# Offset Area Management Plan – Aldoga South

## 2020/8773 Aldoga Solar Project – Expansion Area

August 2023

**Project Number: 20-226**

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# Document verification

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# Declaration of accuracy

I declare that to the best of my knowledge, all the information contained in, or accompanying this document is complete, current and correct.

I am duly authorised to sign this declaration on behalf of the proponent/approval holder. I am aware that:

a. section 490 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) (EPBC Act) makes it an offence for an approval holder to provide information in response to an approval condition where the person is reckless as to whether the information is false or misleading.

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c. the above offences are punishable on conviction by imprisonment, a fine or both.

| | |
|---|---|
| Signed: | |
| Full name (please print): | |
| Organisation (please print): | ACCIONA Energy Australia Global Pty Ltd |
| EPBC Referral Number: | 2020/8773 |
| Name of Management Plan this document and declaration refers to: | Offset Area Management Plan (EPBC conditions of approval # 5 to 12) |
| Date: | |

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# 1. Introduction

ACCIONA Energy Australia Global Pty Ltd (ACCIONA) will develop the Aldoga Solar Farm – Expansion Area Project (the Project/impact site), which is anticipated to generate approximately 200 MWh of renewable energy to contribute to the national electrical grid via solar photovoltaic panels. The solar capacity will be in addition to the already approved Aldoga Solar Farm, which has capacity for an additional 280 MWh. The Project Area is situated across two properties, located approximately 20 km northwest of Gladstone, Queensland within the Gladstone State Development Area.

The Aldoga Solar Farm Expansion Area received approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) (2020/8873) on the 29 September 2022. The Project Footprint has been designed to avoid remnant vegetation where possible, and approximately 50% of the impact area is degraded grazing land, with significant weed infestations.

The Project will impact on vegetation which is considered to be critical habitat for Koala and habitat for Greater Glider and Squatter Pigeon. The impact assessment for the Project determined that there would be a significant residual impact on these species (see Section 4.4 of NGH 2021). As part of the EPBC Act conditions of approval, offsets are required for:

- 269.72 ha of Koala (*Phascolarctos cinereus*) habitat
- 259.20 ha of Squatter Pigeon (*Geophaps scripta scripta*) habitat
- 258.77 ha of Greater Glider (*Petauroides volans*) habitat.

The conditions of approval require preparation of an offsets area management plan (OAMP) and the action cannot commence until this OAMP has been approved in writing by the Minister.

The purpose of this OAMP is to identify the objectives, outcomes and actions necessary to offset residual impacts to matters of national environmental significance (MNES) under the EPBC Act Draft Environmental Offset Policy.

The offset for the Project will be delivered across two offset areas, Aldoga North, and Aldoga South. This OAMP relates to the Aldoga South location. Figure 1-1 shows the location of the offset sites in relation to the impact site.

## 1.1 Approval conditions

The Aldoga Solar Farm- Expansion Area Project was approved subject to conditions under the EPBC Act. The conditions related to offsets are listed in Table 1-1, along with where each is addressed in this OAMP.

Table 1-1 EPBC approval conditions for the Aldoga Solar Farm Project

| Condition number | Condition | Section |
|---|---|---|
| 5 | The approval holder must, prior to **commencement of the Action**, submit to the **department** for the written approval of the **Minister** an Offset Area Management **Plan** (OAMP). | Section 1 |
| 6 | The OAMP must specify how the approval holder will compensate for **impacts** of the Action to **Koala habitat, Squatter Pigeon habitat** and **Greater Glider habitat** in accordance with the **EPBC Act Environmental Offsets Policy** to the satisfaction of the | Table 5-1 details how the offset will meet the obligation of the |

| Condition number | Condition | Section |
|---|---|---|
| | **Minister** | Environmental Offsets Policy. |
| 7 | The OAMP must be prepared by a **suitably qualified ecologist**. | Section 1.2 |
| 8 | To ensure that the offsets required for **Koala habitat**, **Squatter Pigeon habitat** and **Greater Glider habitat** provide a conservation gain in accordance with the **EPBC Act Environmental Offsets Policy**, the **completion criteria** specified in the approved OAMP must be achieved within 20 years of the **commencement of the Action** and then be maintained or improved for the duration of the approval. | Section 7.3 |
| 9 | The approval holder must not **commence the Action** until the OAMP has been approved in writing by the **Minister**. | Section 1.5 |
| 10 | The approval holder must implement the OAMP approved by the **Minister** prior to the **commencement of the Action** and for the remainder of the approval. | Section 1.5 |
| 11 | The OAMP must include:<br>a. a summary of the residual **impacts** of the Action on **Koala habitat**, **Squatter Pigeon habitat** and **Greater Glider habitat** (including **impacts** on **habitat quality**) which will be offset. This summary must include the area of habitat, condition and **habitat quality** of **Koala habitat**, **Squatter Pigeon habitat** and **Greater Glider habitat** at all **impact** sites which each particular offset site/s is to address; | Section 2.1 |
| | b. a description of the proposed offset site/s, including location, size, condition, current **habitat quality** of habitat of the relevant **protected matters**, environmental values present and surrounding land uses; | Section 1.3 and Section 3 |
| | c. a table of commitments made in the OAMP to achieve the ecological benefits for **Koala habitat, Squatter Pigeon habitat** and **Greater Glider habitat**, and a reference to where these commitments are detailed in the OAMP; | Table 1-3 |
| | d. the mechanism by which and the timing by when (being no later than 24 months after the **commencement of the Action**) the offset site/s will be **secured** in perpetuity; | Section 1.4 |
| | e. the approval holder must notify the **department** within 5 **business days** of the mechanism to **secure** the offset site/s having been executed, and provide documentary evidence to demonstrate the **securement** of the offset site/s | Section 1.4 |
| | f. baseline data of the offset site/s, including results from field validated surveys, and quantifiable ecological data on **habitat quality** for **Koala habitat**, **Greater Glider habitat** and **Squatter Pigeon habitat** and other supporting evidence that documents the presence of **Squatter Pigeon** and potential presence of **Koala** and **Greater Glider**; | Appendix B includes the habitat quality data for all the target species at the offset site. Database records of Koala, Greater Glider and Squatter |

| Condition number | Condition | Section |
|---|---|---|
| | | Pigeon for the broader region are shown in Figure 1-2. |
| | g. details of how the offset/s will provide connectivity with other habitats, populations and biodiversity corridors and/or will contribute to a larger strategic offset for **Koala**, **Squatter Pigeon** and **Greater Glider**; | Section 3.2 |
| | h. maps and **shapefiles** to clearly define the location and boundaries of the offset site/s, accompanied by **offset attributes**; and | Figure 1-1, Figure 1-2, Figure 3-1 and Figure 4-1 are provided in this document and show the location of the offset site and its boundaries. Shapefiles are provided as an attachment. |
| | i. specific offset **completion criteria** derived from the **site habitat quality** to demonstrate the improvement in the quality of **Koala habitat**, **Squatter Pigeon habitat** and **Greater Glider habitat** within the environmental offset sites over the period of life of this approval required to meet the requirements of the **EPBC Act Environmental Offsets Policy**. | Completion criteria linked to the habitat quality are listed in Table 7-3. |
| 12 | The OAMP must contain details of the management Actions, and timeframes for implementation, to be undertaken to achieve the offset **completion criteria** specified in the OAMP including but not limited to:<br>a. Weed and feral animal control; | Details of weed and feral animal control are in Sections 4.3 and 4.6. Completion criteria are listed in Table 7-3. |
| | b. interim milestones that set targets at 5-yearly intervals for progress towards achieving the offset **completion criteria**; | Interim targets are provided in Table 7-4. |
| | c. the nature, timing and frequency of monitoring to inform progress against achieving the 5-yearly interim milestones (the frequency of monitoring must be sufficient to track progress towards each set of milestones, and sufficient to determine whether the environmental offset is likely to achieve those milestones in time to implement any necessary corrective Actions)<br>i. timing for the submission of monitoring reports which provide evidence demonstrating whether the interim milestones and offset **completion criteria** are likely to be, and/or have been, achieved, including a firm commitment to notify the **department** in writing 1 year in advance of the end of the approval if the **completion criteria** will not be achieved within 20 years of the **commencement of the Action**; and<br>ii. timing for the implementation of corrective Actions if monitoring activities indicate the interim milestones will not be, or have not been, achieved. | The timing of monitoring is listed in Table 7-1. Monitoring reporting is listed in Table 7-2.<br>Section 7.3.2 contains commitments relating to monitoring reporting.<br>Table 7-8 contains corrective actions for each management action. |

| Condition number | Condition | Section |
|---|---|---|
| | d. a risk analysis and a risk assessment and mitigation strategy for all risks to the successful implementation of the OAMP and timely achievement of the offset **completion criteria**, including a rating of all initial and post-mitigation residual risks in accordance with the **risk assessment matrix;** and | Section 6 discusses the risks associated with the offset and Table 6-1 lists the risk ratings and mitigation strategies. |
| | e. evidence of how the management Actions and corrective Actions take into account relevant **approved conservation advices** and are consistent with any relevant **recovery plans** and **threat abatement plans**. | Table 4-1 shows how the recovery plan actions are related to the actions in the OAMP. |
| 13 | To ensure that the offsets required for **Koala habitat, Squatter Pigeon habitat** and **Greater Glider habitat** provide a conservation gain in accordance with the **EPBC Act Environmental Offsets Policy**, the **completion criteria** specified in the approved OAMP:<br>a. must be achieved within 20 years of the **commencement of the Action**; and | Section 7.2 |
| | b. once achieved, must be maintained or improved for the remaining duration of the approval. | Section 7.2 |
| 14 | The approval holder must, within 20 **business days** of the 20th anniversary of the **commencement of the Action:**<br>a. submit to the **department** a report detailing the area and condition of **Koala habitat, Squatter Pigeon habitat** and **Greater Glider habitat** in all offset area(s) specified in the approved OAMP; and | Section 7.3.2 |
| | b. notify the **department** in writing of any **completion criteria** at any offset area(s) specified in the approved OAMP that have not been achieved and the likely reasons that these **completion criteria** have not been met. | Section 7.3.2 |

## 1.2 Suitably qualified ecologist

This plan was prepared by Dr Carissa Free (NGH) and Dr Jarrah Wills (NGH).

Dr Carissa Free has a PhD in ecology and has a worked as an ecological consultant for 14 years. She has undertaken impact assessments on major infrastructure projects including mine expansions, major gas pipelines, road upgrades and several wind and solar farms. She has formal training in the Queensland Regional Ecosystem framework and BioCondition Assessment methodology. She has undertaken many surveys for Greater Glider, Koala and Squatter Pigeon across central and south-east Queensland and understands the species' ecological requirements.

Dr Jarrah Wills has a PhD in restoration/plant ecology, is trained in undertaking BioCondition assessments and has over 12 years' experience undertaking vegetation research, surveys and management activities for companies, universities and NGOs. His areas of expertise are botanical and ecological surveys, ecological restoration and how this relates to ecosystem functioning and subsequent services.

## 1.3 Offset approach – Aldoga South

Two offset sites will be secured to offset the impacts to the relevant species. In combination these two sites will cover the direct offset obligations for the Project. Details of these sites are listed in Table 1-2. Due to easements for existing powerlines and buffers required with neighbouring industries, only a portion of each Lot Plan will be secured for the offsets. This OAMP is for the Aldoga South offset site (hereafter referred to as the offset site), which can be seen in Figure 1-1.

Table 1-2 Offset locations for Aldoga Solar Farm.

| Site Name | Lot Plans* | Registered Owner | Lot Plan Total Area (ha) | Offset Area (ha) |
|---|---|---|---|---|
| Aldoga North | 1 SP307522 (Lot 1) | Minister for Economic Development Queensland | 201.0 | 23.18 |
| | 30 CTN107 (Lot 30) | Minister for Economic Development Queensland | 481.0 | 165.4 |
| **Aldoga South** | **6 SP20087 (Lot 6)** | Minister for Economic Development Queensland | 583.0 | 514.0 |
| | **45 CTN98 (Lot 45)** | Minister for Economic Development Queensland | 263.3 | 213.2 |

*only a portion of each Lot will be used as part of the offset due to easements and exclusion of unsuitable vegetation.

