	Assessment Unit	Year 0 - Baseline	Year 5		Year 10		Year 15		Year 20	
				Change in attribute score	Potential score uplift	Change in attribute score	Potential score uplift	Change in attribute score	Potential score uplift	Change in attribute score	Potential score uplift
Recruitment of woody perennial species in EDL Number of tree species which are naturally recruiting within the 100*50 m plot (i.e. occurring as saplings <5cm DBH).	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	433	Some recruitment appearing in AU3-T2	433	The assisted regeneration of trees will ensure recruitment is taking place. Natural recruitment is assumed following year 15.	5.00	The assisted regeneration of trees will ensure recruitment in taking place. Natural recruitment is assumed following year 15.	5.00	The assisted regeneration of tr+AM8;AM6trees will ensure recruitment in taking place. Natural recruitment is assumed following year 15.	5.00
		AU2	300		300		5.00		5.00		5.00
		AU3	150		150		5.00		5.00		5.00
Native plant species richness - trees Number of native tree species occurring in the 10*50 metre plot.	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	417	No predicted change at year 5 due to significant habitat disturbance associated with Lantana management.	417	Although assisted planting has taken place, species richness will not be reflected until trees are contributing to the T1/T2 layer.	4.17	By year 15, assisted regeneration trees are expected to exceed 100 mm DBH, and therefore contribute to the T1/T2 layer.	5.00	By year 15, assisted regeneration trees are expected to exceed 100 mm DBH, and therefore contribute to the T1/T2 layer.	5.00
		AU2	5.00		5.00		5.00		5.00		5.00
		AU3	3.75		3.75		3.75		3.75		3.75
Native plant species richness - shrubs Number of native shrub species occurring in the 10*50 metre plot.	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	5.00	No predicted change at year 5 due to significant habitat disturbance associated with Lantana management.	5.00	Native shrub layer is expected to be more dense with assisted regeneration species. Spp richness may increase by 1-2 species.	5.00	Spp richness may increase by 1-2 species.	5.00	Spp richness may increase by 1-2 species.	5.00
		AU2	2.50		2.50		3.75		5.00		5.00
		AU3	1.25		1.25		2.50		2.50		2.50
Native plant species richness - grasses Number of native grass species occurring in the 10*50 metre plot.	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	5.00	No predicted change at year 5 due to significant habitat disturbance associated with Lantana management.	5.00	Assisted revegetation will plant native stock (or spread seed) to meet benchmark values native to the area and RE. AU1 - no predicted change. AU2 - One new native grass species is expected to accumulate each vegetation survey year. AU3 - assisted reveg of native grasses will take place.	5.00	Assisted revegetation will plant native stock (or spread seed) to meet benchmark values native to the area and RE. AU1 - no predicted change. AU2 - One new native grass species is expected to accumulate each vegetation survey year. AU3 - assisted reveg of native grasses will take place.	5.00	Assisted revegetation will plant native stock (or spread seed) to meet benchmark values native to the area and RE. AU1 - no predicted change. AU2 - One new native grass species is expected to accumulate each vegetation survey year (for sites below benchmark).	5.00
		AU2	2.50		2.50		2.50		2.50		2.50
		AU3	0.00		0.00		2.50		2.50		2.50
Native plant species richness - forbs Number of native forb species occurring in the 10*50 metre plot.	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	4.17	No predicted change at year 5 due to significant habitat disturbance associated with Lantana management.	4.17	Native forbs are expected to regenerate naturally over time to align with benchmark values, especially following good rain years. Estimated at 2 new species each vegetation survey year (for sites below benchmark).	5.00	Native forbs are expected to regenerate naturally over time to align with benchmark values, especially following good rain years. Estimated at 2 new species each vegetation survey year (for sites below benchmark).	5.00	Native forbs are expected to regenerate naturally over time to align with benchmark values, especially following good rain years. Estimated at 2 new species each vegetation survey year (for sites below benchmark).	5.00
		AU2	1.25		1.25		2.50		2.50		2.50
		AU3	1.25		1.25		2.50		2.50		2.50
Tree canopy height (average of emergent, canopy, sub-canopy) Average score of each strata layer median height value (i.e. emergent, canopy, sub-canopy layers)	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	5.00	Tree canopy height is expected to increase over time. Conservative estimate of 50 cm of growth is expected at each vegetation survey year (every 5 years), until benchmark value is attained.	5.00	Tree canopy height is expected to increase over time. Conservative estimate of 50 cm of growth is expected at each vegetation survey year (every 5 years), until benchmark value is attained.	5.00	Tree canopy height is expected to increase over time. Conservative estimate of 50 cm of growth is expected at each vegetation survey year (every 5 years), until benchmark value is attained.	5.00	Tree canopy height is expected to increase over time. Conservative estimate of 50 cm of growth is expected at each vegetation survey year (every 5 years), until benchmark value is attained.	5.00
		AU2	4.00		5.00		5.00		5.00		5.00
		AU3	4.00		4.00		4.00		4.00		5.00
Tree canopy cover (average of emergent, canopy, sub-canopy) Percentage of 100m transect within the monitoring site that is covered by canopy and sub-canopy.	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	5.00	Predictions not made due to high score already attained at each site.	5.00	Canopy cover has attained high score.	5.00	Canopy cover has attained high score.	5.00	Canopy cover has attained high score.	5.00
		AU2	5.00		5.00		5.00		5.00		5.00
		AU3	5.00		5.00		5.00		5.00		5.00
Shrub canopy cover Percentage of 100m transect within the monitoring site that is covered by shrub.	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	5.00	No change predicted at yr 5	5.00	Expected increase in native shrub cover at AU2 and AU3, following the removal of lantana and assisted regeneration of native species.	5.00	Expected increase in native shrub cover at AU2 and AU3, following the removal of lantana and assisted regeneration of native species.	5.00	Continued native shrub growth of up to 1 m cover between yr 15 and 20.	5.00
		AU2	0.00		0.00		3.00		5.00		5.00
		AU3	0.00		0.00		3.00		3.00		5.00
Native grass cover The extent/occurrence of native grass cover (average cover across 1x1 monitoring plots).	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	3.00	Given the coverage and vegetation disturbance required for Lantana removal, native grass cover changes are not predicted for yr 5.	3.00	Native grasses are expected to observably recovering by year 10. An estimated 5% increase is reflected in scores.	3.00	Native grasses are expected to continue to recover by year 15. An estimated 2-5% increase is reflected in scores.	4.33	Native grasses are expected to continue to recover by year 20. An estimated 2-5% increase is reflected in scores.	5.00
		AU2	0.50		0.50		2.00		2.00		4.00
		AU3	0.00		0.00		3.00		3.00		5.00
Organic litter The extent/occurrence of organic litter (average cover across 1x1 monitoring plots).	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	5.00	Given the coverage and vegetation disturbance required for Lantana removal, litter cover changes are not predicted for yr 5.	5.00	Organic litter regeneration is expected to be low in year 10. This is attributed to the early stages of assisted regeneration and a predicted more dense native shrub layer in year 10. A 2% cover increase is reflected at sites which are below benchmark.	5.00	Organic litter regeneration is expected to accelerate more at year 15. A 2-5% cover increase is reflected at sites which are below benchmark.	5.00	Organic litter regeneration is expected to accelerate more at year 15-20. A 2-5% cover increase is reflected at sites which are below benchmark.	5.00
		AU2	4.00		4.00		4.00		5.00		5.00
		AU3	0.00		0.00		0.00		3.00		3.00
Large trees (each plus non-each) Number of large trees above the DBH size threshold defined by the target Regional Ecosystem bio-condition benchmark.	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	11.67	No change predicted at yr 5.	11.67	No change predicted at yr 10.	11.67	No change predicted at yr 15.	11.67	Some large tree accumulation. See large tree predictions section.	13.33
		AU2	7.50		7.50		7.50		7.50		7.50
		AU3	7.50		7.50		7.50		7.50		7.50
Coarse woody debris Amount of coarse woody debris occurring within the monitoring site (in metres per site) (collected the length of wood debris that is >10cm in width and >0.5m in length).	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	3.00	No change predicted at yr 5.	3.00	No change predicted at yr 10	3.00	The over crowding of CWD at AU1 will be redistributed between AU2 and AU3.	5.00	The over crowding of CWD at AU1 will be redistributed between AU2 and AU3.	5.00
		AU2	1.00		1.00		1.00		5.00		5.00
		AU3	1.00		1.00		1.00		5.00		5.00
Non-native plant cover Includes the extent/occurrence of non-endemic (weeds) species listed under the Census of Queensland Plants 2024, and includes invasive weeds listed under the Biosecurity Act 2014 and weeds of National Significance as a WONS (percentage coverage within the monitoring site)	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from the Queensland Government Guide to Determining Terrestrial Habitat Quality version 1.2. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan Implement RMP	AU1	5.00	AU1 - reduced to below 15%, AU2/3 reduced to 30% accounting for mass removal of LC, and potential high recruitment of other herbaceous pioneer species.	5.00	All sites maintained below 15% weed cover.	5.00	All sites maintained below 15% weed cover.	5.00	All sites maintained below 10% weed cover.	5.00
		AU2	0.00		3.00		4.00		4.00		5.00
		AU3	0.00		3.00		5.00		5.00		5.00
Stem count predictions and large tree accumulation (raw values input into Habitat Index)											
LITK only ≥100 mm DBH (Koala MHQA only)	Total stems (pe ha)	AU1	281.33	No stem count change is reflected in year 5 scores due to the intensive weed management practices which are to be carried out.	281.33	AU1-T3 - 10% (of TD average) stem count increase divided between species. AU2 and AU 3 - 15% growth	286.00	AU1-T3 - further 10% (of TD average) stem count increase divided between species. AU2 and AU 3 - 15% growth	293.33	AU1-T3 - total stems exceeds benchmark. No further predictions	293.33
		AU2	71.00		71.00		152.00		233.00		237.00
		AU3	43.50		43.50		77.50		107.50		137.50
		AU1	117.22		117.22		119.17		122.22		122.22
		AU2	12.24		12.24		26.38		40.32		44.68
		AU3	12.79		12.79		22.79		31.62		40.44
All trees ≥100 mm DBH (Koala MHQA only)	Total stems (pe ha)	AU1	304.67		304.67		315.00		320.33	AU2 and AU3 - another 15% stem accumulation and stems grow into 300 mm category	320.67
		AU2	72.00		72.00		159.00		246.00		333.00
		AU3	43.50		43.50		77.50		111.50		145.50
		AU1	126.84		126.84		130.42		133.47		133.61
		AU2	12.41		12.41		27.41		42.41		57.41
		AU3	12.79		12.79		22.79		32.79		42.79
GHFF Forage tree stems ≥300 mm DBH (GHFF MHQA only)		AU1	68	Existing stems at baseline are unlikely to have experienced enough growth between years 0 and 10 due to time required to reach 300 mm DBH. No change in score is predicted.	68	Some baseline trees between stem range of 100-300 mm DBH are expected to reach and exceed 300 mm DBH.	84	Some baseline trees between stem range of 100-300 mm DBH are expected to reach and exceed 300 mm DBH.	84	Some baseline trees between stem range of 100-300 mm DBH are expected to reach and exceed 300 mm DBH.	88
		AU2	12		12		12		12		143
		AU3	8.5		8.5		43.5		43.5		73.5
New large trees (DBH ≥140 mm DBH)	Large tree density and average stem DBH is relatively high at baseline for sites 1-3, and as such DBH growth has been estimated at 2 mm per 5 year interval. This is an estimate based on resource competition and the unpredictability of large tree growth rates. Large trees have not been predicted for AU2 and AU3 due to estimated starting values.	AU1	116		116		116	Large tree density and average stem DBH is relatively high at baseline for sites 1-3, and as such DBH growth has been estimated at 2 mm per 5 year interval. This is an estimate based on resource competition and the unpredictability of large tree growth rates. Large trees have not been predicted for AU2 and AU3 due to estimated starting values.	120	Large tree density and average stem DBH is relatively high at baseline for sites 1-3, and as such DBH growth has been estimated at 2 mm per 5 year interval. This is an estimate based on resource competition and the unpredictability of large tree growth rates. An additional four large trees are predicted to accumulate at AU2 and 3. Again, this is a conservative estimate. This is based off the publication by Ngugi et al. 2015.	130
		AU2	24		24		24		24		32
		AU3	18		18		18		18		26