Coordinates for both the north and south offset areas are included in Appendix F.

All of the proposed offset lots are freehold land, with no Property Maps of Assessable Vegetation (PMAVs) in place. The entirety of the area shown as the Aldoga South Offset Site in Figure 1-1 will be secured using a Voluntary Declaration (Section 1.4).

The Aldoga South Offset Site is located south of the Mt Larcom-Gladstone Road and south of the Rio Tinto Yarwun refinery, approximately 7 km south of the Aldoga Solar Farm- Expansion Area Project Area. The site is accessed of Koncina Road off the Bruce Highway. It lies within the Gladstone State Development Area and is adjacent to the Rio Tinto Yarwun bauxite refinery dam. A Powerlink high voltage transmission line intersects Lot 6 SP20087 and Lot 45 CTN98 (Figure 1-2).

This offsite site was selected due to its proximity to the Project Area, its significant ecological value to the regional Koala, Greater Glider and Squatter Pigeon populations (both currently and into the future), the large patch size and connectivity to habitat along the coast.

The benefits of this approach can be broadly summarized as:

- The size of the patch, providing **large contiguous habitat areas**, aligns with the Commonwealth's recovery objectives for Koala and Greater Glider.
- **Conservation gain**: the proposed offset site will include protection of land presently designated for development. The offset is designated as a 'high impact industry precinct' under the Gladstone SDA.
- **In close proximity to the impact site** providing benefit to the species in the same region as where the impact will take place.

Both North and Aldoga South offset sites are located in the Gladstone SDA high impact industry precinct (Figure 1-3). The development intent of this precinct is to accommodate high impact industrial development that is difficult to locate and requires separation from sensitive land uses, as

well as needing access to transport and supply chain networks (DSDILGP, 2022). Under the Gladstone SDA, and with the exception of Mt Larcom (the north-eastern side), development is reasonably expected to be intensive from the Bruce Highway west of the Project Area through to the Narrows. Other industrial activities are therefore expected to occur within the local landscape. The area is relatively isolated as a result of the surrounding land use, and it is expected that these barriers will be exacerbated over time as the Gladstone SDA is further developed.

Both the impact and Aldoga South offset site are located in the vicinity of the Aurizon freight rail line (to the north) and bordered to the north-east by three high-pressure CSG pipelines (APLNG, QCLNG and GLNG). A Powerlink high voltage transmission line intersects the offset site. The presence of the bauxite dam and other refinery infrastructure adjacent to the offset site make it vulnerable to clearing for expansion of these activities.

The solar farm (Project) location was chosen as it is in keeping with the development intent for the SDA. The offset site locations have been chosen to protect current and future ecological values within a landscape that would otherwise be under threat, due to its development designation. The offset site has also been chosen as it contains suitable habitat for each of the three MNES required to be offset.

Section 3 provides additional information about the reason that the Aldoga South offset site is appropriate to compensate for Project impacts.

## 1.4 Legal mechanism

The offset sites will be secured through a voluntary declaration under the *Vegetation Management Act 1999* (VM Act) within 24 months after the commencement of the Action (as per Condition 11d). Once the declaration has been registered on the title, the offset area will become Category A regulated vegetation. Once approved this OAMP will be attached Voluntary Declaration which will enforce compliance with the OAMP.

Acciona will notify the DCCEEW within five business days of securing the offset site and provide documentary evidence to demonstrate the securement.

## 1.5 Environmental outcomes and objectives

The environmental outcomes to be achieved through implementing the OAMP are:

- Increased Koala habitat quality
- Increased Greater Glider habitat quality
- Increased Squatter Pigeon habitat quality
- Reduced threats
- Legal security of the offset sites to ensure protection of the impacted species and other MNES which may be present
- Monitoring and reporting which tracks the success of management and enables timely adaptive responses.

The management objectives for the offset site include:

- Provide an overall conservation outcome that improves habitat for Koala, Greater Glider and Squatter Pigeon now and into the future, by maintaining existing habitat and enhancing low-quality habitat. The outcome will be achieved through management actions including:
    - reducing the risk of predation on the target species by introduced predators

  - controlling invasive existing and new weeds to reduce impacts on the target species
  - managing grazing to control fuel loads while also reducing impacts of grazing on recruitment and habitat quality of the target species.
- Managing fire to protect and enhance target species habitat
- Provide a direct offset of a size and scale that is proportionate to the residual impacts on Koala, Greater Glider and Squatter Pigeon
- Manage the risks of the offset not being successful within the required management time frames.

The action cannot commence until this OAMP is approved in writing by the Minister (as per Condition 9). Further, the approved OAMP must be implemented prior to commencement of the Action and for the remainder of the approval (until 2080) (as per Condition 10).

### 1.5.1 Commitments of the OAMP

Acciona commits to manage the offsets to achieve the environmental outcomes required by the Conditions of Approval (Table 1-1). Table 1-3 lists the environmental outcomes of the OAMP and the management commitments which will ensure that the outcomes are achieved.

Table 1-3 Acciona commitments to achieve the environmental outcomes of this OAMP.

| Environmental outcome | Management commitments to achieve outcome | Sections detailed |
|---|---|---|
| Increase Koala, Greater Glider and Squatter Pigeon habitat quality | • Reduce weed cover to less than 5% across the offset site<br>• Manage grazing to control weeds and promote grass cover that is suitable for the target species<br>• Manage grazing to improve recruitment of eucalypts suitable for Greater Glider and Koala to manage fuel loads<br>• Implement fire management to protect habitat and enhance habitat quality<br>• Provide commensurate Greater Glider den resources by ensuring a ratio of one (existing) hollow or one nest box (installed) per denning tree (trees over 50 cm DBH) removed within the impact area (counted at the time of clearing) across the north & south offset areas, to ensure a total minimum of 300 natural or artificial dens for Greater Glider within the offset areas. | Section 4.3, 4.4 and 4.7 |
| Reduce threats | • Reduce predation threats to all species through active management. | Section 4.6 |
| Legal protection | • Legally secure the offset site through a Voluntary Declaration. | Section 4.5 |
| Monitoring and adaptive management | • Monitoring at regular intervals until completion criteria are met<br>• Reporting to identify progress to completion | Section 7 |

| Environmental outcome | Management commitments to achieve outcome | Sections detailed |
|---|---|---|
| | criteria and any triggers for management | |

300000.0000 305000.0000 310000.0000

7365000.0000 7360000.0000 7355000.0000

1SP307522b

30 CTN107a

30 CTN107b

6SP20087b

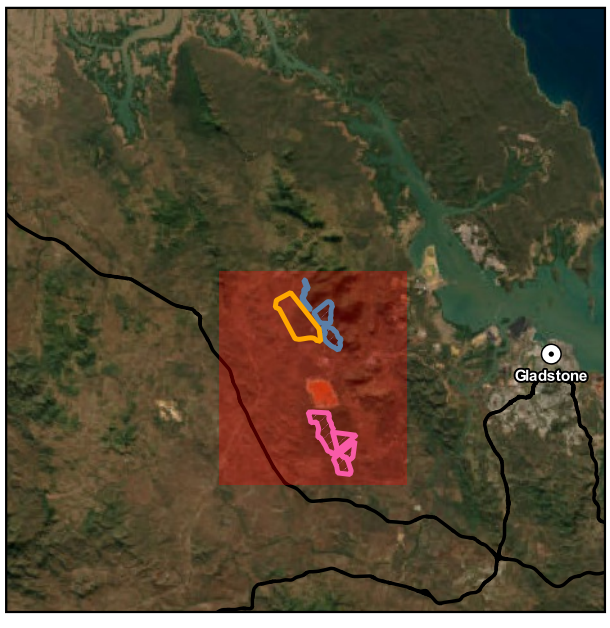
45CTN198a

45CTN198b

6SP20087a

## Figure 1-1 Aldoga North & South Offset Sites – location

- Impact Site
- Project Footprint
- Aldoga North Offset Site - 188.58 ha
- Aldoga South Offset Site - 727.20 ha




0 1 2 km



Ref: 20-226 Aldoga SF Mapping \ Figure 1-1 Aldoga North & South Offset Sites – location
Author: Teagan McKillop
Date created: 31.05.2023
Datum: GDA94 / MGA zone 56

NGH

300000.0000 305000.0000 310000.0000

7360000.0000 7355000.0000 7350000.0000

Gladstone Gladstone Airport Calliope

**Figure 1-2 Aldoga Offset Site – ecological context (South)**

- Offset Site
- Statewide corridor
- Waterways
- Threatened Ecological Community

Database Records

- Dansiea elliptica
- Black-breasted Button-quail
- Black-faced Monarch
- Greater Glider
- Koala
- Latham's Snipe
- Marsh Sandpiper
- Powerful Owl
- Rufous Fantail
- Satin Flycatcher
- Short-beaked Echidna
- Spectacled Monarch
- Squatter Pigeon
- White-throated Needletail
- Yellow-bellied Glider

Vegetation Management Regional Ecosystems

- Category A or B endangered
- Category C or R endangered
- Category A or B of concern
- Category C or R of concern
- Category A or B least concern
- Category C or R least concern

0 0.5 1 1.5 km



Ref: 20-226 Aldoga SF Mapping \ Figure 1-2 Aldoga Offset Site – ecological context
Author: T. Hume
Date created: 13.06.2023
Datum: GDA94 / MGA zone 56

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295000.0000 300000.0000 305000.0000 310000.0000 315000.0000

7370000.0000 7365000.0000 7360000.0000 7355000.0000 7350000.0000

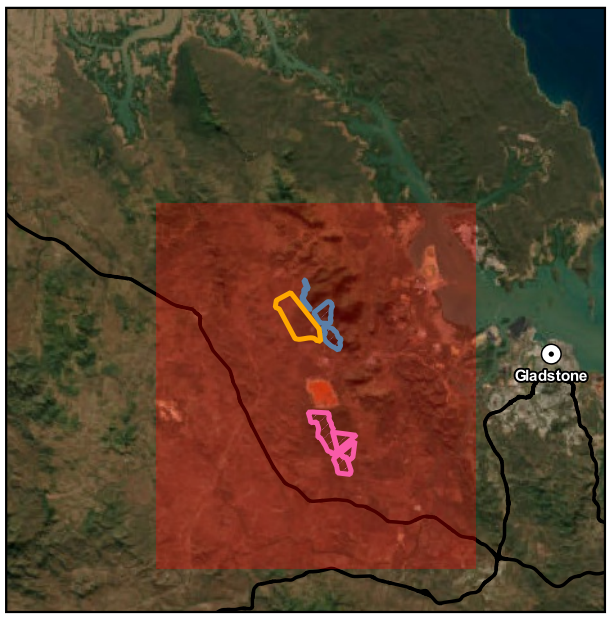
1SP307522b
30 CTN107a
30 CTN107b
6SP20087b
45CTN198a
45CTN198b
6SP20087a

**Figure 1-3 Aldoga North & South Offset Sites – landscape context**

- Impact Site
- Aldoga North Offset Site
- Aldoga South Offset Site
- Bruce Highway
- Main road
- Railway
- Oil and gas pipelines

State Development Area precincts

- High Impact Industry
- Environmental Management




0 1 2 3 4 5 km



Ref: 20-226 Aldoga SF Mapping \ Figure 1-3 Aldoga North & South Offset Sites – landscape context
Author: Teagan McKillop
Date created: 31.05.2023
Datum: GDA94 / MGA zone 56

NGH

# 2. Impact and offset site assessment method

The Project was deemed to have a significant residual impact on Koala, Squatter Pigeon and Greater Glider (NGH, 2022) (Table 2-1). The habitat quality for each of these species at both the impact and offsets sites has been assessed using the *Species habitat and TEC Quality- EPBC offsets and the DEHP (2017) Guide* (DCCEEW, 2022d) and the *Modified Qld habitat quality spreadsheet* (provided by DCCEEW) (DCCEEW, 2022d). Both the guide and the spreadsheet are based on the *Guide to Determining Terrestrial Habitat Quality* (DES, 2020) and a BioCondition assessment conducted under the *Queensland BioCondition Methodology* (Eyre, T..J *et al.*, 2015).