Woolshed Offset Area - Koala MHQA - Habitat Index and Site Context attribute score progression at interim and completion monitoring years

[illegible]

Scoring section	Measurable attribute	Management, Monitoring and Interventions	Assessment Unit	Year 0 - Baseline	Year 5		Year 10		Year 15		Year 20	
					Change in attribute score	Potential score uplift	Change in attribute score	Potential score uplift	Change in attribute score	Potential score uplift	Change in attribute score	Potential score uplift
Habitat quality site-based scoring	Vegetation condition	Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from GHFF MHQA method. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan 5. Revegetation and Habitat Creation Implement RMP.	AU1	16.3	BioCondition score progression in accordance with the Site Condition upswing table.	16.3	BioCondition score progression in accordance with the Site Condition upswing table.	17.5	BioCondition score progression in accordance with the Site Condition upswing table.	17.8	BioCondition score progression in accordance with the Site Condition upswing table.	18.3
			AU2	9.1		10.1		12.6		14.6		15.1
			AU3	6.3		7.1		11.2		12.9		14.2
	Species richness	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from GHFF MHQA method. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan 5. Revegetation and Habitat Creation Implement RMP.	AU1	5	Habitat benefit are not expected in year 5 as weed removal and subsequent assisted and natural revegetation mean new species have not entered the upper strata.	5	Habitat benefit are not expected in year 10 as weed removal and subsequent assisted and natural revegetation mean new species have not entered the upper strata.	5	Habitat benefit are not expected in year 15 as weed removal and subsequent assisted and natural revegetation mean new species have not entered the upper strata.	5	As revegetated species begin to enter the upper strata the species richness score increases.	6.7
			AU2	5		5		5		5		10
			AU3	5		5		5		5		5
	Flower score	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from GHFF MHQA method. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan 5. Revegetation and Habitat Creation Implement RMP.	AU1	8	Minimal change in year 5 as species regenerating and planted are already recognised in high flower score	8	Minimal change in year 10 as species regenerating and planted are already recognised in high flower score	8	Minimal change in year 15 as species regenerating and planted are already recognised in high flower score	8	Minimal change in year 20 as species regenerating and planted are already recognised in high flower score	8
			AU2	8		8		8		8		8
			AU3	8		8		8		8		8
	Timing of biological shortages	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from GHFF MHQA method. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan 5. Revegetation and Habitat Creation Implement RMP.	AU1	4	Minor change in year 5 as there has been no significant winter flowering species entering T1 (strata)	4	Little change in year 10 as there has been no significant winter flowering species entering T1 (strata)	4	Little change in year 15 as there has been no significant winter flowering species entering T1 (strata)	4	Maturing plantings and natural recruitment entering T1 and T2 strata, large tree recruitment beginning.	8
			AU2	5.75		6.5		6.5		6.5		10
			AU3	4		4		4		4		6
	Quality of foraging habitat	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from GHFF MHQA method. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan 5. Revegetation and Habitat Creation Implement RMP.	AU1	5	Minimal change in year 5 as there has been no significant winter flowering species entering T1 (strata)	5	Minimal change in year 10 as there has been no significant winter flowering species entering T1 (strata)	5	Minimal change in year 15 as there has been no significant winter flowering species entering T1 (strata)	5	Maturing plantings and natural recruitment entering T1 and T2 strata, large tree recruitment beginning.	5
			AU2	2.5		2.5		2.5		2.5		5
			AU3	5		5		5		5		5
	Non-native plant cover	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from GHFF MHQA method. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan 5. Revegetation and Habitat Creation Implement RMP.	AU1	10	AU1 - reduced to below 15%, AU2/3 reduced to 30% accounting for mass removal of LC, and potential high recruitment of other herbaceous pioneer species.	10	All sites maintained below 15% weed cover.	10	All sites maintained below 15% weed cover.	10	All sites maintained below 10% weed cover.	10
			AU2	1		5		7.5		7.5		10
			AU3	1		5		10		10		10
Habitat quality site-context attributes	Size of patch	N/A	All AUS	10	This attribute already scores the maximum score with >200 ha size of patch.							10
	Connectedness	N/A		10	This attribute already scores the maximum score with 9 active GHFF camps within 20 km of the site since 2021.							10
	Context	N/A		10	This attribute cannot be improved through management actions. The site scores 10, which correlates to 45% of potential foraging habitat within 20 km of the Offset Site. Foraging habitat is considered to be all remnant vegetation of either Regulated Vegetation Category A, B or C status.							10
	Ecological corridors	N/A		10	This attribute already scores the maximum score as the Offset site is located within a state and regional corridor.							10
	Note or site location to species overall population in the state	N/A		1	This attribute cannot be improved through offset management actions.							1
Threats	Fuel hazard rating	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from GHFF MHQA method. Key Actions: 2. Biosecurity Management Plan 3. Fencing, Access and Signage Plan 4. Fire Management Plan 5. Revegetation and Habitat Creation Implement RMP.	All AUS	1	An extreme or very high fuel hazard rating is presumed at year 0 based on the abundance of shrubby vegetation. Reduced fuel load due to management of Lantana camara infestations which inflate shrub layer biomass.	7	Further reduction in fuel load to score of low, reflecting maintenance of invasive weeds.	15	Low fuel hazard rating is maintained	15	Low fuel hazard rating is maintained	15
	Presence of top-strand barbed-wire fencing or similar	7		Top-strand barbed-wire fencing is present on at least one fence boundary or internal fenceline							7	
	Presence of powerlines	15		Powerlines are not present.							15	
	Proportion of wooded vegetation	15		Greater than 75% of the site is wooded at year 0. High score is attained.							15	
Species stocking rate	GHFF foraging tree density - per hectare	Annual monitoring of performance at each of the seven established Baseline BioCondition plots - OMP Figure 4. KPI's have been adopted from GHFF MHQA method. Key Actions: 2. Biosecurity Management Plan 4. Fire Management Plan 5. Revegetation and Habitat Creation Implement RMP.	AU1	6	Moderate baseline score reflects existing canopy trees in this AU. Little change is expected in the number of canopy trees present to year 5.	6	Moderate baseline score reflects existing canopy trees in this AU. Little change is expected in the number of canopy trees present to year 10.	6	Moderate baseline score reflects existing canopy trees in this AU. Little change is expected in the number of canopy trees present to year 15.	6	Moderate baseline score reflects existing canopy trees in this AU. Little change is expected in the number of canopy trees present to year 20.	6
			AU2	2	Assisted revegetation outcomes are unlikely to be reflected in stem count scores for GHFF. Existing stems at baseline are unlikely to have experienced enough growth between years 0 and 5 due to time required to reach 300 mm DBH. No change in score is predicted until year 15.	2	Assisted revegetation outcomes are unlikely to be reflected in stem count scores for GHFF. Existing stems at baseline are unlikely to have experienced enough growth between years 5 and 10 due to time required to reach 300 mm DBH. No change in score is predicted until year 15.	2	Assisted revegetation outcomes are unlikely to be reflected in stem count scores for GHFF. Existing stems at baseline are unlikely to have experienced enough growth between years 10 and 15 due to time required to reach 300 mm DBH. No change in score is predicted until year 15.	2	Assisted revegetation outcomes begin to be reflected in stem count scores for GHFF. Existing stems at baseline are unlikely to have experienced enough growth between years 15 and 20 due to time required to reach 300 mm DBH. Change is reflected in proportion to regeneration of canopy species at year 0.	7
			AU3	2		2		2		2		4

Attachment 10 – MHQA Baseline - Koala

OFFSET - KOALA Baseline

[illegible]

Species Stocking Rate (SSR)					AU1	AU2	AU3
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0	5	10	10	5	5
		No	Yes - adjacent	Yes - on site			
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15	5	5
		Not habitat	Dispersal	Foraging			
Approximate density (per ha)	Score	0	10	20	10	0	0
		0%	low	medium			
Role/importance of species population on site*	Score (Total from supplementary table below)	0	5	10	5	5	5
				15			
		0	5 - 15	20 - 35	40 - 45		
Total SRR score (out of 70)					40	15	15
SSR Score (out of 4)					2.3	0.9	0.9

SSR Supplementary Table		AU1		AU2		AU3	
*Key source population for breeding	Score	0	10	0	0	0	
		No	Yes/ Possibly				
*Key source population for dispersal	Score	5		5	5	5	
		No	Yes/ Possibly				
*Necessary for maintaining genetic diversity	Score	0	15	0	0	0	
		No	Yes/ Possibly				
*Near the limit of the species range	Score	0	15	0	0	0	
		No	Yes				
Total for SSR Supplementary Table				5	5	5	