BioCondition surveys were conducted on the impact and offset sites by suitably qualified ecologists across the following periods:

- 12- 16 April 2021 (impact sites)
- 26 March to 2 April 2022 (offset sites)
- 25 to 30 July 2022 (offset sites).

The latest version of the BioCondition benchmarks which were available at the time of the survey were used for field data collection and calculations. There were:

- Impact Sites - Version 2.3 (released August 2015)
- Offset sites - Version 3.1 (released December 2021).

The 'Modified Qld' habitat quality spreadsheet was used to score each site on three aspects:

**Site Condition** *(total score 100, scaled to score out of 3)*

- Vegetation condition assessed according to the BioCondition methodology (out of 80)
- Quality and availability of food and foraging habitat- poor (1), moderate (5) or high (10) (out of 10)
- Quality and availability of shelter- poor (1), moderate (5) or high (10) (out of 10)

**Site Context** *(total score 56, scaled to score out of 3)*

- Size of patch (out of 10), connectedness (out of 5) and context (out of 5) was scored as per the BioCondition methodology
- Ecological Corridors- not within an ecological corridor (0), sharing a common boundary (4) or within a corridor (6) (score out of 6)
- Role of the site location to the species overall population in the state- not likely to be critical (1), likely to be critical (4) and critical to the species survival (5) (score out of 5)
- Threats to the species- high level of threat (1), moderate level of threat (7) and low level of threat (15) (score out of 15)
- Species mobility capacity- severely restricted (1). Highly restricted (4), moderately restricted (7), not restricted (10) (score out of 10).

**Stocking Rate** *(total score 70, scaled to score out of 4)*

- Presence detected on or adjacent to the site- not present (0), adjacent (5), recorded on site (10) (score out of 10). This was determined using species records in ALA (ALA, 2023) and WildNet (DES, 2023) or verified sightings during surveys.

- Species usage of the site- not habitat (0), dispersal (5), foraging (10), Breeding (15) (score out of 15). Based on the habitats available and proximity to water (for Squatter Pigeon), all impact and offset sites for all species were considered to be breeding habitat.
- Approximate density- no records (0), same density as surrounding region (up to 30km) (10), density likely to be greater than surrounding region (up to 30 km) (20), records for species in the surrounding region are only found in the site (30) (score out of 30). Note: this scale was not provided as part of the guide and was developed by NGH specifically for this OAMP. The database records for each species for the surrounding 30 km was assessed against the species records either in the site or adjacent.
- Role or importance of the species population on site- key source population for breeding (No-0, Yes-10), key source population for dispersal (No-0, Yes-5), necessary for maintaining genetic diversity (No-0, Yes-15), near the limit of the species range (No-0, Yes-15) (score out of 15).

Threats to all species was deemed to be moderate at all of the impact and offset sites. Signs of Wild Dogs (*Canis familiaris*), European Foxes (*Vulpes vulpes*), Feral Cats (*Felis catus*) and Feral Pigs (*Sus scrofa*) were recorded within the impact sites and some of the offset sites but were presumed to present at all. It is assumed that all of the sites will have predation threats from Wild Dogs and European Foxes. Damage from Feral Pigs was evident at some of the offset sites and the species is common in the Gladstone area. It is likely that Feral Pigs damage vegetation, spread weeds and threaten nesting Squatter Pigeons within the impact and offset sites.

Species mobility capacity was determined based on the species ecology and ability to move between patches. Squatter Pigeon are known to disperse over large areas (Squatter Pigeon Workshop, 2011) (score 10). Koala are known to cross roads and paddocks to reach suitable habitat, although they face significant threats while doing so (DCCEEW, 2022b) (score 7). Greater Gliders rarely cross the ground and their ability to move through the landscape without trees is severely restricted (DCCEEW, 2022c) (score 1). All impact and offset sites were scored the same.

## 2.1 Impact site values

The vegetation and condition within the impact site was ground-truthed by NGH in 2020 and confirmed and refined in 2021 and 2022 (NGH, 2022). Each impact site (Section 3.2, Figure 3-1) was assessed using site context, site condition and species stocking rate for each MNES species and given a total score out of 10. Scores for each site and for each species were averaged to give an average score per assessment unit. The average score for each assessment unit was averaged to give the overall habitat quality score for the impact site.

A summary of the assessment units and habitat quality scores can be found in Table 2-2. The habitat quality spreadsheets for each species can be found in Appendix A.

Table 2-1 MNES habitat and habitat quality within the impact site.

| Matter | Area required to offset (ha) | Habitat impacted | Habitat quality |
|---|---|---|---|
| Koala | 269.72 | Mixed eucalypt woodlands dominated by Koala food trees (259.46 ha). No signs of the Koala were recorded during searches. Non-remnant areas at this site are typically not suitable for this species due to the very dense infestation of Giant Rats Tail Grass. Approximately 10ha of non-remnant area has been mapped as | 5 |

| Matter | Area required to offset (ha) | Habitat impacted | Habitat quality |
|---|---|---|---|
| | | Koala habitat, requiring offset. This is areas of scattered paddock trees, surrounded by dense Giant Rats Tail Grass.<br>No records of Koala occur within 5 km of the Project Area including injured or dead Koalas collected by local wildlife carers. | |
| Greater Glider | 258.77 | Foraging habitat within mixed eucalypt woodlands. Hollow bearing tree counts indicated that suitable hollow bearing trees are sparse. Surveys did not detect the species in the Project Footprint. | 5 |
| Squatter Pigeon | 259.2 | Mixed eucalypt woodlands with sparse native grasses. Water is available all year round from a large number of farm dams, cattle troughs and creeks within 1 km of the Project Area. Squatter Pigeon has been recorded within the Project Area along the existing tracks and many have been recorded within the local area. Non-remnant areas in the Project Area are not suitable for this species due to the density of introduced grasses. | 6 |

Table 2-2 Habitat quality scores of each assessment unit at the impact site

| Impact AU | RE | Number HQ sites | Area (ha) | Site Condition (out of 3) | Site Context (out of 3) | Stocking Rate (out of 4) | Habitat Quality Score |
|---|---|---|---|---|---|---|---|
| **Greater Glider** | | | | | | | |
| AU1 | Remnant 11.3.26 | 3 | 72.83 | 2.31 | 1.73 | 0.57 | 4.61 |
| AU2 | Remnant 11.7.6 | 3 | 128.9 | 2.37 | 1.68 | 0.57 | 4.62 |
| AU3 | HVR 11.3.4 | 4 | 57.71 | 1.99 | 1.66 | 0.57 | 4.22 |
| | | | | | | **Average** | **4.48 (rounded to 4)** |
| **Koala**[1] | | | | | | | |
| AU1 | Remnant 11.3.26 | 3 | 72.83 | 2.46 | 1.95 | 0.86 | 5.26 |
| AU2 | Remnant 11.7.6 | 3 | 128.9 | 2.52 | 1.89 | 0.86 | 5.27 |
| AU3 | HVR 11.3.4 | 4 | 57.71 | 2.25 | 1.9 | 0.86 | 5 |
| | | | | | | **Average** | **5.18 (rounded to 5)** |
| **Squatter Pigeon** | | | | | | | |

[1] Note, no AU was established in the approximate 10ha non-remnant area of mapped Koala habitat, given the very high percentage of Giant Rats Tail Grass as ground cover.

| Impact AU | RE | Number HQ sites | Area (ha) | Site Condition (out of 3) | Site Context (out of 3) | Stocking Rate (out of 4) | Habitat Quality Score |
|---|---|---|---|---|---|---|---|
| AU1 | Remnant 11.3.26 | 3 | 72.83 | 2.46 | 1.89 | 2 | 6.35 |
| AU2 | Remnant 11.7.6 | 3 | 128.9 | 2.52 | 1.84 | 2 | 6.35 |
| AU3 | HVR 11.3.4 | 4 | 57.71 | 2.25 | 1.84 | 2 | 6.09 |
| | | | | | | **Average** | **6.27 (rounded to 6)** |

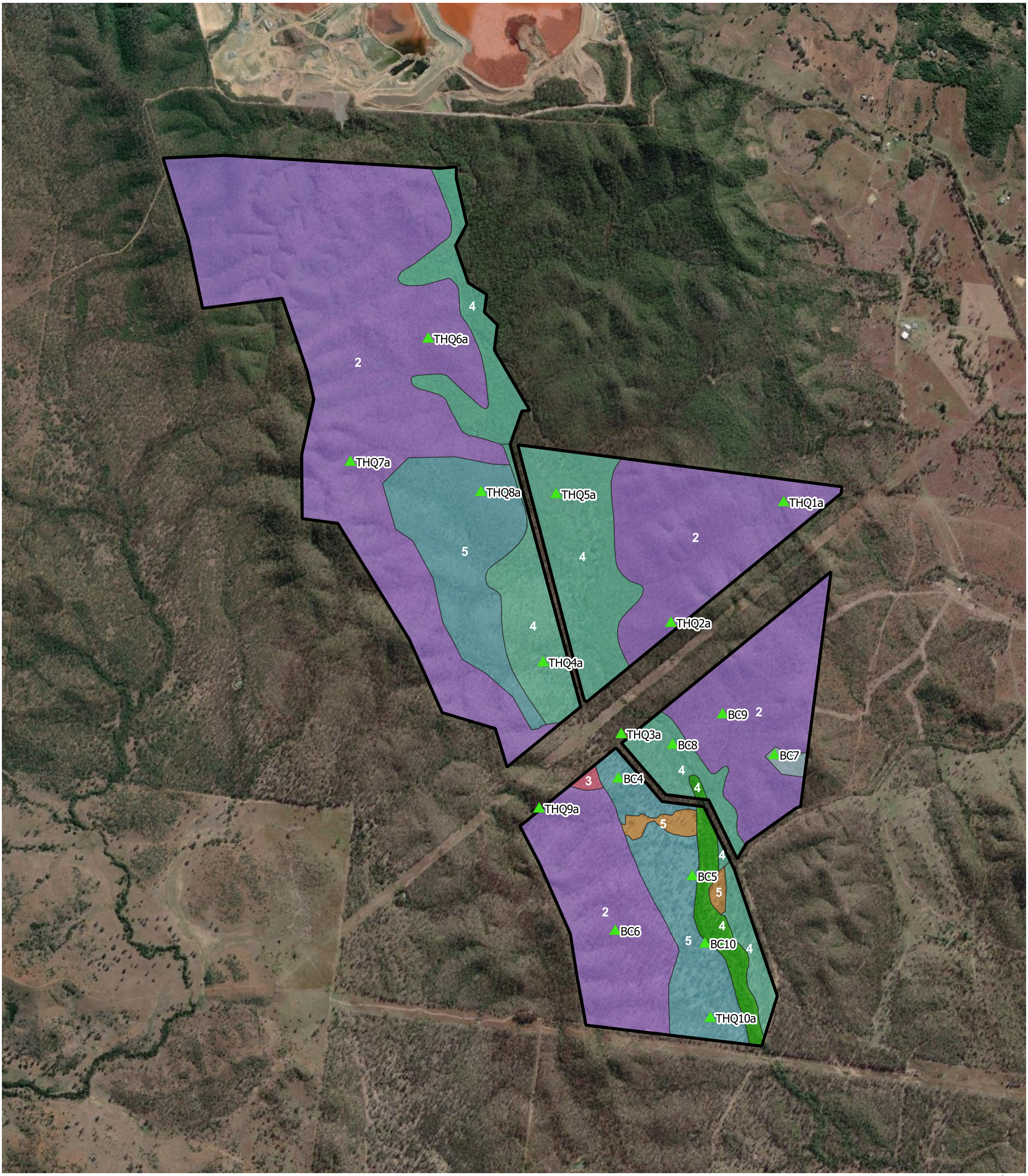



**Figure 2-1 Assessment units and ground-truthed regional ecosystems**

Aldoga South Offset Sites

Biocondition site

Vegetation Management Regional Ecosystems

- RE 11.11.4
- RE 11.11.3
- RE 11.3.26
- RE 11.3.25
- RE (HVR) 11.3.26
- RE (HVR) 11.11.4
- Non-remnant

NOTE: N/S represent sites that are not suitable for Koala, Greater Glider, or Squatter Pigeon and are not included as part of the offset



Ref: 20-226 Aldoga SF Workspace
Author: Teagan McKillop
Date created: 28.10.2022
Datum: GDA94 / MGA zone 56

NGH

# 3. Aldoga South offset site values

## 3.1 Bioregional context & landscape connectivity

The offset sites lie within the Brigalow Belt bioregion and Mt Morgan Ranges sub-region. The South-east Queensland Bioregion lies to east and includes Calliope Conservation Park, Gladstone Harbour, Targinie State Forest and Curtis Island National Park. To the south of the offset site, lies Dan Dan National Park, Kroombit Tops National Park and to the west lies the Callide Ranges. The surrounding land use is a mix of agriculture (mostly grazing), industrial land (refineries), low density residential and vegetated blocks.

The Aldoga South offset sites abut an existing area (approximately 280 ha) zoned for environmental management under the Gladstone SDA. Together, these offset sites and the environmental management precinct will create a combined protected area of over 1,000 ha.

The North and Aldoga South offset sites have been chosen strategically, with consideration of their place in the broader landscape. As noted previously, Koala and Greater Glider are yet to be confirmed as present within either the impact site, or the offset sites, however there are 2016 records of Koala within the general vicinity of the Aldoga South offset site (Figure 3-1 ), and two records for Greater Glider within the Aldoga South offset site, from 1999 and 1997 (Figure 3-1). Several records of this species also occur to the north, in Rio Tinto managed land.

Both of these species are considered likely to occur at low population densities in the general area and could be expected to move through the landscape along riparian corridors, such as Larcom Creek. Koala are known to be able to cross roads on foot or via under road culverts. Koala have a relatively large dispersal distance, typically between 13km and 43km (Norman et al., 2019), and could be reasonably expected to move in and out of the Aldoga South offset site. Greater Glider has a small home range (between 1ha and 16ha) and low dispersal ability. The Aldoga South offset site is more likely to be utilised by Greater Glider who are already present in the same vegetated patch as the offset. Movement potential by Squatter Pigeon is much greater.

The Project was designed to maintain riparian corridors running from Larcom Creek through to Mt Larcom, providing opportunity for wildlife movement into and out of the Aldoga North offset site as well as the surrounding intact vegetation patch which sits outside of the Gladstone SDA.

A large terrestrial biodiversity corridor lies 5 km to the east along the coast. The offset site is connected to the vegetation within the corridor and a large patch to the south through a series of narrow corridors and fragmentated patches. The terrestrial biodiversity corridor encompasses protected areas with vegetated connectivity; Calliope Conservation Park, Beechers State Forest and Mount Stowe State Forest. The Aldoga South offset site connects to these via Koala/Greater Glider habitat along a series of small creeks and roadside vegetation, as well as along Calliope River. To the northeast, the offset site is also connected via a patch of Koala/Greater Glider habitat that runs along the eastern edge of Red Mud Dam, along the edge of Gladstone Mt Larcom Rd and then via small creeks and roadside vegetation to Mount Stowe State Forest (Figure 3-1).

Between the Aldoga South offset and the terrestrial biodiversity corridor (Figure 3-1), land is outside of the Gladstone SDA, and is predominantly freehold. The majority of vegetation shown as Koala/Greater Glider habitat on Figure 3-1 is Category B or Category C regulated vegetation, affording it a level of protection and making it likely that these connections will persist into the future.

There is a potential barrier to movement for Greater Glider at Calliope River Road, which is more than 6km from the Aldoga South offset. In several places, vegetation comes up to the edge of the

two-lane road, providing an achievable distance for gliders to cross the road. Greater Glider are known to be present on the eastern side of Calliope River Road in Mount Stowe State Forest. Given this species' small home range, it is only possible that Greater Glider would disperse between the terrestrial biodiversity corridor (Figure 3-1) and the Aldoga South offset site.

To the west, remnant vegetation becomes sparse as agricultural land use increases. The area between the Aldoga South offset and the Bruce Highway (5km away) is part of the Gladstone SDA, designated as High Impact Industry Precinct. Category C regulated vegetation (Koala and Greater Glider habitat) along the waterways provides some protection for these linkages, however high impact development in the general area is likely to occur within the life of the offset.

Farmer Creek and Gravel Creek would provide connectivity west of the offset site but the vegetation, particularly close to the Bruce Highway, is disturbed and likely only suitable for Koala. The culverts on these creeks are not designed specifically for fauna crossings and there is no fauna fencing along the road, and the vegetation is in poor condition. Fauna that are able to travel to the western side of the Bruce Highway will have very little remnant vegetation for habitat (mostly regrowth vegetation along watercourses) and there are no large patches of vegetation suitable for sustaining a long-term population.

## 3.2 Offset area values

The offset site is a large, mostly contiguous patch of vegetation around 5,000 ha in size. It contains mostly mixed eucalypt woodlands. The area contains numerous records of State and Commonwealth listed threatened species including:

- Black-breasted Button-quail (*Turnix melanogaster*) (listed as Vulnerable under the EPBC Act and *Nature Conservation Act 1992* (NC Act))
- Yarwun White-wood (*Atalaya collina*) (listed as Endangered under the EPBC Act and NC Act)
- Powerful Owl (*Ninox strenua*) (listed as Vulnerable under NC Act)
- Yellow-bellied Glider (*Petaurus australis*) (listed as Vulnerable under the EPBC Act and NC Act).

Protection of these areas within an offset will protect these additional species. The properties have few to no tracks, but a large powerline corridor intersects both Lot 6 and Lot 45. A few farm dams and a cleared grazing occur in the south of Lot 6.

There was no obvious signs of recent fire at the offset site, however, fire history mapping (NAFI, 2023)) shows that shows part of the offset site was burnt in 2013 and some of the surrounding vegetation (in the same patch) was most recently burnt in 2017.

Being part of a large patch with limited fire breaks means the offset site is currently vulnerable to wildfire. The tenure of the land and the terrain also makes prescribed burning and installation of fire protection infrastructure difficult which adds to its current vulnerability. Actions through the OAMP include establishing fire breaks (Section 4.7), which will reduce the risk of intense burns.

The offset will maintain a larger patch of vegetation within a fragmented landscape and within the Gladstone Sate Development Area (which is currently zoned for high impact industry). Outside of the protected areas (Calliope Conservation Park, Beechers State Forest and Mount Stowe State Forest) the offset area is the only large patch of vegetation remaining in the region. Without the offset, this patch could become smaller, more fragmented, and considerably less valuable for the relevant species.

## Figure 3-1 Wildlife Corridors

- Impact Site
- Aldoga North Offset Site
- Aldoga South Offset Site
- Bruce Highway
- Main road
- Railway
- Potential wildlife movement

**Biodiversity Corridors**

- Riparian
- Riparian/Terrestrial
- Terrestrial

**State Development Area precincts**

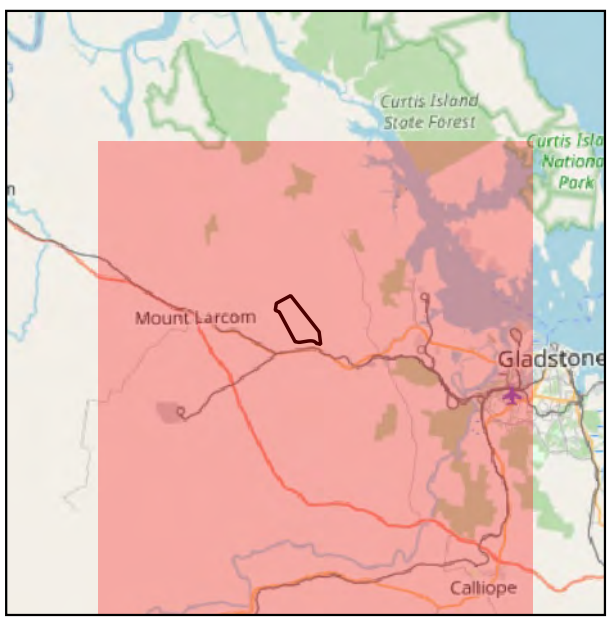
- High Impact Industry
- Environmental Management

**Protected Areas**

- Conservation Park
- National Park
- Resources Reserve
- State Forest

**Database Records (ALA/WildNet)**

- Greater Glider
- Koala
- Squatter Pigeon




0 1 2 3 4 5 km



Ref: 20-226 Aldoga SF Mapping
Author: Taylor Hume
Date created: 23.02.2023
Datum: GDA94 / MGA zone 56

NGH

## 3.3 Koala

The Project will impact 269 ha of Koala habitat, which will require offsetting. The average score for Koala within the impact site is 5 (Table 2-1).

The offset site contains eucalypt woodlands which are dominated by Koala food tree species, including *Eucalyptus crebra*, *E. tereticornis, Corymbia citriodora, Corymbia intermedia and E. acmenoides* (DCCEEW, 2022e). Ground cover is sparse to moderate in most areas, making it suitable for Koala movement. Some areas did contain dense shrubs and weeds which would make movement difficult for Koala. Weeds will be managed as per Section 4.3. Free-standing water is available at farm dams and intermittently in waterways. There is evidence of Wild Dogs using the offset site and given the adjacent agricultural and low-density residential areas it is likely that dog numbers will remain consistent and permanent year-round.

No Koalas or signs of Koalas were recorded within the offset sites despite searches for scats at all habitat quality sites and incidentally throughout the Lots. One record of Koala from 1997 does occur in Lot 45 and it is assumed that the species occurs in low densities.

The offset site is cut off from the north via Gladstone-Mt-Larcom Rd and a freight rail corridor. Connectivity to the north to Mt Larcom is confined to the occasional non-wildlife specific underpass along creeks including Larcom Creek, which runs adjacent to the Project Area and connects to the offset site.

The offset site will protect future Koala habitat and provide a refuge for Koala with ongoing climate change.

### 3.3.1 Offset area calculation

Lot 45 contains 213.16 ha of habitat suitable for Koala which consists of remnant eucalypt woodlands mostly dominated by *E. crebra and Corymbia citriodora*. One small area (0.8 ha) of non-remnant is considered suitable for assisted regeneration.

Lot 6 contains 513 ha of suitable vegetation including around 105 ha of High Value Regrowth (HVR) suitable regeneration. The area has been cleared previously for grazing and a small dam exists for current cattle.

A list of the REs found within the offset areas is in Table 3-1.

Table 3-1 Regional ecosystems ground-truthed within Aldoga South offset sites that are suitable for Koala.

| Regional Ecosystem | Short Description | Area (ha) available in Lot 45 | Area (ha) available in Lot 6 | Total (ha) |
|---|---|---|---|---|
| ***Eucalyptus crebra* woodlands** | | | | |
| 11.11.4 | *Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges | 141.72 | 319.11 | 460.83 |
| HVR 11.11.4 | *Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges | 0 | 1.37 | 1.37 |

| Regional Ecosystem | Short Description | Area (ha) available in Lot 45 | Area (ha) available in Lot 6 | Total (ha) |
|---|---|---|---|---|
| **Mixed eucalypt woodland** | | | | |
| 11.3.26 | *Eucalyptus moluccana or E. microcarpa* woodland to open forest on margins of alluvial plains | 68.13 | 68.73 | 136.86 |
| 11.3.26 HVR | *Eucalyptus moluccana or E. microcarpa* woodland to open forest on margins of alluvial plains | 0 | 104.62 | 104.62 |
| 11.11.3 | *Corymbia citriodora, Eucalyptus crebra, E. acmenoides* open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges | 2.51 | 0 | 2.51 |
| 11.3.25 | Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines | 0.80 | 14.19 | 14.99 |
| Non-remnant | Cleared with scattered trees | 0 | 5.89 | 5.89 |
| | **Total area** | ***213.16*** | **513.91** | **727.1** |

The breakdown of the habitat quality scores for each assessment unit is shown in Table 3-2. The habitat quality data including the BioCondition scores for all of the habitat quality sites can be found in Appendix A.1.