Final habitat quality score (weighted)	AU1	AU2	AU3	Ave / Final
Site Condition score (out of 3)	2.46	1.33	1.06	1.62
Site Context Score (out of 3)	2.41	2.20	2.20	2.27
Species Stocking Rate Score (out of 4)	2.29	0.66	0.86	1.33
Habitat Quality Score (out of 10)	7.16	4.38	4.11	5.22
Habitat Quality score (Rounded)	7.00	6.00	5.00	6.00
Assessment Unit area (ha)	61.35	20.63	6.65	88.63
Total offset area (ha) for this MNES	80.63	88.92	88.92	88.82
Qo Weighting	0.69	0.23	0.07	1.00
Weighted Habitat Quality Score	4.95	1.02	0.31	6.28

Supplementary table for threats scoring		Score			Result	Final result	
Used threatening process	Scoring indicator	Score weighting	1	7	15		Score
Altered fire regimes	Fuel hazard rating	30%	Extreme or Very High fuel hazard rating	Moderate or High fuel hazard rating	Low fuel hazard rating	1	0.3
Mortality from dogs	Wild/domestic dog activity index		An activity index score of very high or high	An activity index score of low or medium	An activity index score of absent or very low	7	
	Evidence of wild dog	15%	Traces of dogs detected through scats and/or tracks	Anecdotal evidence (i.e. landholder and/or local community discussion)	No traces of wild dog are detected on site / no anecdotal evidence	1	0.6
Mortality from vehicles	Percentage of site boundary by roads.		>75% of Site boundary is either bounded by roads (within 200 meters) or intersects with roads	16-75% of Site boundary is either bounded by roads (within 200 meters) or intersects with roads.	<15% of Site boundary is either bounded by roads (within 200 meters) or intersects with roads.	15	
	Type of road	15%	Highway / motorway / high traffic	Street / main road / moderate traffic and/or busy during peak hour	Unsealed / low and/or occasional traffic	15	2.25
Habitat loss, fragmentation, and degradation	Proportion of wooded vegetation	40%	0-25% wooded vegetation occupies the site	26-75% wooded vegetation occupies the site	>75% wooded vegetation occupies the site	15	6
Threats score out of 15							
Scaled score (1-5=1; 6-10=7; 11-15=15)							

9.15

Assessment Unit - Regional Ecosystem		koala scat																																			
		AU 1 - Remnant and High Value Regrowth RE12.9-10.2												AU 2 - Remnant RE12.8-17										AU 3 - Remnant RE12.8-24										Totals			
Site Reference	Benchmark	HQP 1a		HQP 3a		HQP 2a		Average % benchmark		Average Score	Benchmark	OA AU2 T1		OA AU2 T2		Average % benchmark		Average Score	Benchmark	OA AU3 T1		OA AU3 T2		Average % benchmark		Average Score	Benchmark	OA AU3 T1		OA AU3 T2		Average % benchmark				Average Score	
	12.9-10.2	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score		Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			12.8.24	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			12.8.24	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score		
Site Condition		100	100	100%	5.0	33	33%	3.0	100	100%	5.0	78%	4.33	100	66	66%	3.0	50	50%	3.0	58%	3.00	100	33	33%	3.0	15	15%	0.0	24%	1.50	53%	2.94				
Recruitment of woody perennial species in EDL		6	8	133%	5.0	5	83%	2.5	8	133%	5.0	117%	4.17	7	9	129%	5.0	8	114%	5.0	121%	5.00	7	9	129%	5.0	4	57%	2.5	93%	3.75	110%	4.31				
Native plant species richness - trees		7	12	171%	5.0	14	200%	5.0	9	129%	5.0	167%	5.00	5	3	60%	2.5	4	80%	2.5	70%	2.50	7	6	86%	2.5	1	14%	0.0	50%	1.25	96%	2.92				
Native plant species richness - shrubs		7	10	143%	5.0	12	171%	5.0	10	143%	5.0	152%	5.00	12	7	58%	2.5	3	25%	2.5	42%	2.50	13	1	8%	0.0	2	15%	0.0	12%	0.00	69%	2.50				
Native plant species richness - grasses		13	14	108%	5.0	23	177%	5.0	10	77%	2.5	121%	4.17	27	11	41%	2.5	5	19%	0.0	30%	1.25	28	7	25%	2.5	6	21%	0.0	23%	1.25	58%	2.22				
Native plant species richness - forbes		16.5	17.85	108%	5.0	18.6	113%	5.0	17.75	108%	5.0	109%	5.00	14.5	18.0	124%	5.0	10.5	72%	5.0	98%	5.00	19	16.5	87%	5.0	12.0	63%	3.0	75%	4.00	94%	4.67				
Tree canopy height (average of emergent, canopy, sub-canopy)		42	49.15	117%	5.0	44.65	106%	5.0	47.85	114%	5.0	112%	5.00	34	31.6	93%	5.0	29.4	86%	5.0	90%	5.00	38.5	48.8	127%	5.0	53.6	139%	5.0	133%	5.00	112%	5.00				
Tree canopy cover (average of emergent, canopy, sub-canopy)		6	10.8	180%	5.0	9.9	165%	5.0	5.7	95%	5.0	147%	5.00	5	0.1	2%	0.0	0	0%	0.0	1%	0.00	7	0	0%	0.0	0	0%	0.0	0%	0.00	49%	1.67				
Shrub canopy cover		21	5.2	25%	1.0	11	52%	3.0	27.6	131%	5.0	70%	3.00	32	13.8	43%	1.0	0.2	1%	0.0	22%	0.50	8	0	0%	0.0	0	0%	0.0	0%	0.00	30%	1.17				
Native grass cover		48	64	133%	5.0	43	90%	5.0	54	113%	5.0	112%	5.00	21	23	110%	5.0	4	19%	3.0	64%	4.00	32	0	0%	0.0	0	0%	0.0	0%	0.00	59%	3.00				
Organic litter		38	30	79%	10.0	56	147%	15.0	34	89%	10.0	105%	11.67	24	18	75%	10.0	6	25%	5.0	50%	7.50	25	16	64%	10.0	2	8%	5.0	36%	7.50	64%	8.89				
Large trees (euc plus non-euc)		506	1020	202%	2.0	1190	235%	2.0	370	73%	5.0	170%	3.00	234	10	4%	0.0	100	43%	2.0	24%	1.00	764	100	13%	2.0	30	4%	0.0	9%	1.00	67%	1.67				
Coarse woody debris		0	15	15%	5.0	15	15%	5.0	10.3	10%	5.0	5.0	0	30	30%	3.0	30	30%	3.0	30%	3.00	0	30	30%	3.0	30	30%	3.0	30%	3.00	30%	3.67					
Non-native plant cover		N/A	10		10.0	10		10.0	10		10.0	10.0	N/A	5		5.0	5		5.0	5.0	5.00	10	5		5.0	5		5.0	5		5.0	5.0	6.67				
Quality and availability of food and foraging habitat		N/A	10		10.0	5		5.0	5		5.0	6.7	N/A	5		5.0	1		1.0	1.0	3.00	10	5		5.0	5		5.0	5		5.0	5.0	4.89				
Quality and availability of shelter					83			80.5			82.5	82.0								42	48.3						29	38.3			56.2						
Site Condition Score					100			100			100	100								100	100						100	100			100						
MAX Site Condition Score					2.49			2.42			2.48	2.46								1.26	1.45						0.86	1.15			1.69						
Site Condition Score - out of 3																																					
Site Context		10	>6200ha (Figure 50)		10			10			10	10.00	10	>6200ha (Figure 50)		10			10			10	10	10	>6200ha (Figure 50)		10			10			10.00				
Size of patch		5	89.8% (Figure 51)		5			5			5	5.0	5	89.8% (Figure 51)		5			5			5	5	5	89.8% (Figure 51)		5			5			5.00				
Connectedness		5	72.83% (Figure 52)		4			4			4	4.0	5	72.83% (Figure 52)		4			4			4	4	4	72.83% (Figure 52)		4			4			4.00				
Context		6	in state corridor		6			6			6	6.0	6	in state corridor		6			6			6	6	6	in state corridor		6			6			6.00				
Ecological Corridors		5	Critical Habitat		5			5			5	5.0	5	Critical Habitat		5			5			5	5	5	Critical Habitat		5			5			5.00				
Role of site location to species overall population in the state		15	Moderate level threats		7			7			1	5.0	10	Moderate level threats		7			7			7	15	Moderate level threat		7			7			7			6.33		
Threats to the species					10.00			10.00			10	10.0	10			7.00			7			7	10			7			7			7			8.00		
Species mobility capacity																																					
													</																								

Assessment Unit - Regional Ecosystem		AU 1 - Remnant and High Value Regrowth RE12.9-10.2										AU 2 - Remnant RE12.8.17										AU 3 - Remnant RE12.8.24										Totals		
Site Reference	Benchmark	HQP 1a			HQP 3a			HQP 2a			Average % benchmark	Average Score	Benchmark	QA AU2 T1			QA AU2 T2			Average % benchmark	Average Score	Benchmark	QA AU3 T1			QA AU3 T2			Average % benchmark	Average Score	Benchmark	Average % benchmark	Average Score	
		Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score				Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score				Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score						Raw Data
Site Condition	12.9-10.2	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			12.8.17	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score				12.8.24	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score					
Recruitment of woody perennial species in EDL	100	100	100%	5.0	90	90%	5.0	100	100%	5.0	97%	5.00	100	90	90%	5.0	90	90%	5.0	90%	5.00	100	90	90%	5.0	90	90%	5.0	90%	5.00	92%	5.00		
Native plant species richness - trees	6	8	133%	5.0	6	100%	5.0	8	133%	5.0	122%	5.00	7	9	129%	5.0	8	114%	5.0	121%	5.00	7	9	129%	5.0	5	71%	2.5	100%	3.75	115%	4.58		
Native plant species richness - shrubs	7	12	171%	5.0	14	200%	5.0	9	129%	5.0	167%	5.00	5	5	100%	5.0	5	100%	5.0	100%	5.00	7	6	86%	2.5	4	57%	2.5	71%	2.50	113%	4.17		
Native plant species richness - grasses	7	10	143%	5.0	12	171%	5.0	10	143%	5.0	152%	5.00	12	10	83%	2.5	6	50%	2.5	67%	2.50	13	7	54%	2.5	7	54%	2.5	54%	2.50	91%	3.33		
Native plant species richness - forbes	13	14	108%	5.0	23	177%	5.0	12	92%	5.0	126%	5.00	27	17	63%	2.5	11	41%	2.5	52%	2.50	28	13	46%	2.5	12	43%	2.5	45%	2.50	74%	3.33		
Tree canopy height (average of emergent, canopy, sub-canopy)	16.5	17.85	108%	5.0	18.6	113%	5.0	17.75	108%	5.0	109%	5.00	14.5	18.0	124%	5.0	11.0	76%	5.0	100%	5.00	19	16.5	87%	5.0	13.5	71%	5.0	79%	5.00	96%	5.00		
Tree canopy cover (average of emergent, canopy, sub-canopy)	42	49.15	117%	5.0	44.65	106%	5.0	47.85	114%	5.0	112%	5.00	34	31.6	93%	5.0	29.4	86%	5.0	90%	5.00	38.5	48.8	127%	5.0	53.6	139%	5.0	133%	5.00	112%	5.00		
Shrub canopy cover	6	10.8	180%	5.0	9.9	165%	5.0	5.7	95%	5.0	147%	5.00	5	3	60%	5.0	3	60%	5.0	60%	5.00	7	4	57%	5.0	4	57%	5.0	57%	5.00	88%	5.00		
Native grass cover	21	20	95%	5.0	21	100%	5.0	27.6	131%	5.0	109%	5.00	32	29	91%	5.0	3	53%	5.0	72%	4.00	8	10	125%	5.0	10	125%	5.0	125%	5.00	102%	4.67		
Organic litter	48	64	133%	5.0	43	90%	5.0	54	113%	5.0	112%	5.00	21	23	110%	5.0	17	81%	5.0	95%	5.00	32	12	38%	3.0	12	38%	3.0	38%	3.00	82%	4.33		
Large trees (euc plus non-euc)	38	34	89%	10.0	54	142%	15.0	42	111%	15.0	114%	13.33	24	22	92%	10.0	10	42%	5.0	67%	7.50	25	20	80%	10.0	6	24%	5.0	52%	7.50	78%	9.44		
Coarse woody debris	506	520	103%	5.0	690	136%	5.0	370	73%	5.0	104%	5.00	234	260	111%	5.0	250	107%	5.0	109%	5.00	764	475	62%	5.0	455	60%	5.0	61%	5.00	91%	5.00		
Non-native plant cover	0	10	10%	5.0	10	10%	5.0	10.3	10%	5.0	10%	5.00	0	10	10%	5.0	10	10%	5.0	10%	5.00	0	10	10%	5.0	10	10%	5.0	10%	5.00	10%	5.00		
Quality and availability of food and foraging habitat	N/A	10.00		10.0	10		10.0	10		10.0	10.0	10.0	N/A	10		10.0	10		10.0	10.0	10.0	10	5		5.0	5		5.0	5.0	5.0	8.33			
Quality and availability of shelter	N/A	10.00		10.0	10		10.0	10		10.0	10.0	10.0	N/A	5		5.0	5		5.0	5.0	5.0	10	5		5.0	5		5.0	5.0	5.0	6.67			
Site Condition Score				90			95			95	93.3								73			76.5				71			63		66.8		78.9	
MAX Site Condition Score				100			100			100	100								100			100				100			100		100		100	
Site Condition Score - out of 3				2.70			2.85			2.85	2.80								2.19			2.30				2.12			1.89		2.00		2.37	
Size of patch	10	>6200ha (Figure 50)		10			10			10	10.0		10	>6200ha (Figure 50)		10			10	10	10	10	10	>6200ha (Figure 50)		10			10		10		10.00	
Connectiveness	5	89.8% (Figure 51)		5			5			5	5.0		5	89.8% (Figure 51)		5			5	5	5	5	5	89.8% (Figure 51)		5			5		5		5.00	
Context	5	72.83% (Figure 52)		4			4			4	4.0		5	72.83% (Figure 52)		4			4	4	4	4	4	72.83% (Figure 52)		4			4		4		4.00	
Ecological Corridors	6	In state corridor		6			6			6	6.0		6	In state corridor		6			6	6	6	6	6	In state corridor		6			6		6		6.00	
Role of site location to species overall population in the state	5	Critical Habitat		5			5			5	5.0		5	Critical Habitat		5			5	5	5	5	5	Critical Habitat		5			5		5		5.00	
Threats to the species	15	Low level threats		15			15			15	15.0		15	Low level threats		15			15	15	15	15	15	Low level threats		15			15		15		15.00	
Species mobility capacity	10			10			10			10	10.0		10			10			10	10	10	10		10			10			10		10.00		
Site Context Score				55			55			55	55.0								55			55				55			55		55		55.00	
MAX Site Context Score				56			56			56	56								56			56				56			56		56		56	
Site Context Score - out of 3				2.95			2.95			2.95	2.95								2.95			2.95				2.95			2.95		2.95		2.95	
Habitat Quality		Raw Data	Score		Raw Data	Score		Raw Data	Score		Average Score			Raw Data	Score		Raw Data	Score		Average Score			Raw Data	Score		Raw Data	Score		Raw Data	Score		Average Score		Average Score
Quality and availability of food and foraging habitat																																		
Proportion of canopy cover of LKLT trees within the 100x50 meter BioCondition plot	20		0.68	20.00		1.00	20.00		0.99	20.00	20.00			0.75	20.00			0.75	20.00		20.00			0.83	20.00		0.86	20.00			20.00		20.00	
Forage tree species richness (LKLTs as per Youngentob et al., 2022) [Only trees >100 DBH]	10		3.00	5.00		3.00	5.00		3.00	5.00	5.00			4.00	10.00			4.00	10.00		10.00			3.00	5.00		3.00	5.00			5.00		6.67	
Tree density (per hectare stem count) of LKLT species	20		1.50	20.00		1.36	20.00		0.79	20.00	20.00			0.40	10.00			0.41	10.00		10.00			0.42	10.00		0.38	10.00			10.00		13.33	
Recruitment of LKLT species only (% of total LKLT within plot)	10		1.00	10.00		1.00	10.00		1.00	10.00	10.00			1.00	10.00			1.00	10.00		10.00			1.00	10.00		1.00	10.00			10.00		10.00	
MAX Score	60			55.00			55.00			55.00	55.00				50.00				50.00		50.00				45.00			45.00			45.00		50.00	
% of total score				91.67			91.67			91.67	83.33				83.33				83.33		83.33				75.00			75.00			75.00		83.33	
scaled score				10.00			10.00			10.00	10.00				10.00				10.00		10.00				5.00			5.00			5.00		10.00	
Quality and availability of shelter																																		
presence of preferred ancillary trees (listed in Youngentob et al.)	10		5.00	5.00		1.00	1.00		1.00	1.00	2.33			5.00	5.00			5.00	5.00		5.00			5.00	5.00		5.00	5.00			5.00		4.11	
Canopy cover of all trees within the 100x50 meter BioCondition plot	20		1.65	20.00		1.36	20.00		0.90	20.00	20.00			0.90	20.00			0.90	20.00		20.00			1.00	20.00		0.90	20.00			20.00		20.00	
Recruitment of all Forage/Shelter tree species (% of total tree species diverse)	10		1.00	10.00		1.00	10.00		1.00	10.00	10.00			1.00	10.00			1.00	10.00		10.00			1.00	10.00		1.00	10.00			10.00		10.00	
Tree density (per hectare stem count) of all trees >100 mm DBH	20		1.57	20.00		1.36	20.00		1.40	20.00	20.00			0.43	10.00			0.44	10.00		10.00			0.41	10.00		0.41	10.00			10.00		13.33	
Proximity to habitat refugia	10		5.00	5.00		5.00	5.00		5.00	5.00	5.00			5.00	5.00			5.00	5.00		5.00			1.00	1.00									

Attachment 11 – MHQA
baseline Grey-headed
Flying-fox

Linked cell

Final habitat quality score (weighted)	AU1	AU2	AU3	Ave / Final
Habitat Quality (out of 4)	1.93	1.25	1.17	1.45
Site Context Score (out of 3)	2.30	2.30	2.30	2.30
Species Stocking Rate Score (out of 3)	1.80	0.60	0.60	1.00
Habitat Quality score (out of 10)	6.03	4.15	4.07	4.75
Habitat Quality score (Rounded)	6.00	4.00	4.00	4.67
Assessment Unit area (ha)	61.35	20.63	6.65	88.63
Total offset area (ha) for this MNES	88.63	88.63	88.63	88.63
Size Weighting	0.69	0.23	0.08	1.00
	4.18	0.97	0.31	5.45
Weighted Habitat Quality Score				

Supplementary table for threats scoring			Score			Result		Final result
Listed threatening process	Scoring indicator	Score weight	1	7	15	Score	Weighted score	
Altered fire regimes	Fuel hazard rating	30%	Extreme or Very High fuel hazard rating	Moderate or High fuel hazard rating	Low fuel hazard rating	1		0.3
Entanglement in netting and barb wire fences	Presence of top-strand barbed-wire fencing or similar	15%	Site is entirely bounded by top-strand barbed-wire fencing	Top-strand barbed-wire fencing in place on at least one fence boundary or internal fence line	Site is absent of top-strand barbed-wire fencing	7		
Electrocution on powerlines	Presence of powerlines	15%	Powerline/s intersect site	Powerline/s run parallel with a site boundary (within 100 metres)	Powerlines are not present as per the above	15		1.05
Habitat loss, fragmentation, and degradation	Proportion of wooded vegetation	40%	0-25% wooded vegetation occupies the site	26-75% wooded vegetation occupies the site	>75% wooded vegetation occupies the site			2.25
Threats score out of 15						15		6
Scaled score (1-5=1; 6-10=5; 11-15=10)								