Table 3-2 Habitat quality scores for the Aldoga South offset site for Koala.

| Impact AU | RE | Number HQ sites | Area (ha) | Site Condition (out of 3) | Site Context (out of 3) | Stocking Rate (out of 4) | Habitat Quality Score |
|---|---|---|---|---|---|---|---|
| AU1 | 11.11.3 | 2 | 2.51 | 2.59 | 1.82 | 2 | 6.41 |
| AU2 | 11.11.4 | 7 | 460.83 | 2.51 | 1.93 | 2 | 6.44 |
| AU3 | 11.11.4 HVR | 1 | 1.37 | 2.52 | 1.71 | 2 | 6.23 |
| AU4 | 11.3.26 | 3 | 151.85^ | 2.58 | 1.89 | 2 | 6.47 |
| AU5 | 11.3.26 HVR | 5 | 110.5* | 1.93 | 1.82 | 2 | 5.75 |
| | | **Total** | **727.1 ha** | | | **Average** | **6.26 (rounded to 6)** |

^the small area of 11.3.25 adjacent to 11.3.26 has been included in this total as condition was similar. * the non-remnant area was included in HVR 11.3.26 as that was preclear RE and the remaining vegetation conformed with this assessment unit.

The EPBC Offset Assessment Guide Calculator was used to determine the area needed for the Koala, based on the assumptions listed in Appendix C. The Aldoga South offset site contributes

82.62% of the overall area needed to meet the Project's offset obligation. The remainder of the obligation will be offset at the Aldoga North offset site.

Table 3-3 The percentage of the offset obligation for Koala acquitted by the Aldoga South offset site.

| Impact to be offset | Proposed Offset Area (ha) | Time until ecological benefit | Habitat quality impact area | Habitat quality score prior to offset (start) | HQ score without offset | Habitat quality score after offset (future) | % of the offset obligation |
|---|---|---|---|---|---|---|---|
| 269.72 | 727.22 | 20 | 5 | 6 | 5 | 7 | 82.62 |

Section 7.3.2 describes in more detail how management actions will enable conservation gain (future habitat quality score) over the life of the offset. Table 7-5 shows the Koala specific management measures that will enable the conservation gain (future habitat quality score) to be met for each assessment unit. With these management actions, the overall average score for Koala in all assessment units at 20 years will be 6.

No BioCondition sites were established in RE 11.3.25 due to the small size and linear nature of the patch, and the similarity in condition to the adjacent RE 11.3.26. An additional two BioCondition sites will be established in the RE 11.3.25 patch upon implementation of this OAMP.

## 3.4 Squatter Pigeon

The Project will impact 258.4 ha of breeding habitat and 0.81 ha of foraging habitat for Squatter Pigeon. All of the suitable vegetation within the offset site can be considered to be breeding habitat (within 1 km of water) due to the large number of artificial watering points and creeks within the properties themselves and nearby.

DCCEEW defines Squatter Pigeon habitat as (DCCEEW, 2023):

*Any remnant or regrowth open-forest to sparse, open woodland or scrub dominated by Eucalyptus, Corymbia, Acacia or Callitris species, on sandy or gravelly soils and within 1 km (for breeding habitat) or 3 km (for foraging habitat) of a suitable, permanent or seasonal waterbody.*

The offset sites contain open eucalypt woodlands suitable for Squatter Pigeon. Many farm dams in in and adjacent to the offset properties would provide mostly permanent water. The woodlands are dominated by eucalypts with mostly native grasses in the understorey.

A Squatter Pigeon record occurs in the offset site from 1997 and there are also records in neighbouring properties. Many records for Squatter Pigeon occur in the region within both non-remnant and vegetated areas. This species is widespread in the Gladstone area and is likely to already use both Lot 45 and Lot 6.

The offset site offers large areas of vegetation suitable for foraging and breeding. Native grasses suitable for foraging are present within the offset site. Native grass cover can be enhanced through weed control, grazing management and fire management to improve foraging opportunities for this species.

### 3.4.1 Offset area calculation

There is 213.6 ha of suitable habitat available in Lot 45. Most of this area is remnant and in good condition but still has a moderate abundance of weeds (particularly Lantana) which make some areas less suitable for Squatter Pigeon. A total of 513.9 ha of Squatter Pigeon habitat is available in Lot 6. This lot contains around 104 ha of HVR which contains scattered trees and evidence of higher intensity grazing. A creek, with a high abundance of weeds, and a dam are within this area and would be suitable for regeneration. A list of the REs suitable for Squatter Pigeon within the offset area is in Table 3-4.

Table 3-4 Regional ecosystems ground-truthed within Aldoga South offset sites that are suitable for Squatter Pigeon.

| Regional Ecosystem | Short Description | Area (ha) available in Lot 45 | Area (ha) available in Lot 6 | Total |
|---|---|---|---|---|
| ***Eucalyptus crebra* woodlands** | | | | |
| 11.11.4 | *Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges | 141.72 | 319.11 | 460.83 |
| HVR 11.11.4 | *Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges | 0 | 1.37 | 1.37 |
| **Mixed eucalypt woodland** | | | | |
| 11.3.26 | *Eucalyptus moluccana or E. microcarpa* woodland to open forest on margins of alluvial plains | 68.13 | 68.73 | 136.86 |
| 11.3.26 HVR | *Eucalyptus moluccana or E. microcarpa* woodland to open forest on margins of alluvial plains | 0 | 104.62 | 104.62 |
| 11.11.3 | *Corymbia citriodora, Eucalyptus crebra, E. acmenoides* open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges | 2.51 | 0 | 2.51 |
| 11.3.25 | Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines | 0.80 | 14.19 | 14.99 |
| Non-remnant | Cleared with scattered trees | 0 | 5.89 | 5.89 |
| | **Total area** | ***213.16*** | **513.91** | **727.1** |

^the small area of 11.3.25 adjacent to 11.3.26 has been included in this total as condition was similar. * the non-remnant area was included in HVR 11.3.26 as that was preclear RE and the remaining vegetation conformed with this assessment unit.

The habitat quality score for each assessment unit is shown in Table 3-5. The habitat quality data, including the BioCondition scores for all of the habitat quality sites, can be found in Appendix A.3.

Table 3-5 Habitat quality scores for the Aldoga South offset site for Squatter Pigeon.

| Impact AU | RE | Number HQ sites | Area (ha) | Site Condition (out of 3) | Site Context (out of 3) | Stocking Rate (out of 4) | Habitat Quality Score |
|---|---|---|---|---|---|---|---|
| AU1 | 11.11.3 | 2 | 2.51 | 2.59 | 1.82 | 2 | 6.41 |
| AU2 | 11.11.4 | 7 | 460.83 | 2.51 | 1.95 | 2 | 6.46 |
| AU3 | 11.11.4 HVR | 1 | 1.37 | 2.52 | 1.71 | 2 | 6.23 |
| AU4 | 11.3.26 | 3 | 151.85^ | 2.58 | 1.89 | 2 | 6.47 |
| AU5 | 11.3.26 HVR | 5 | 110.5* | 1.81 | 1.77 | 2 | 5.58 |
| | | **Total** | **727.1 ha** | | | **Average** | **6.23 (rounded to 6)** |

^the small area of 11.3.25 adjacent to 11.3.26 has been included in this total as condition was similar. * the non-remnant area was included in HVR 11.3.26 as that was preclear RE and the remaining vegetation conformed with this assessment unit.

The EPBC Offset Assessment Guide Calculator was used to determine the area needed for the Squatter Pigeon based on the assumptions listed in Appendix C. The Aldoga South Offset site contributes 71.64% of the overall area needed to meet the Projects offset obligation Table 3-6. The remainder of the obligation will be offset at the Aldoga South offset site and an indirect offset (Section 8.1).

Table 3-6 The percentage of the offset obligation for Squatter Pigeon acquitted by the Aldoga South offset site.

| Impact to be offset | Proposed Offset Area (ha) | Time until ecological benefit | Habitat quality impact area | Habitat quality score prior to offset (start) | HQ score without offset | Habitat quality score after offset (future) | % of the offset obligation |
|---|---|---|---|---|---|---|---|
| 259.2 | 727.22 | 20 | 6 | 6 | 5 | 7 | 71.64 |

Section 7.3.2 describes in more detail how management actions will enable conservation gain (future habitat quality score) over the life of the offset. Table 7-5 shows the Squatter Pigeon specific management measures that will enable the conservation gain (future habitat quality score) to be met for each assessment unit (as per Condition). With these management actions, the overall average score for Squatter Pigeon for all assessment units at 20 years will be 7.

## 3.5 Greater Glider

The Project will impact 258.7 ha of Greater Glider habitat, which will require offsetting. The average score for Greater Glider within the impact site is 5.

The offset site contains the eucalypt woodlands which are dominated by suitable Greater Glider food tree species, including *Eucalyptus crebra*, *E. tereticornis, Corymbia citriodora, Corymbia intermedia* and *E. acmenoides*. All of the habitat quality sites surveyed contained trees over 30 cm

in diameter at breast height (DBH) which would indicate that it is foraging habitat for Greater Glider (REF). Several of the habitat quality sites also contained trees over 50 cm in diameter which would be suitable for denning now or into the future.

There are patches that contain SEVT and montane shrubland which are likely to be dominated by species which are not Greater Glider food trees, although some eucalypts may be present. Due to the lack of Greater Glider food trees, it is unlikely that these communities will be used regularly by Greater Glider and they have therefore been excluded from the offset calculations.

Two records for Greater Glider are within the offset site, from 1999 and 1997. Several records of this species also occur north in Rio Tinto managed land. The next closest records within connected vegetation are along the coast, more than 6 km away. Given the suitability of the habitat it is likely that Greater Glider utilise the offset site at a low density.

The offset site is cut off from the south via Gladstone-Mt-Larcom Rd and a freight rail corridor. Connectivity from the south to Mt Larcom is confined to the occasional non-wildlife specific underpasses along creeks including Larcom Creek which runs adjacent to the Project Area and to the offset site. Connectivity to the east and north is currently maintained through vegetation within rural properties, Targinie State Forest and Rundle Range National Park.

### 3.5.1 Offset area calculation

Lot 45 contains 213.16 ha of habitat suitable for Greater Glider which consists of remnant eucalypt woodlands mostly dominated by *Eucalyptus crebra, E. tereticornis* and *E. citriodora*. One small area (0.8 ha) of non-remnant is suitable for assisted regeneration.

Lot 6 contains 513.19 ha of suitable vegetation including 104.ha of RE 11.3.26 which is known habitat for Greater Glider and suitable for regeneration. A list of the REs found to be within the offset areas is in Table 3-7.

Table 3-7 Regional ecosystems ground-truthed within the Aldoga South offset sites which are suitable for Greater Glider.

| Regional Ecosystem | Short Description | Area (ha) available in Lot 45 | Area (ha) available in Lot 6 | Total |
|---|---|---|---|---|
| ***Eucalyptus crebra* woodlands** | | | | |
| 11.11.4 | *Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges | 141.72 | 319.11 | 460.83 |
| HVR 11.11.4 | *Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges | 0 | 1.37 | 1.37 |
| **Mixed eucalypt woodland** | | | | |
| 11.3.26 | *Eucalyptus moluccana or E. microcarpa* woodland to open forest on margins of alluvial plains | 68.13 | 68.73 | 136.86 |
| 11.3.26 HVR | *Eucalyptus moluccana or E. microcarpa* woodland | 0 | 104.62 | 104.62 |

| Regional Ecosystem | Short Description | Area (ha) available in Lot 45 | Area (ha) available in Lot 6 | Total |
|---|---|---|---|---|
| | to open forest on margins of alluvial plains | | | |
| 11.11.3 | *Corymbia citriodora, Eucalyptus crebra, E. acmenoides* open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges | 2.51 | 0 | 2.51 |
| 11.3.25 | Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines | 0.80 | 14.19 | 14.99 |
| Non-remnant | Cleared with scattered trees | 0 | 5.89 | 5.89 |
| | **Total area** | ***213.16*** | **513.91** | **727.1** |

The overall habitat quality scores for each Lot in shown in Table 3-8. The habitat quality data including the condition scores for all of the habitat quality sites can be found in Appendix A.1. All of the BioCondition sites contained trees greater than 30 cm DBH and had suitable food trees so the whole offset site is considered suitable foraging habitat for Greater Glider

Table 3-8 Habitat quality scores for the Aldoga South offset site.

| Impact AU | RE | Number HQ sites | Area (ha) | Site Condition (out of 3) | Site Context (out of 3) | Stocking Rate (out of 4) | Habitat Quality Score |
|---|---|---|---|---|---|---|---|
| AU1 | 11.11.3 | 2 | 2.51 | 2.59 | 1.82 | 2 | 6.41 |
| AU2 | 11.11.4 | 7 | 460.83 | 2.51 | 1.95 | 2 | 6.46 |
| AU3 | 11.11.4 HVR | 1 | 1.37 | 2.52 | 1.71 | 2 | 6.23 |
| AU4 | 11.3.26 | 3 | 151.85^ | 2.58 | 1.89 | 2 | 6.47 |
| AU5 | 11.3.26 HVR | 5 | 110.5* | 1.81 | 1.82 | 2 | 5.63 |
| | | **Total** | **727.1 ha** | | | **Average** | **6.24 (rounded to 6)** |

^the small area of 11.3.25 adjacent to 11.3.26 has been included in this total as condition was similar. * the non-remnant area was included in HVR 11.3.26 as that was preclear RE and the remaining vegetation conformed with this assessment unit.

The EPBC Offset Assessment Guide Calculator was used to determine the area needed for the Greater Glider based on the assumptions listed in Appendix C. The Aldoga South Offset site contributes 86.11% of the overall area needed to meet the Projects offset obligation (Table 3-9).

Table 3-9 The percentage of the offset obligation for Greater Glider acquitted by the Aldoga South offset site.

| Impact to be offset | Proposed Offset Area (ha) | Time until ecological benefit | Habitat quality impact area | Habitat quality score prior to offset (start) | HQ score without offset | Habitat quality score after offset (future) | % of the offset obligation |
|---|---|---|---|---|---|---|---|
| 258.77 | 727.22 | 20 | 5 | 6 | 5 | 7 | 86.11 |

Section 7.3.2 describes in more detail how management actions will enable conservation gain (future habitat quality score) over the life of the offset.

Table 7-6 shows the Greater Glider specific management measures that will enable the conservation gain (future habitat quality score) to be met for each assessment unit. With these management actions, the overall average score for Greater Glider at all assessment units at 20 years will be 6.

# 4. Offset area management

## 4.1 Management objectives

The environmental outcomes of this OAMP are to improve habitat quality and values for Koala, Greater Glider and Squatter Pigeon within the offset site. Implementation of this plan will manage the risks to the target species and allow for continual monitoring, refinement, and review of this plan.

The management objectives of this OAMP include:

- Reduce the risk of predation on the target species by introduced predators including Wild Dogs, European Foxes and Feral Pigs.
- Control invasive weeds particularly Giant Rats Tail Grass, Rubber Vine and Lantana to reduce impacts on the target species
- Manage grazing to control fuel loads and reduce impacts on recruitment and habitat quality of the target species.
- Manage fire to protect and reduce the incidence of unplanned fires which could impact target species habitat as well as using ecologically appropriate burns to enhance habitat

These objectives align with the conservation advice and plans for the target species (Table 4-1).

Table 4-1 Recovery actions for Koala, Greater Glider and Squatter Pigeon and how the offset management will promote these actions.

| Species | Relevant conservation advice or recovery plan | Threats or recovery actions | Proposed measures in this OAMP |
|---|---|---|---|
| Koala | • Conservation Advice for the *Phascolarctos cinereus* (Koala) combined populations of Queensland, New South Wales and ACT (DCCEEW, 2022e)<br>• National Recovery Plan for the Koala *Phascolarctos cinereus* (combined populations of Queensland, NSW and ACT) | • Loss of climatically suitable habitat<br>• Increased intensity of drought, heatwaves, bushfire<br>• Declining nutritional value of foliage<br>• Clearing and degradation of habitat<br>• Mortality caused by dogs and vehicles<br>• Disease | • The offset site protects higher altitude woodlands which may be more resilient to climate change<br>• Increased bushfire protection measures will protect habitat on and surrounding the offset sites<br>• The offset will prevent further degradation of habitat and provide improvements in habitat quality<br>• Introduced predators will be monitored and controlled |
| Greater Glider | • Conservation Advice for the *Petauroides volans* (Greater Glider southern and central) (DCCEEW, 2022)<br>• No recovery plan is publicly available for this species. | • Inappropriate fire regimes<br>• Habitat clearing and fragmentation<br>• Timber harvesting<br>• Barbed wire fencing<br>• Increased temperatures and changes in rainfall | • The offset site protects higher altitude woodlands which may be more resilient to climate change<br>• Increased bushfire protection measures will protect habitat on and surrounding the offset sites<br>• Bushfire management will ensure ecologically appropriate |

| Species | Relevant conservation advice or recovery plan | Threats or recovery actions | Proposed measures in this OAMP |
|---|---|---|---|
| | | • Hyper-predation by owls<br>• Competition with Sulphur-crested Cockatoos<br>• Predation by Feral Cats and European Red Fox | burns of woodlands are implemented.<br>• The offset will prevent further degradation of habitat and provide improvements in habitat quality<br>• Introduced predators will be monitored and controlled |
| Squatter Pigeon | • Conservation Advice *Geophaps scripta scripta* (TSSC, 2015)<br>• No recovery plan is publicly available for this species. | • Overgrazing by livestock and introduced pests such as European Rabbit (*Oryctolagus cuniculus*)<br>• Introduced weeds<br>• Inappropriate fire regimes<br>• Thickening of understorey vegetation<br>• Trampling of nests by stock<br>• Illegal shooting<br>• Clearance of habitat<br>• Reduction in abundance of natural food plants | • The offset site protects higher altitude woodlands which may be more resilient to climate change<br>• Increased bushfire protection measures will protect habitat on and surrounding the offset sites<br>• Bushfire management will ensure ecologically appropriate burns of woodlands are implemented.<br>• The offset will prevent further degradation of habitat and provide improvements in habitat quality<br>• Introduced predators will be monitored and controlled<br>• Weeds, particularly shrubs and grasses, will be managed to ensure suitability for Squatter Pigeon<br>• Grazing will be managed at low densities when required to control thickening of the undergrowth, manage fuel loads and maintain a ground storey that is suitable for Squatter Pigeon |

## 4.2 Management areas

The offset area has been divided into management units, based on the condition and type of vegetation, the aims of the offset and management required to achieve these aims. This will target appropriate interventions and tailor the management approach.

Three management units have been devised and include:

- MU 1- consists of AU 3, AU 4 and AU 5. These areas consist of non-remnant, remnant and HVR vegetation, which contain scattered trees, sapling, and seedlings, with a moderate

abundance of weeds often impeding regeneration. Evidence of grazing is abundant. This area would have previously supported woodland to open forest.

- MU 2 - consists of remnant vegetation across AU 1 and AU 2. These areas have been disturbed by historical logging and continued low density cattle grazing but contain an intact canopy and species representative of the pre-disturbance vegetation type.

Table 4-2 Management units within each assessment unit and representative photos.

| Management Unit | Assessment Units | Area (ha) | Representative Photo |
|---|---|---|---|
| MU1 | AU3, AU4 and AU 5 (which includes the non-remnant area) | 111.88 |  |
| MU2 | AU 1 and AU2 - Remnant 11.3.26, 11.11.4, 11.11.3 | 615.1 |  |

## 4.3 Offset area operational plan

An offset area operation plan (OAOP) will be developed within 12 months of the legal security of the land. This plan will focus on detailed, on-ground actions, and include specific measures for:

- weed management
- pest animal management
- rehabilitation and regeneration
- bushfire management
- fencing and grazing control
- signage
- nest box installation, monitoring and maintenance
- planned access and roads

- collaborating with adjacent land managers and local government agencies.

This operational plan will be developed with input from suitably qualified specialists (e.g., a bushfire consultant) and on-ground managers (e.g., natural areas regeneration contractor), in consultation with relevant stakeholders including neighbouring land managers and the registered property owner. The OAOP will be adaptive, with flexibility to maximise collaborative land management actions, such as coordinated fire regimes and pest animal management.

## 4.4 Management Action 1- Weed management

The control of weeds is critical for achieving the improvement to the habitat quality within the offset area. Historical land use across the offset area has resulted in the establishment of a variety of environmental weeds.

Numerous weeds of environmental significance, including weeds of national environmental significance (WONS) and restricted weeds listed under the *Biosecurity Act 2014* (Biosecurity Act), have been recorded across the offset sites (Table 5-1) and include:

- Lantana *Lantana camara* (Category 3 under the Biosecurity Act and WONS)
- Rubber Vine *Cryptostegia grandiflora* (Category 3 under the Biosecurity Act and WONS)
- Prickly Pear *Opuntia tomentosa* (Category 3 under the Biosecurity Act and WONS)

Off these species, Lantana, and Rubber Vine present a major threat to the goals of the offset; these species are known to inhibit Koala movement, smother and outcompete native trees needed for foraging and denning, forbs and grasses and alter natural fire regimes. Consequently, their management is critical to the success of the offset.

Management measures for the control of Lantana, and Rubber Vine will include:

- Baseline weed mapping will be undertaken and as well as annual assessments, which will include an assessment of the effectiveness of treatments and spread. Specific weed management actions will be developed and included in the OAOP, and implemented within 12 months of securing the offset site.
- A suitably qualified bush regenerator will be engaged to undertake the weed management. They will utilise strategic weed management to ensure the native vegetation is promoted across the site and no adverse effects of the weed management will occur.

Many other weed species which are not state or commonwealth significant weeds, such as Praxelis (*Praxelis clematidea*) or Guinea Grass (*Megathyrsus maximus*), recorded can have local impacts on habitat quality by excluding native forage species or making movements difficult. These species (referred hereafter as MNES relevant weeds) will also be controlled where they are impacting habitat condition or in densities large enough to inhibit the movement of MNES.

Management unit areas will be further refined into weed management areas by the weed management contractor and mapped in the OAOP as well as appended to the revised OAMP (Section 7.2.1). Final weed management actions will be developed in consultation with neighbouring land managers and local government agencies to ensure management actions achieve the best outcomes. Timing of weed control and monitoring in each year will be decided by the weed management contractors, using local knowledge of flowering, seeding and weather. Details will be provided in a chapter of the OAOP.