Assessment Unit - Regional Ecosystem		AU 1 - Remnant and High Value Regrowth RE12.9-10.2										AU 2 - Remnant RE12.8.17										AU 3 - Remnant RE12.8.24										Totals			
Site Reference	Benchmark	HQP 1a			HQP3a			HQP 2a			Average % benchmark	Average Score	Benchmark	QA AU2 T1			QA AU2 T2			Age % bench	Average Score	Benchmark	QA AU3 T1			QA AU3 T2			Age % bench	Average Score	Age % bench	Average Score			
		Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score				Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score				Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score					Raw Data	% Benchmark	Score
Site Condition	12.9-10.2																																		
Recruitment of woody perennial species in EDL	100	100	100%	5.0	33	33%	3.0	100	100%	5.0	78%	4.33	100	66	66%	3.0	50	50%	3.0	58%	3.00	100	33	33%	3.0	15	15%	0.0	24%	1.50	53%	2.94			
Native plant species richness - trees	6	8	133%	5.0	5	83%	2.5	8	133%	5.0	117%	4.17	7	9	129%	5.0	8	114%	5.0	121%	5.00	7	9	129%	5.0	4	57%	2.5	93%	3.75	110%	4.31			
Native plant species richness - shrubs	7	12	171%	5.0	14	200%	5.0	9	129%	5.0	167%	5.00	5	3	60%	2.5	4	80%	2.5	70%	2.50	7	6	86%	2.5	1	14%	0.0	50%	1.25	96%	2.92			
Native plant species richness - grasses	7	10	143%	5.0	12	171%	5.0	10	143%	5.0	152%	5.00	12	7	58%	2.5	3	25%	2.5	42%	2.50	13	1	8%	0.0	2	15%	0.0	12%	0.00	69%	2.50			
Native plant species richness - forbes	13	14	108%	5.0	23	177%	5.0	10	77%	2.5	121%	4.17	27	11	41%	2.5	5	19%	0.0	30%	1.25	28	7	25%	2.5	6	21%	0.0	23%	1.25	58%	2.22			
Tree canopy height (average of emergent, canopy, sub-canopy)	16.5	17.85	108%	5.0	18.6	113%	5.0	17.75	108%	5.0	109%	5.00	14.5	18.0	124%	5.0	10.5	72%	5.0	98%	5.00	19	16.5	87%	5.0	12.0	63%	3.0	75%	4.00	94%	4.67			
Tree canopy cover (average of emergent, canopy, sub-canopy)	42	49.15	117%	5.0	44.65	106%	5.0	47.85	114%	5.0	112%	5.00	34	31.6	93%	5.0	29.4	86%	5.0	90%	5.00	38.5	48.8	127%	5.0	53.6	139%	5.0	133%	5.00	112%	5.00			
Shrub canopy cover	6	10.8	180%	5.0	9.9	165%	5.0	5.7	95%	5.0	147%	5.00	5	0.1	2%	0.0	0	0%	0.0	1%	0.00	7	0	0%	0.0	0	0%	0.0	0%	0.00	49%	1.67			
Native grass cover	21	5.2	25%	1.0	11	52%	3.0	27.6	131%	5.0	70%	3.00	32	13.8	43%	1.0	0.2	1%	0.0	22%	0.50	8	0	0%	0.0	0	0%	0.0	0%	0.00	30%	1.17			
Organic litter	48	64	133%	5.0	43	90%	5.0	54	113%	5.0	112%	5.00	21	23	110%	5.0	4	19%	3.0	64%	4.00	32	0	0%	0.0	0	0%	0.0	0%	0.00	59%	3.00			
Large trees (euc plus non-euc)	38	30	79%	10.0	56	147%	15.0	34	89%	10.0	105%	11.67	24	18	75%	10.0	6	25%	5.0	50%	7.50	25	16	64%	10.0	2	8%	5.0	36%	7.50	64%	8.89			
Coarse woody debris	506	1020	202%	2.0	1190	235%	2.0	370	73%	5.0	170%	3.00	234	10	4%	0.0	100	43%	2.0	24%	1.00	764	100	13%	2.0	30	4%	0.0	9%	1.00	67%	1.67			
Non-native plant cover	0	15	15%	5.0	15	15%	5.0	10.3	10%	5.0		5.0	0	30	30%	3.0	30	30%	3.0	30%	3.00	0	30	30%	3.0	30	30%	3.0	30%	3.00	30%	3.67			
Site Condition Score				63			65.5			67.5		65.3				45			36		40.3				38			19		28.3			44.6		
MAX Site Condition Score				80			80			80		80				80			80		80				80			80			80			80	
Site Condition Score - out of 20				15.75			16.38			16.88		16.33				11.13			9.00		10.06				9.50			4.63		7.06			11.15		
Quality and availability of food and foraging habitat + Quality and availability of foraging habitat	Benchmark	contributor	Raw data	Score	Raw data	Score	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Raw data	Score	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Raw data	Score	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Total average score
Species richness	20	22.2		5.0	1	5	2	5	2	5	5	20	2	5	1	5	1	5	1	5	5	20	2	5	1	5	1	5	1	5	5	20	2	5	5.0
Flower score	20	11.1	0.65	8.0	0.65	8	0.65	8	0.65	8	8	20	8	0.65	8	0.54	8	0.65	8	8	20	8	0.65	8	0.65	8	0.65	8	8	8	8	8	8	8.0	
Timing of Biological shortages	20	11.1		4	4	4	4	4	4	4	4	20	10	8.5	10	3	3	3	3	6.5	10	4	4	4	4	4	4	4	4	4	4	4	4.8		
Quality of foraging habitat	20	22.2		5.0	5	5	5	5	5	5	5	20	5	5	5	0	0	0	0	2.5	20	5	2	5	1	5	5	5	5	5	5	5	4.2		
non-native plant cover	20	22.2	0.15	10.0	0.15	10.0	0.1	10.0	0.1	10.0	10	20	0.30	5.0	30%	5.0	30%	5.0	5	5	20	30%	5.0	30%	5.0	30%	5.0	30%	5.0	5	5	5	6.7		
Q+A foraging habitat + Q+A shelter habitat score				32.0		32.0		32.0		32.0		32.0		33.0		21.0		21.0		27.0		80		27.0		27.0		27.0		27.0		28.7			
MAX Score	80			80		80		80		80		80				80		80		80		80		80		80		80		80		80		80	
Site condition score	20	22.2		15.8		16.4		16.3		16.9		20		11.1		9.0		9.0		10.1		20		9.5		4.6		7.1		11.2					
Q+A foraging habitat + Q+A shelter habitat score	80	88.9		32.0		32.0		32.0		32.0		80		33.0		21.0		21.0		27.0		80		27.0		27.0		27.0		28.7					
Combined Habitat Quality Score				47.8		48.4		48.9		48.3		48.3		44.1		30.0		37.1		36.5		100		31.6		31.6		34.1		39.8					
MAX Habitat Quality Score	100			100		100		100		100		100		100		100		100		100		100		100		100		100		100					
Combined HQ Score - out of 4				1.91		1.94		1.96		1.93		1.77				1.20		1.48		1.48		100		1.46		1.27		1.36		1.59					
Site Context	Benchmark	Data	Score								Average Score	Benchmark	Raw data	Score	Raw data	Score	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Raw data	Score	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Total average score
Size of patch	20		>6200ha (Figure 50)	10.0		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0		10.0		10.0	
Connectedness	20		9 camps with 20 km	10.0		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0		10.0		10.0	
Context	20		>45% habitat within 20 km	10.0		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0		10.0		10.0	
Ecological Corridors	20		in state corridor	10.0		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0		10.0		10.0	
Role of site location to species overall population in the state	20		1 significant camp	1.0		1.0		1.0		1.0		1.0	20		1.0		1.0		1.0		1.0	20		1.0		1.0		1.0		1.0		1.0		1.0	
threats to the species	20		low level threats	10.0		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0	20		10.0		10.0		10.0		10.0		10.0		10.0	
Site Context Score				51		51		51		51		51.0				51		51		51				51		51		51		51		51.0			
MAX Site Context Score				60		60		60		60		60				60		60		60				60		60		60		60		60			
Site Context Score - out of 3				2.55		2.55		2.55		2.55		2.55				2.55		2.55		2.55				2.55		2.55		2.55		2.55		2.55			
Species Stocking Rate	Benchmark										Average Score	Benchmark								Average Score	Benchmark														
GHFF tree density per/ha	20			6	6	6	6	6	6	6	6	20		2	2	2	2	2	2	2	2	20		2	2	2	2	2	2	2	2	3.3			
Site Context Score				6		6		6		6		6.0				6		6		6.0				6		6		6		6		6.0			
MAX Site Context Score				10		10		10		10		10				10		10		10				10		10		10		10		10			
Site Context Score - out of 3				1.80		1.80		1.80		1.80		1.80				0.60		0.60		0.60				0.60		0.60		0.60		0.60		1.00			

Final habitat quality score (weighted)	AU1	AU2	AU3	Ave / Final	
Habitat Quality (out of 4)	1.93	1.48	1.36	1.59	
Site Context Score (out of 3)	2.55	2.55	2.55	2.55	
Species Stocking Rate Score (out of 3)	1.80	0.60	0.60	1.00	
Habitat Quality score (out of 10)	6.28	4.63	4.51	5.14	
Habitat Quality score (Rounded)	6.00	4.00	4.00	4.67	
Assessment Unit area (ha)	61.35	20.63	6.65	88.63	
Total offset area (ha) for this MNES	88.63	88.63	88.63	88.63	
Size Weighting	0.69	0.23	0.08	1.00	
Weighted Habitat Quality Score	4.35	2.08	0.34	5.77	6.00

Assessment Unit - Regional Ecosystem		AU 1 - Remnant and High Value Regrowth RE12.9-10.2												AU 2 - Remnant RE12.8.17								AU 3 - Remnant RE12.8.24												Totals	
Site Reference	Benchmark	HQP 1a			HQP3a			HQP 2a			Average % benchmark	Average Score	Benchmark	OA AU2 T1			OA AU2 T2			Average % benchmark	Average Score	Benchmark	OA AU3 T1			OA AU3 T2			Average % benchmark	Average Score	Average % benchmark	Average Score			
		Transect 1			Transect 2			Transect 3						Transect 1			Transect 2						Transect 1			Transect 2									
		Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score				Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score				Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score					Raw Data	% Benchmark	Score
Site Condition	12.9-10.2	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Average % benchmark	Average Score	12.8.17	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Average % benchmark	Average Score	12.8.24	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Average % benchmark	Average Score	Average % benchmark	Average Score			
Recruitment of woody perennial species in EDL	100	100	100%	5.0	90	90%	5.0	100	100%	5.0	97%	5.00	100	90	90%	5.0	90	90%	5.0	90%	5.00	100	90	90%	5.0	90	90%	5.0	90%	5.00	92%	5.00			
Native plant species richness - trees	6	8	133%	5.0	5	83%	2.5	8	133%	5.0	117%	4.17	7	9	129%	5.0	8	114%	5.0	121%	5.00	7	9	129%	5.0	4	57%	2.5	93%	3.75	110%	4.31			
Native plant species richness - shrubs	7	12	171%	5.0	14	200%	5.0	9	129%	5.0	167%	5.00	5	4	80%	2.5	5	100%	5.0	90%	3.75	7	6	86%	2.5	3	43%	2.5	64%	2.50	107%	3.75			
Native plant species richness - grasses	7	10	143%	5.0	12	171%	5.0	10	143%	5.0	152%	5.00	12	8	67%	2.5	4	33%	2.5	50%	2.50	13	5	38%	2.5	5	38%	2.5	38%	2.50	80%	3.33			
Native plant species richness - forbes	13	14	108%	5.0	23	177%	5.0	12	92%	5.0	126%	5.00	27	13	48%	2.5	7	26%	2.5	37%	2.50	28	9	32%	2.5	8	29%	2.5	30%	2.50	64%	3.33			
Tree canopy height (average of emergent, canopy, sub-canopy)	16.5	17.85	108%	5.0	18.6	113%	5.0	17.75	108%	5.0	109%	5.00	14.5	18.0	124%	5.0	11.0	76%	5.0	100%	5.00	19	16.5	87%	5.0	12.5	66%	3.0	76%	4.00	95%	4.67			
Tree canopy cover (average of emergent, canopy, sub-canopy)	42	49.15	117%	5.0	44.65	106%	5.0	47.85	114%	5.0	112%	5.00	34	31.6	93%	5.0	29.4	86%	5.0	90%	5.00	38.5	48.8	127%	5.0	53.6	139%	5.0	133%	5.00	112%	5.00			
Shrub canopy cover	6	10.8	180%	5.0	9.9	165%	5.0	5.7	95%	5.0	147%	5.00	5	2.5	50%	3.0	2.5	50%	3.0	50%	3.00	7	2.5	36%	3.0	2.5	36%	3.0	36%	3.00	77%	3.67			
Native grass cover	21	10.2	49%	1.0	16	76%	3.0	27.6	131%	5.0	85%	3.00	32	18.9	59%	3.0	5.2	16%	1.0	38%	2.00	8	5	63%	3.0	5	63%	3.0	63%	3.00	62%	2.67			
Organic litter	48	64	133%	5.0	43	90%	5.0	54	113%	5.0	112%	5.00	21	23	110%	5.0	7	33%	3.0	71%	4.00	32	2	6%	0.0	2	6%	0.0	6%	0.00	63%	3.00			
Large trees (euc plus non-euc)	38	30	79%	10.0	56	147%	15.0	34	89%	10.0	105%	11.67	24	18	75%	10.0	6	25%	5.0	50%	7.50	25	16	64%	10.0	2	8%	5.0	36%	7.50	64%	8.89			
Coarse woody debris	506	1020	202%	2.0	1190	235%	2.0	370	73%	5.0	170%	1.00	234	10	4%	0.0	100	43%	2.0	24%	1.00	764	100	13%	2.0	30	4%	0.0	9%	1.00	67%	1.67			
Non-native plant cover	0	15	15%	5.0	15	15%	5.0	10.3	10%	5.0	5.0	0	0	15	15%	5.0	30	30%	3.0	23%	4.00	0	15	15%	5.0	15	15%	5.0	15%	5.00	19%	4.67			
Site Condition Score				63			67.5			70	66.8	50.3				54			47	50.3	80				51			39	44.8	53.9					
MAX Site Condition Score				80			80			80	80	80				80			80	80	80				80			80	80	80					
Site Condition Score - out of 20				15.75			16.88			17.50	16.71	12.56				13.38			11.75	12.56					12.63			9.75	11.19	13.49					
Quality and availability of food and foraging habitat + Quality and availability of shelter	Benchmark	% contribution	Raw data	Score	Raw data	Score	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Raw data	Score	Raw data	Score	Raw data	Score	Average Score	Total average score					
Species richness	20	22.2		2	5.0		1	5		5	5	20	3	5		1	5		5	20		2	5		1	5		5	5	5.0					
Flower score	10	11.1		0.65	8.0		0.65	8		8	8	10	0.65	8		0.54	8		8	10		0.65	8		0.65	8		8	8	8.0					
Timing of Biological shortages	10	11.1		4	4.0		4	4		4	4	10	8.5	10		3	3		6.5	10		4	4		4	4		4	4	4.8					
Quality of foraging habitat	20	22.2		2	5.0		1	5		5	5	20	3	5		0	0		2.5	20		2	5		1	5		5	5	4.2					
non-native plant cover	20	22.2		0.15	10.00		0.15	10.00		10.00	10	20	0.15	10.00		0.30	5.00		7.50	20.00		0.15	10.00		0.15	10.00		10.00	10.00	9.17					
Q+A foraging habitat + Q+A shelter habitat score				32.0			32.0			32.0	32.0			38.0			21.0		29.5			32.0			32.0			32.0	32.0	31.2					
MAX Score	80			80			80			80	80	80					80		80	80	80				80			80	80	80					
Site condition score	20	22.2		15.8			16.9			17.5	16.7	20		13.4			11.8		12.6	20		12.6			9.8			11.2	13.5						
Q+A foraging habitat + Q+A shelter habitat score	80	88.9		32.0			32.0			32.0	32.0	80		38.0			21.0		29.5	80		32.0			32.0			32.0	32.0	31.2					
Combined Habitat Quality Score				47.8			48.9			49.5	48.7			51.4			32.8		42.1			44.6			41.8			43.2	44.7						
MAX Habitat Quality Score				100			100			100	100	100					100		100	100	100				100			100	100	100					
Combined HQ Score- out of 4	100			1.91			1.96			1.98	1.95	100				2.06		1.31		1.68	100			1.79			1.67	1.73	1.79						
Site Context	Benchmark	Data	Score								Average Score								Average Score										Average Score	Total average score					
Size of patch	10	>6200ha (Figure 50)	10.0				10.0			10.0	10.0	10							10.0	10.0					10.0			10.0	10.0	10.0					
Connectedness	10	9 camps with 20 km	10.0				10.0			10.0	10.0	10							10.0	10.0					10.0			10.0	10.0	10.0					
Context	10	>45% habitat within 20 km	10.0				10.0			10.0	10.0	10							10.0	10.0					10.0			10.0	10.0	10.0					
Ecological Corridors	10	in state corridor	10.0				10.0			10.0	10.0	10							10.0	10.0					10.0			10.0	10.0	10.0					
Role of site location to species overall population in the state	10	1 significant camp	1.0				1.0			1.0	1.0	10							1.0	1.0					1.0			1.0	1.0	1.0					
threats to the species	10	Low level threats	10.0				10.0			10.0	10.0	10							10.0	10.0					10.0			10.0	10.0	10.0					
Site Context Score				51			51			51	51.0								51	51					51			51	51	51.0					
MAX Site Context Score				60			60			60	60								60	60					60			60	60	60					
Site Context Score - out of 3				2.55			2.55			2.55	2.55								2.55	2.55					2.55			2.55	2.55	2.55					
Species Stocking Rate	Benchmark										Average Score								Average Score										Average Score	Total average score					
GHFF tree density per/ha	10			6	6		6	6		6	6	10			2	2		2	2	2	10			2	2		2	2	2	3.3					
Site Context Score				6			6			6	6.0								2.0	2.0					2			2							
MAX Site Context Score				10			10			10	10								2	2					2			2							
Site Context Score - out of 3				1.80			1.80			1.80	1.80								0.60	0.60					0.60			0.60	0.60	0.60					