Table 4-3 Environmental weeds recorded within the Aldoga South offset site.

| Botanical Name | Common Name | Qld Biosecurity Act Status | WONS | Treatment Method |
|---|---|---|---|---|
| *Lantana camara* | Lantana | Restricted- Category 3 | Yes | Foliar spray, cut-stump or mechanical removal. |
| *Lantana montevidensis* | Creeping Lantana | Restricted- Category 3 | | Foliar spray |
| *Cryptostegia grandiflora* | Rubber Vine | Restricted- Category 3 | Yes | Foliar spray, cut-stump or basal bark. |
| *Macroptilium atropurpureum* | Siratro | | | Foliar spray |
| *Megathyrsus maximus* | Guinea Grass | | | Foliar spray |
| *Opuntia tomentosa* | Velvety Tree Pear | Restricted- Category 3 | Yes | Cut-stump or basal bark. |
| *Passiflora suberosa* | Corky Passionflower | | | Foliar spray |
| *Praxelis clematidea* | Praxelis | | | Foliar spray |
| *Senna occidentalis* | Coffee Senna | | | Foliar spray, cut-stump or basal bark. |
| *Solanum seaforthianum* | Brazilian Nightshade | | | Foliar spray, cut-stump or basal bark. |
| *Stachytarpheta jamaicensis* | Snake weed | | | Foliar spray |

The Biosecurity Act requires all landowners to manage biosecurity risks on lands that they control when they know about the risk or can be expected to know about the risk. A landowner is expected to identify weeds and pest animals on their property and manage them appropriately. Depending on the category of weed, a landowner has an obligation to:

- report all findings within 24 hrs (Category 2)
- not distribute, trade or release (Category 3)
- move (Category 4)
- possess or keep on their land (Category 5).

All of the restricted weeds identified in the offset site are Category 3 which means the only obligation the landowner has is to not distribute the weed or release it into the environment. As these weeds are already present and widely distributed there is no obligation for the landowner to control the infestations. The proposed weed management actions will reduce the distribution and abundance of infestations which would not occur without the offset.

Weed control and monitoring will be undertaken every year for the first five years (Table 4-4), with at least one control event per year at a time most suitable to the weeds species being targeted. After the initial five years, monitoring and management should be undertaken every three years

until the completion criteria are met. The completion criteria for weed management for each year are listed in Table 4-4.

Table 4-4 Timelines for weed management actions and the competition criteria for each year of the OAMP.

| Weed management action | Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1* | 2 | 3 | 4 | 5 | 6-10 | 10-15 | 16-20 |
| Undertake baseline weed survey and map weed management areas | ✓ | | | | | | | |
| Develop weed management plan and actions for inclusion in the OAOP | ✓ | | | | | | | |
| Initial weed control and monitoring | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| Maintenance weed monitoring and management | | | | | | ✓ Year 8 | ✓ Year 11 and 13 | ✓ Year 16 and 19 |
| Interim targets/completion criteria | | >50% weed cover for all sites | >25% weed cover for all sites | >25% weed cover for all sites | >20% weed cover for all sites | >15% weed cover for all sites | >10% weed cover for all sites | >5% weed cover for all sites |

*This timeline commences from the date the land is secured.

## 4.5 Management Action 2- Rehabilitation and regeneration management

It is recommended that the rehabilitation of the offset area be undertaken using a combination of active and passive restoration methods. This will ensure the improvement of habitat quality and that the aims of the of this OAMP will be achieved. Table 4-4 describes the rehabilitation approach within each MU.

Table 4-5 Rehabilitation approaches for each of the management units.

| Management Unit | Area (ha) | Rehabilitation Approach |
|---|---|---|
| MU1 | 111.88 | **Assisted Natural Regeneration**<br>MU1 consists of non-remnant, remnant and HVR vegetation associated with riparian habitat. As this area contains evidence of natural regeneration in the form of seedling, sapling and trees and is surrounded by remnant vegetation, it is proposed the area is rehabilitated using assisted natural regeneration and active |

| Management Unit | Area (ha) | Rehabilitation Approach |
|---|---|---|
| | | planting will not be required if management recommendations are followed.<br>It is important for the impediments to natural regeneration be managed. This includes management of weeds that are inhibiting natural regeneration and the strategic use of grazing, either through exclusion or pulse grazing as required. |
| MU2 | 615.1 | **Assisted Natural Regeneration**<br>MU2 consists of remnant vegetation mostly on Landzone 11.<br>within the northern sections of the offset area. In general, this MU has an intact and well-developed canopy, with native species representative of these REs. However, lantana and rubber vine have infested some sections and will require treatment to ensure the habitat quality is maintained and improved. The intensity of management will be considerably less than within MU1. |

MU1 requires fencing of the creek lines to exclude cattle from the waterways and consequently will require more intensive weed management, and monitoring.

### 4.5.1 Maintenance Schedule

MU1 should be maintained for a minimum of 60 months to ensure the survival of the natural regeneration and to ensure the weeds are not increasing in abundance due to the potential exclusion of cattle. Details of the timing and maintenance tasks are provided in Table 4-5.

Table 4-6 Maintenance schedule for MU1

| Timing | Maintenance Task |
|---|---|
| First 3 months | **Control weeds** – Prior to commencing any management actions, the site will be treated for weeds. Following the initial tertiary treatment, weed abundance and distribution will be checked monthly and controlled as required, taking care not to damage regenerating native species, including grasses and forbs.<br>**Install signage** – install signage along the boundary of MU1 to ensure the location of natural regeneration is known by other land managers<br>**General Site Maintenance** – e.g., remove any rubbish found within the creek lines or surrounds. |
| 3-24 months | **Control weeds** – After the first 3 months, conduct weed checks at 2–3-month intervals and control as required.<br>**Monitor Natural Regeneration** – Check the area for natural regeneration and to see if the level of grazing and weed management area achieving the aims and objectives of MU1.<br>**General Site Maintenance** – e.g., remove any rubbish found within the creek lines or surrounds. |
| 24-60 months | **Control weeds** – After the first 24 months, conduct weed checks at 6-month intervals and control as required.<br>**Monitor Natural Regeneration** – Check the area for natural regeneration and to see if the level of grazing and weed management area achieving the aims and objectives of MU1.<br>**General Site Maintenance** – e.g., remove any rubbish found within the creek lines or surrounds. |

## 4.6 Management Action 3 - Legally securing the offset area

The offset properties (Figure 1-1) will be protected through a voluntary declaration under Section 19E and 19F of the VM Act. The process is administered by the Department of Resources and security of the land will be undertaken within 24 months after the commencement of the Action. The declaration will be registered on both properties title documents and will be binding on the current landowners and any that may purchase the properties in the future.

The offset sites will be mapped as Category A on the State regulated vegetation map. The proposed mechanism is considered an appropriate protection mechanism for the species considered.

## 4.7 Management Action 4 - Pest management

Pest management actions will be developed within one year of the land being secured and included in the OAOP. Introduced predators are listed as a key threat to both Koalas and Squatter Pigeon in their respective Conservation Advice. Feral Dogs are a significant threat to Koala particularly in areas where Koalas need to cross open ground to access habitat (Narayan, 2019). European Foxes, Feral Cats, Wild Dogs and Feral Pigs are all threats to Squatter Pigeon particularly when nesting. Predation on nests and birds and destruction of nesting habitat by all four pest species is likely to occur in the local area. Feral Cats and European Foxes have been implicated in the decline of Squatter Pigeon in central Queensland previously (Lord, 1956). Feral Cats and European Foxes have also been known to occasionally prey on Greater Glider particularly after fire (Jones and Coman, 1981). Threats from pests are considered to be moderate in the remnant areas due to less edge effects and higher in the non-remnant areas due to the

proximity to agricultural land and lack of protection from predators. It is likely that control will bring this threat down to a low threat at all sites.

The Biosecurity Act requires all landowners to manage biosecurity risks on lands that they control when they know about the risk or can be expected to know about the risk. A landowner is expected to pest animals on their property and manage them appropriately. Wild Dogs, Feral Cats and European Foxes are restricted animals under the Biosecurity Act and cannot be released, fed or moved by a landowner and there is an obligation to take reasonable and practical measures to minimise the biosecurity risk. The management actions listed in this OAMP are above the general obligations for landowners.

Management measures for the control of introduced predators in the offset site include:

- Baseline monitoring (using automatic cameras) to identify the abundance and distribution of Wild Dogs (*Canis sp*.), European Red Fox (*Vulpes vulpes*) and Feral Cats (*Felis catus*) across the offset site.
- Development of pest management actions within the OAOP within 12 months of securing the offset site specifying techniques to monitor and manage pest animals as well as monitoring frequency.
- Pest monitoring will be conducted by a suitably qualified person. Baseline monitoring should be undertaken within 12 months of securing the offset. Where abundance or increased distribution triggers management action, management should be undertaken by a qualified pest animal contractor. Monitoring will be undertaken annually for the first three years and then every three years after that. After 15 years, monitoring should reduce to five-yearly (Table 4-10).

The results of the baseline surveys will be appended to this plan (Section 7.2.1).

Pest management control methods will depend on the species, abundance, broader regional control measures and local experience of the pest contractor but may include (but not limited to) (Table 4-9):

- baiting
- trapping (using cages and leg hold traps etc)
- shooting.

The methods considered most suitable by the pest management contractor will be included in the pest management plan within the OAOP. Timing of the actions will be decided by the pest management contractor who will determine the most effective season for control based on the species, the broader regional control time (i.e., it is better to control dogs across the broader landscape consecutively rather than in isolation) and the season (it is easier to trap pigs when food and water resources are scarce such as at the end of the dry season) (Table 4-9).

Table 4-7 Potential monitoring and control techniques to be undertaken for pest animals within the offset area.

| Species | Possible methods used for monitoring | Possible control techniques | Most effective timing |
|---|---|---|---|
| Wild Dog | Trapping<br>Spotlight counts<br>Track counts<br>Cameras | Soft net traps<br>Cage traps<br>Padded jaw traps<br>Ground shooting | No specific timing required but is most effective if carried out in conjunction with regional control. |

| Species | Possible methods used for monitoring | Possible control techniques | Most effective timing |
|---|---|---|---|
| | | Baiting (both passive and active)<br>Fumigation of dens | |
| Feral Cat | Trapping<br>Spotlight counts<br>Track counts<br>Cameras | Soft net traps<br>Cage traps<br>Padded jaw traps<br>Ground shooting<br>Baiting (both passive and active)<br>Fumigation of dens | No specific timing required |
| European Fox | Trapping<br>Spotlight counts<br>Track counts<br>Cameras | Soft net traps<br>Cage traps<br>Padded jaw traps<br>Ground shooting<br>Baiting (both passive and active)<br>Fumigation of dens | No specific timing required |
| Feral Pig | Aerial surveys<br>Trapping<br>Dung counts<br>Spotlight counts<br>Track counts<br>Cameras | Trapping (best used when resources are scarce and as part of a coordinated regional program)<br>Baiting<br>Ground shooting | Timing depends on the method and availability of resources. |

Other pest species including European Rabbits (*Oryctolagus cuniculus*), deer (variety of species) and Hares (*Lepus capensis*) may be detected during baseline surveys. Management of these species will depend on their potential impact to habitat quality and their abundance. The pest management contractor will decide whether management of these species would be beneficial.

Table 4-8 Timelines for pest management actions and the competition criteria for each year of the OAMP.

| Pest management action | Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1* | 2 | 3 | 4 | 5 | 6-10 | 10-15 | 6-20 |
| Undertake baseline surveys to identify pest abundance | ✓ | | | | | | | |
| Develop pest management plan and actions for inclusion in the OAOP | ✓ | | | | | | | |

| **Pest management action** | **Year** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1*** | **2** | **3** | **4** | **5** | **6-10** | **10-15** | **6-20** |
| Initial pest control and monitoring | ✓ | ✓ | ✓ | | | | | |
| Maintenance pest monitoring and management | | | | | | ✓ Year 6 and 9 | ✓ Year 12 and 15 | ✓ Year 20 |
| Interim targets/completion criteria | | | Pest species abundance less than baseline | | Pest species abundance less than baseline or species not detected for two consecutive monitoring periods. | | Pest species not detected for two consecutive monitoring periods. | |

*This timeline commences from the date the land is secured.

## 4.8 Management Action 5- Bushfire management

The offset area bushfire management actions will be included in the OAOP, developed within one year of legally securing the land. The OAOP will aim to outline the management actions needed to prevent the spread of uncontrolled wildfire and outline the ecological burns required to manage the vegetation within the offset properties.