Assessment Unit - Regional Ecosystem		AU 1 - Remnant and High Value Regrowth RE12.9-10.2										AU 2 - Remnant RE12.8.17								AU 3 - Remnant RE12.8.24										Totals			
Site Reference	Benchmark	HQP 1a			HQP3a			HQP 2a			Average % benchmark	Average Score	Benchmark	OA AU2 T1			OA AU2 T2			Average % benchmark	Average Score	Benchmark	OA AU3 T1			OA AU3 T2			Average % benchmark	Average Score	Average % benchmark	Average Score	
		Transect 1	Score		Transect 2	Score		Transect 3	Score					Raw Data	Score		Raw Data	Score					Raw Data	Score		Raw Data	Score						Raw Data
Site Condition	12.9-10.2	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			12.8.17	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			12.8.24	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score					
Recruitment of woody perennial species in EDL	100	100	100%	5.0	90	90%	5.0	100	100%	5.0	97%	5.00	100	90	90%	5.0	90	90%	5.0	90%	5.00	100	90	90%	5.0	90	90%	5.0	90%	5.00	92%	5.00	
Native plant species richness - trees	6	8	133%	5.0	6	100%	5.0	8	133%	5.0	122%	5.00	7	9	129%	5.0	8	114%	5.0	121%	5.00	7	9	129%	5.0	5	71%	2.5	100%	3.75	115%	4.58	
Native plant species richness - shrubs	7	12	171%	5.0	14	200%	5.0	9	129%	5.0	167%	5.00	5	5	100%	5.0	5	100%	5.0	100%	5.00	7	6	86%	2.5	4	57%	2.5	71%	2.50	113%	4.17	
Native plant species richness - grasses	7	10	143%	5.0	12	171%	5.0	10	143%	5.0	152%	5.00	12	9	75%	2.5	5	42%	2.5	58%	2.50	13	6	46%	2.5	6	46%	2.5	46%	2.50	86%	3.33	
Native plant species richness - forbes	13	14	108%	5.0	23	177%	5.0	12	92%	5.0	126%	5.00	27	15	56%	2.5	9	33%	2.5	44%	2.50	28	11	39%	2.5	10	36%	2.5	38%	2.50	69%	3.33	
Tree canopy height (average of emergent, canopy, sub-canopy)	16.5	17.85	108%	5.0	18.6	113%	5.0	17.75	108%	5.0	109%	5.00	14.5	18.0	124%	5.0	11.0	76%	5.0	100%	5.00	19	16.5	87%	5.0	13.0	68%	3.0	78%	4.00	96%	4.67	
Tree canopy cover (average of emergent, canopy, sub-canopy)	42	49.15	117%	5.0	44.65	106%	5.0	47.85	114%	5.0	112%	5.00	34	31.6	93%	5.0	29.4	86%	5.0	90%	5.00	38.5	48.8	127%	5.0	53.6	139%	5.0	133%	5.00	112%	5.00	
Shrub canopy cover	6	10.8	180%	5.0	9.9	165%	5.0	5.7	95%	5.0	147%	5.00	5	3	60%	5.0	3	60%	5.0	60%	5.00	7	3	43%	3.0	3	43%	3.0	43%	3.00	83%	4.33	
Native grass cover	21	15.2	72%	3.0	21	100%	5.0	27.6	131%	5.0	101%	4.33	32	24	75%	3.0	10.2	32%	1.0	53%	2.00	8	7	88%	3.0	7	88%	3.0	88%	3.00	81%	3.11	
Organic litter	48	64	133%	5.0	43	90%	5.0	54	113%	5.0	112%	5.00	21	23	110%	5.0	12	57%	5.0	83%	5.00	32	7	22%	3.0	7	22%	3.0	22%	3.00	72%	4.33	
Large trees (euc plus non-euc)	38	30	79%	10.0	56	147%	15.0	34	89%	10.0	105%	11.67	24	18	75%	10.0	6	25%	5.0	50%	7.50	25	16	64%	10.0	2	8%	5.0	36%	7.50	64%	8.89	
Coarse woody debris	506	520	103%	5.0	690	136%	5.0	370	73%	5.0	104%	5.00	234	260	111%	5.0	250	107%	5.0	109%	5.00	764	475	62%	5.0	455	60%	5.0	61%	5.00	91%	5.00	
Non-native plant cover	0	15	15%	5.0	15	15%	5.0	10.3	10%	5.0		5.0	0	15	15%	5.0	30	30%	3.0	23%	4.00	0	15	15%	5.0	15	15%	5.0	15%	5.00	19%	4.67	
Site Condition Score				68			75			70		71.0				63			54	58.5					57			47			51.8		60.4
MAX Site Condition Score				80			80			80		80				80			80	80					80			80			80		80
Site Condition Score - out of 20				17.00			18.75			17.50		17.75				15.75			13.50	14.63					14.13			11.75			12.94		15.10
Quality and availability of food and foraging habitat + Quality and availability of shelter	Benchmark	% contribution	Raw data	Score	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Raw data	Score	Average Score	Benchmark	Raw data	Score	Raw data	Score	Average Score	Total average score					
Species richness	20	22.2	2	5.0	1	5	2	5	5	20	3	5	1	5	5	20	2	5	1	5	5	20	2	5	1	5	5	5	5.0				
Flower score	10	11.1	0.65	8.0	0.65	8	0.65	8	8	10	0.65	8	0.54	8	10	0.65	8	0.65	8	10	0.65	8	0.65	8	0.65	8	8	8	8.0				
Timing of Biological shortages	10	11.1	4	4.0	4	4	4	4	4	10	8.5	10	3	3	6.5	10	4	4	4	4	6.5	10	4	4	4	4	4	4	4.8				
Quality of foraging habitat	20	22.2	2	5.0	1	5	2	5	5	20	3	5	0	0	2.5	20	2	5	1	5	2.5	20	2	5	1	5	5	5	4.2				
non-native plant cover	20	22.2	0.15	10.00	0.15	10.00	0.10	10.0	10	20	0.15	10.00	0.30	5.00	7.50	20.00	0.15	10.00	0.15	10.00	7.50	20.00	0.15	10.00	0.15	10.00	10.00	10.00	9.2				
Q+A foraging habitat + Q+A shelter habitat score				32.0		32.0		32.0	32.0			38.0		21.0	29.5			32.0		32.0	29.5			32.0		32.0	32.0	31.2					
MAX Score	80			80		80		80	80			80		80	80			80		80	80			80		80	80	80	80				
Site condition score	20	22.2		17.0		18.8		17.5	17.8	20		15.8		13.5	14.6	20			14.1		11.8			32.0		32.0	12.9	15.1					
Q+A foraging habitat + Q+A shelter habitat score	80	88.9		32.0		32.0		32.0	32.0	80		38.0		21.0	29.5	80			32.0		32.0			32.0		32.0	32.0	31.2					
Combined Habitat Quality Score				49.0		50.8		49.5	49.8			53.8		34.5	44.1			44.1		43.8			44.9		44.9	46.3	46.3						
MAX Habitat Quality Score	100			100		100		100	100	100		100		100	100	100			100		100	100			100		100	100					
Combined HQ Score - out of 4				1.96		2.03		1.98	1.99			2.15		1.38	1.77			1.85		1.75			1.85		1.80	1.85							
Site Context	Benchmark	Data	Score						Average Score						Average Score						Average Score							Average Score	Total average score				
Size of patch	10	>6200ha (Fagus)	10.0	10.0		10.0		10.0	10.0	10		10.0		10.0	10.0	10		10.0		10.0	10.0			10.0		10.0	10.0	10.0					
Connectedness	10	9 camps with >45% habitat v	10.0	10.0		10.0		10.0	10.0	10		10.0		10.0	10.0	10		10.0		10.0	10.0			10.0		10.0	10.0	10.0					
Context	10	>45% habitat v	10.0	10.0		10.0		10.0	10.0	10		10.0		10.0	10.0	10		10.0		10.0	10.0			10.0		10.0	10.0	10.0					
Ecological Corridors	10	in state corridor	10.0	10.0		10.0		10.0	10.0	10		10.0		10.0	10.0	10		10.0		10.0	10.0			10.0		10.0	10.0	10.0					
Role of site location to species overall population in the state	10	1 significant ca	1.0	1.0		1.0		1.0	1.0	10		1.0		1.0	1.0	10		1.0		1.0	1.0			1.0		1.0	1.0	1.0					
threats to the species	10	Low level threat	10.0	10.0		10.0		10.0	10.0	10		10.0		10.0	10.0	10		10.0		10.0	10.0			10.0		10.0	10.0	10.0					
Site Context Score				51		51		51	51.0			51		51	51			51		51	51			51		51	51	51					
MAX Site Context Score				60		60		60	60			60		60	60			60		60	60			60		60	60	60					
Site Context Score - out of 3				2.55		2.55		2.55	2.55			2.55		2.55	2.55			2.55		2.55	2.55			2.55		2.55	2.55	2.55					
Species Stocking Rate	Benchmark								Average Score						Average Score						Average Score							Average Score	Total average score				
GHFF tree density per/ha	10		6	6		6		6	6	10		6		2	2	2		2	2	2	2	10		2		2	2	2	2	3.3			
Site Context Score				6		6		6	6.0			10		2	2	2.0		2	2	2.0			2		2	2	2	2	3.3				
MAX Site Context Score				10		10		10	10			10		10	10	10		10	10	10			10		10	10	10	10					
Site Context Score - out of 3				1.80		1.80		1.80	1.80			0.60		0.60	0.60			0.60		0.60	0.60			0.60		0.60	0.60	0.60	1.00				

The assisted regeneration of trees will ensure recruitment in taking place. Natural recruitment is assumed following year 15. By year 15, assisted regeneration trees are expected to exceed 100 mm DBH, and therefore contribute to the T1/T2 layer. Spp richness may increase by 1-2 species.

assisted revegetation will plant native stock (or spread seed) to meet benchmark values native to the area and RE. AU1 - no predicted change. AU2 - One new native grass species is expected to accumulate each vegetation survey year. AU3 - assisted reveg of native grasses will take place.

Native forbs are expected to regenerate naturally over time to align with benchmark values, especially following good rain years. Estimated at 2 new species each vegetation survey year (for sites below benchmark). Tree canopy height is expected to increase over time. Conservative estimate of 50 cm of growth is expected at each vegetation survey year (every 5 years), until benchmark value is attained. canopy cover has attained high score.

expected increase in native shrub cover at AU2 and AU3, following the removal of lantana and assisted regeneration of native species. Native grasses are expected to continue to recover by year 15. An estimated 2-5% increase is reflected in scores.

organic litter regeneration is expected to accelerate more at year 15. A 2-5% cover increase is reflected at sites which are below benchmark. no change predicted at yr 15 the over crowding of CWD at AU1 will be redistributed between AU2 and AU3. all sites maintained below 15% weed cover.

Final habitat quality score (weighted)	AU1	AU2	AU3	Ave / Final
Habitat Quality (out of 4)	1.99	1.77	1.80	1.85
Site Context Score (out of 3)	2.55	2.55	2.55	2.55
Species Stocking Rate Score (out of 3)	1.80	0.60	0.60	1.00
Habitat Quality score (out of 10)	6.34	4.92	4.95	5.40
Habitat Quality score (Rounded)	6.00	4.00	4.00	4.67
Assessment Unit area (ha)	61.35	20.63	6.65	88.63
Total offset area (ha) for this MNES	88.63	88.63	88.63	88.63
Size Weighting	0.69	0.23	0.08	1.00
Weighted Habitat Quality Score	4.39	1.44	0.37	5.90

6.00

Supplementary table for threats scoring			Score			Result		Final result
Listed threatening process	Scoring indicator	Score weight	1	7	15	Score	Weighted score	
Altered fire regimes	Fuel hazard rating	30%	Extreme or Very High fuel hazard rating	Moderate or High fuel hazard rating	Low fuel hazard rating	15	4.5	Maintained low rating.
Entanglement in netting and barb wire fences	Presence of top-strand barbed-wire fencing or similar	15%	Site is entirely bounded by top-strand barbed-wire fencing	Top-strand barbed-wire fencing in present on at least one fence boundary or internal fence line	Site is absent of top-strand barbed-wire fencing	7	1.05	
Electrocution on powerlines	Presence of powerlines	15%	Powerline/s intersect site	Powerline/s run parallel with a site boundary (within 100 metres)	Powerlines are not present as per the above	15	2.25	
Habitat loss, fragmentation, and degradation	Proportion of wooded vegetation	40%	0-25% wooded vegetation occupies the site	26-75% wooded vegetation occupies the site	>75% wooded vegetation occupies the site	15	6	no change.
Threats score out of 15								13.8
Scaled score (1-5=1; 6-10=5; 11-15=10)								10

Maintained low level threats

Assessment Unit - Regional Ecosystem		AU 1- Remnant and High Value Regrowth RE12.9-10.2												AU 2 - Remnant RE12.8.17												AU 3- Remnant RE12.8.24												Totals			
		HQP 1a				HQP3a				HQP 2a				OA AU2 T1				OA AU2 T2				Average % benchmark		Average Score		OA AU3 T1				OA AU3 T2				Average % benchmark		Average Score					
Site Reference	Benchmark	Transact 1		Score	Transact 2		Score	Raw Data		Benchmark	Score	Raw Data		Benchmark	Score	Raw Data		Benchmark	Score	Average % benchmark		Average Score		Benchmark	Transact 1		Transact 2		Average % benchmark		Average Score		Benchmark	Transact 1		Transact 2		Average % benchmark		Average Score	
Site Condition	12.9-10.2	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	Benchmark	Score	Average % benchmark	Average Score	12.8.17	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Average % benchmark	Average Score	12.8.24	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Average % benchmark	Average Score	12.8.24	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Average % benchmark	Average Score		
Recruitment of woody perennial species in EDL	100	100	100%	5.0	90	90%	5.0	100	100%	5.0	97%	5.00	100	90	90%	5.0	90	90%	5.0	90%	5.00	100	90	90%	5.0	90	90%	5.0	90%	5.00	92%	5.00									
Native plant species richness - trees	6	8	133%	5.0	6	100%	5.0	8	133%	5.0	122%	5.00	7	9	129%	5.0	8	114%	5.0	121%	5.00	7	9	129%	5.0	5	71%	2.5	100%	3.75	115%	4.58									
Native plant species richness - shrubs	7	12	171%	5.0	14	200%	5.0	9	129%	5.0	167%	5.00	5	5	100%	5.0	5	100%	5.0	100%	5.00	7	6	86%	2.5	4	57%	2.5	71%	2.50	113%	4.17									
Native plant species richness - grasses	7	10	143%	5.0	12	171%	5.0	10	143%	5.0	152%	5.00	12	10	83%	2.5	6	50%	2.5	67%	2.50	13	7	54%	2.5	7	54%	2.5	54%	2.50	91%	3.33									
Native plant species richness - forbes	13	14	108%	5.0	23	177%	5.0	12	92%	5.0	126%	5.00	27	17	63%	2.5	11	41%	2.5	52%	2.50	28	13	46%	2.5	12	43%	2.5	45%	2.50	74%	3.33									
Tree canopy height (average of emergent, canopy, sub-canopy)	16.5	17.85	108%	5.0	18.6	113%	5.0	17.75	108%	5.0	109%	5.00	14.5	18.0	124%	5.0	11.0	76%	5.0	100%	5.00	19	16.5	87%	5.0	13.5	71%	5.0	79%	5.00	96%	5.00									
Tree canopy cover (average of emergent, canopy, sub-canopy)	42	49.15	117%	5.0	44.65	106%	5.0	47.85	114%	5.0	112%	5.00	34	31.6	93%	5.0	29.4	86%	5.0	90%	5.00	38.5	48.8	127%	5.0	53.6	139%	5.0	133%	5.00	112%	5.00									
Shrub canopy cover	6	10.8	180%	5.0	9.9	165%	5.0	5.7	95%	5.0	147%	5.00	5	3	60%	5.0	3	60%	5.0	60%	5.00	7	4	57%	5.0	4	57%	5.0	57%	5.00	88%	5.00									
Native grass cover	21	20	95%	5.0	21	100%	5.0	27.6	131%	5.0	109%	5.00	32	29	91%	5.0	17	53%	3.0	72%	4.00	8	10	125%	5.0	10	125%	5.0	125%	5.00	102%	4.67									
Organic litter	48	64	133%	5.0	43	90%	5.0	54	113%	5.0	112%	5.00	21	23	110%	5.0	17	81%	5.0	95%	5.00	32	12	38%	3.0	12	38%	3.0	38%	3.00	82%	4.33									
Large trees (euc plus non-euc)	38	34	89%	10.0	54	142%	15.0	42	111%	15.0	114%	13.33	24	22	92%	10.0	10	42%	5.0	67%	7.50	25	20	80%	10.0	6	24%	5.0	52%	7.50	78%	9.44									
Coarse woody debris	506	520	103%	5.0	690	136%	5.0	370	73%	5.0	104%	5.00	234	260	111%	5.0	250	107%	5.0	109%	5.00	764	475	62%	5.0	455	60%	5.0	61%	5.00	91%	5.00									
Non-native plant cover	0	10	10%	5.0	10	10%	5.0	10.3	10%	5.0	10%	5.0	0	10	10%	5.0	10	10%	5.0	10%	5.00	0	10	10%	5.0	10	10%	5.0	10%	5.00	10%	5.00									
Site Condition Score				70			75			75		73.3				65			58		61.5				61			53		56.8		63.9									
MAX Site Condition Score				80			80			80		80				80			80		80				80			80		80		80									
Site Condition Score - out of 20				17.50			18.75			18.75		18.33				16.25			14.50		15.38				15.13			13.25		14.19		15.97									
Quality and availability of food and foraging habitat + Quality and availability of shelter	Benchmark	% contribution	Raw data	Score	Raw data	Score		Raw data	Score		Average Score	Benchmark		Raw data	Score		Raw data	Score		Average Score	Benchmark		Raw data	Score		Raw data	Score		Average Score	Total average score											
Species richness	20	22.2	3	5.0	3	5		4	10		6.66666667	20		5	10		5	10		10	20		3	5		3	5		5	7.2											
Flower score	10	11.1	0.65	8.0		0.65		0.65	8		8	10		0.65	8		0.54	8		8	10		0.65	8		0.65	8		8	8.0											
Timing of Biological shortages	10	11.1	7	7.0	7	7		10	10		10	10		10	10		10	10		10	10		6	6		6	6		6	8.0											
Quality of foraging habitat	20	22.2	3	5.0	2	5		3	5		5	20		3	5		3	5		5	20		2	5		2	5		5	5.0											
non-native plant cover	20	22.2	0.10	10.00		0.10		0.10	10.00		10.00	20.00		0.10	10.00		0.10	10.00		10.00	20.00		0.10	10.00		0.10	10.00		10.00	10.00											
Q+A foraging habitat + Q+A shelter habitat score				35.0		35.0			43.0		37.7			43.0			43.0		43.0		43.0			34.0			34.0		34.0	38.2											
MAX Score	80			80		80			80		80		80			80			80		80		80			80		80		80	80										
Site condition score	20	22.2		17.5		18.8			18.8		18.3	20		16.3			14.5		15.4		20			15.1			13.3		14.2	16.0											
Q+A foraging habitat + Q+A shelter habitat score	80	88.9		35.0		35.0			43.0		37.7	80		43.0			43.0		43.0		80			34.0			34.0		34.0	38.2											
Combined Habitat Quality Score				52.5		53.8			61.8		56.0			59.3			57.5		58.4		100			49.1			47.3		48.2	54.2											
MAX Habitat Quality Score	100			100		100			100		100	100		100			100		100		100		100			100		100	100												
Combined HQ Score- out of 4				2.10		2.15			2.47		2.24			2.37			2.30		2.34		100			1.97			1.89		1.99	2.17											
Site Context	Benchmark	Data	Score								Average Score	Benchmark								Average Score	Benchmark									Average Score	Total average score										
Size of patch	10		>6200ha (Figui	10.0		10.0			10.0		10.0	10		10.0			10.0		10.0		10.0	10		10.0			10.0		10.0	10.0											
Connectedness	10		9 camps with 2	10.0		10.0			10.0		10.0	10		10.0			10.0		10.0		10.0	10		10.0			10.0		10.0	10.0											
Context	10		>45% habitat v	10.0		10.0			10.0		10.0	10		10.0			10.0		10.0		10.0	10		10.0			10.0		10.0	10.0											
Ecological Corridors	10		[in state corrid	10.0		10.0			10.0		10.0	10		10.0			10.0		10.0		10.0	10		10.0			10.0		10.0	10.0											
Role of site location to species overall population in the state	10		1 significant ca	1.0		1.0			1.0		1.0	10		1.0			1.0		1.0		1.0	10		1.0			1.0		1.0	1.0											
threats to the species	10		Low level thre	10.0		10.0			10.0		10.0	10		10.0			10.0		10.0		10.0	10		10.0			10.0		10.0	10.0											
Site Context Score				51		51			51		51.0			51			51		51		51			51			51		51	51.0											
MAX Site Context Score				60		60			60		60			60			60		60		60			60			60		60	60											
Site Context Score - out of 3				2.55		2.55			2.55		2.55			2.55			2.55		2.55		2.55			2.55			2.55		2.55	2.55											
Species Stocking Rate	Benchmark										Average Score	Benchmark								Average Score	Benchmark									Average Score	Total average score										
GHFF tree density per/ha	10		6	6		6	6		6	6	6	10		8	8		6	6		7	10		4	4		4	4		4	4											
Site Context Score				6		6			6		6.0			8			6		7.0		7			4			4		4	5.7											
MAX Site Context Score				10		10			10		10			10			10		10		10			10			10		10	10											
Site Context Score - out of 3				1.80		1.80			1.80		1.80			2.40			1.80		2.10		2.55			1.20			1.20		1.20	1.70											

The assisted regeneration of trees will ensure recruitment in taking place. Natural recruitment is assumed following year 15. By year 15, assisted regeneration trees are expected to exceed 100 mm DBH, and therefore contribute to the T1/T2 layer. Spp richness may increase by 1-2 species.

assisted revegetation will plant native stock (or spread seed) to meet benchmark values native to the area and RE. AU1 - no predicted change. AU2 - One new native grass species is expected to accumulate each vegetation survey year. AU3 - assisted reveg of native grasses will take place. Native forbs are expected to regenerate naturally over time to align with benchmark values, especially following good rain years. Estimated at 2 new species each vegetation survey year (for sites below benchmark). Tree canopy height is expected to increase over time. Conservative estimate of 50 cm of growth is expected at each vegetation survey year (every 5 years), until benchmark value is attained. canopy cover has attained high score. continued native shrub growth of up to 1 m cover between yr 15 and 20. Native grasses are expected to continue to recover by year 20. An estimated 2-5% increase is reflected in scores. organic litter regeneration is expected to accelerate more at year 15-20. A 2-5% cover increase is reflected at sites which are below benchmark. some large tree accumulation. See large tree predictions tab.

the over crowding of CWD at AU1 will be redistributed between AU2 and AU3. all sites maintained below 15% weed cover.

Final habitat quality score (weighted)	AU1	AU2	AU3	Ave / Final
Habitat Quality (out of 4)	2.24	2.34	1.93	2.17
Site Context Score (out of 3)	2.55	2.55	2.55	2.55
Species Stocking Rate Score (out of 3)	1.80	2.10	1.20	1.70
Habitat Quality score (out of 10)	6.59	6.99	5.68	6.42
Habitat Quality score (Rounded)	6.00	4.00	4.00	4.67
Assessment Unit area (ha)	61.35	20.63	6.65	88.63
Total offset area (ha) for this MNES	88.63	88.63	88.63	88.63
Size Weighting	0.69	0.23	0.08	1.00
Weighted Habitat Quality Score	4.56	1.63	0.43	6.62

7.00

Supplementary table for threats scoring			Score			Result		Final result
Listed threatening process	Scoring indicator	Score weight	1	7	15	Score	Weighted score	
Altered fire regimes	Fuel hazard rating	30%	Extreme or Very High fuel hazard rating	Moderate or High fuel hazard rating	Low fuel hazard rating	15		4.5
Entanglement in netting and barb wire fences	Presence of top-strand barbed-wire fencing or similar	15%	Site is entirely bounded by top-strand barbed-wire fencing	Top stand barbed-wire fencing in present on at least one fence boundary or internal fenceline	Site is absent of top-strand barbed-wire fencing	7		1.05
Electrocution on powerlines	Presence of powerlines	15%	Powerline/s intersect site	Powerline/s run parallel with a site boundary (within 100 metres)	Powerlines are not present as per the above	15		2.25
Habitat loss, fragmentation, degradation	Proportion of wooded vegetation	40%	0-25% wooded vegetation occupies the site	26-75% wooded vegetation occupies the site	>75% wooded vegetation occupies the site	15		6
Threats score out of 15								
Scaled score (1-5=1; 6-10=5; 11-15=10)								
13.8								