Inappropriate (either too frequent or not frequent enough) fire regimes can significantly impact habitat quality for all three target species in the short and long term. In the short term, too frequent fire removes foraging opportunities by removing ground forage (for Squatter Pigeon) or tree foliage (for Koala and Greater Glider). Damage to forage trees can force Koala to the ground more frequently which increases the risk of predation and intense wildfire can directly kill or injure Koala or Greater Glider (DoE, 2022). Greater Glider populations are slow to recover from intense bushfires probably due to the changes in composition and structure in vegetation, loss of old hollow bearing trees and changes in nutrients available in forage (Gibbons and Lindenmayer, 2002)(DCCEEW, 2022a). In the long term, inappropriate fire regimes can impact recruitment of new trees for foraging for Koala and Greater Glider and creation of hollow bearing trees as fires kill off small trees before they can establish hollows (Gibbons and Lindenmayer, 2002). Infrequent fires can also limit recruitment of trees and shrubs as fire can promote germination of seeds in the seed bank (NSW DPE, 2021). Lack of fire can also alter ground cover and promote weed growth (NSW DPE, 2021). For these reasons, control of fire is a vital management action for the target MNES and will improve recruitment scores, assist in promoting appropriate shrub, ground and debris cover and species richness for tree, shrubs, grasses and forbs.

The bushfire management measures in the OAOP will be developed by a qualified bushfire management specialist. The OAOP will include:

- Maps showing locations of existing firebreaks and trails and where new firebreaks are required
- Current vegetation conditions and types along with a risk assessment for each type
- Current fuel loads and identification of high-risk areas

- Timeframes for fire management for each vegetation type
- Details of how prescribed burns will be undertaken in consultation with the Queensland Rural Fire Brigade and in compliance with government legislations and regulations.

The OAOP will be developed with consideration of the rehabilitation and regeneration measures to ensure management outcomes align and regenerating vegetation is protected.

Bushfire risk monitoring will be undertaken in accordance with the OAOP.

## 4.9 Management Action 6- Koala, Greater Glider & Squatter Pigeon habitat quality monitoring

The condition component of the Modified Habitat Quality Assessment method allows for repeatable consistent measuring of habitat quality within the offset site. This methodology will be used to monitor habitat quality gains within the existing twelve habitat quality sites. An additional two habitat quality sites will be established in RE 11.3.25, to monitor improvements in this habitat.

Baseline habitat quality and species monitoring will be undertaken within 12 months of the land being secured. Results of the baseline surveys will be appended to this OAMP (Section 7.2.1). Following on from that, habitat quality monitoring will be undertaken annually for the first three years and then every three years after that. After 15 years, monitoring should reduce to five-yearly. The habitat quality monitoring should be reported in the habitat quality monitoring report (Table 7-2) and be included as part of the Annual Compliance Report.

Koala, Squatter Pigeon and Greater Glider surveys should also be undertaken across the offset site to identify the presence of these species. Permanent monitoring transects (or plots) for these species will be established in each assessment unit. The methods used for detecting each species will be best practice and evidence based (i.e., Table 4-6). Details of the monitoring method to be implemented will be included in the OAOP.

Table 4-9 Suggested monitoring techniques for the target species.

| Species | Monitoring methods |
|---|---|
| Koala | Due to the likely low abundance of Koala in the area, direct methods of determining presence are likely to be inaccurate (DoE, 2014b). Indirect methods are likely to be more useful at determining presence.<br>The SAT (Spot Assessment Technique) (Phillips and Callaghan, 2011) can be used across the offset site to detect Koala via scat. A 250 m grid should be established across the site with SATs undertaken at each intersection.<br>Nocturnal spotlighting will also be undertaken (in conjunction with Greater Glider spotlighting) and will provide additional information and search effort.<br>At least two SAT searches should be undertaken in each assessment unit. |
| Greater Glider | Spotlighting transects (either walking or driving)<br>The distance to be covered, time taken to survey and the number of observers should be set at the initial survey. Surveys should be repeated along the same transects for the same duration at every monitoring location.<br>Surveys should be conducted when the weather is suitable for detecting species with a spotlight i.e., not overly windy or wet. Conditions at the time of the survey should be recorded. |

| Species | Monitoring methods |
|---|---|
| | At least two transects should be established in each assessment unit. |
| Squatter Pigeon | This species should be surveyed using diurnal transect searches counting birds or nests (DEWHA, 2010).<br>The distance to be covered, time taken to survey and the number of observers should be set at the initial survey. Surveys should be repeated along the same transects for the same duration at every monitoring location.<br>Surveys should be conducted when the weather is suitable for detecting species i.e., not overly windy or wet. Conditions at the time of the survey should be recorded.<br>In dry periods, observations at water points at dusk and dawn should be considered as the species requires regular access to water.<br>At least two transects should be established in each assessment unit. |

The surveys should be undertaken at the same frequency as the habitat quality monitoring.

### 4.9.1 Hollow bearing trees and nest boxes

The impact area contained low densities of hollow bearing trees, although the number to be cleared will not be known until clearing takes place. In order for the offset site to be used by Greater Glider, trees suitable for denning (trees greater than 50 cm DBH) need to be present. Surveys of the site found low densities of suitable denning trees and low densities of hollows. In order to ensure that sufficient hollows are present within the offset site and to compensate for hollows removed at the impact site, the following will occur:

- Record the actual number of denning trees (as per the definition in the Greater Glider guideline (50 cm DBH or greater) cleared within the final Development Footprint
- Undertake counts of the number of Greater Glider denning trees within the offset sites (north and south) at the implementation of the OAMP.
- Determine the difference between the number of denning trees removed within the Development Footprint and the number of denning within the offset areas.
- Install nest boxes within the offset sites (both North and South sites combined) to make up any difference between what was cleared and what is available, with an upper limit of 300 hollows (combination of natural existing hollows and installed nest boxes). One denning tree would equate to one nest box.

The nest boxes will be installed within two years of the land being secured. They will be managed for the lifetime of the management actions at the offset sites.

## 4.10 Summary of management actions

The timing of management actions over the period of this OAMP is shown in Table 4-12.

Table 4-10 Summary of the management actions to be undertaken at Aldoga South offset area.

| **Management actions** | | | | **Year** | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1*** | **2** | **3** | **4** | **5** | **6-10** | **10-15** | **16-20** |
| Management Action 1: Environmental weed management | One management session per year | One management session per year | One management session per year | One management session per year | One management session per year | One management session every 3 years (Table 4-4) unless yearly interim targets are not met. | One management session every 3 years (Table 4-4) unless yearly interim targets are not met. | One management session every 3 years (Table 4-4) until completion criteria are met. |
| Management Action 2: Rehabilitation and regeneration | Watering and plant maintenance undertaken according to watering schedule | Watering and plant maintenance undertaken according to watering schedule | Watering and plant maintenance undertaken according to watering schedule | | | | | |
| Management Action 3: Legal security of the offset | Land to be secured within 24 months | Land to be secured within 24 months | | | | | | |
| Management Action 4: Pest management | One management session per year | One management session per year | One management session per year | | | One management session every 3 years (Table 4-10) | One management session every 3 years (Table 4-10) | One management session every 3 years (Table 4-10) until completion criteria are met. |
| Management Action 5: Bushfire | Bushfire fire plan to be developed | | | | | | | |

| **Management actions** | | | | **Year** | | | | |
|---|---|---|---|---|---|---|---|---|
| management | within 12 months of securing the land | | | | | | | |
| Management Action 6: Habitat quality and species monitoring<br>Nest box monitoring and maintenance | One monitoring session per year | One monitoring session per year | One monitoring session per year | | | One monitoring session every 3 years (Table 4-4) or completion criteria are met | One management session every 3 years (Table 4-4) or completion criteria are met | One management session every 3 years (Table 4-4) or completion criteria are met |

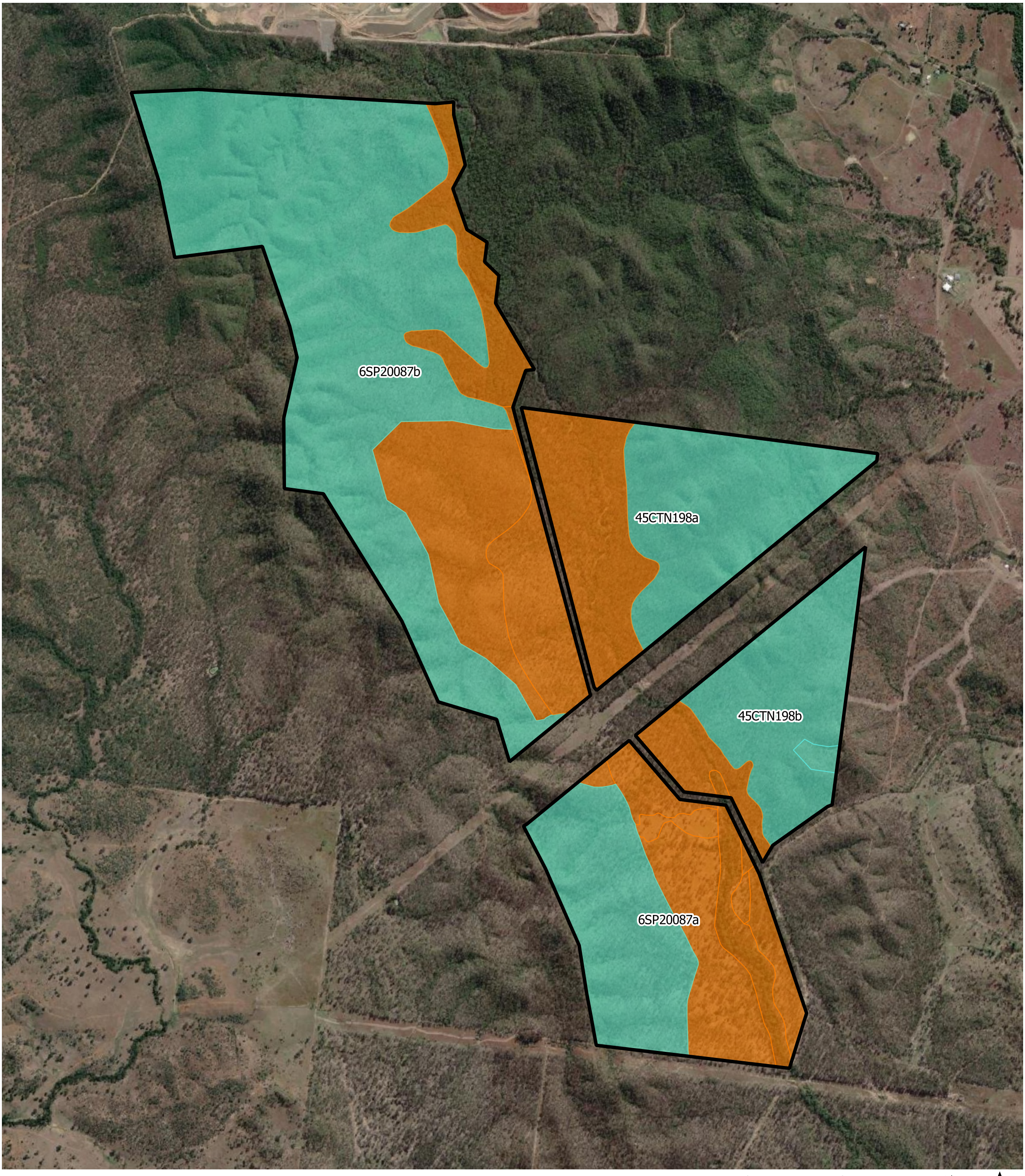



**Figure 4-1 Management Unit Areas**

Aldoga South Offset Site
Management Unit
1
2

0 0.5 1 km



Ref: 20-226 Aldoga SF Workspace
Author: Teagan McKillop
Date created: 28.10.2022
Datum: GDA94 / MGA zone 56

NGH

# 5. Environmental offsets framework

A summary of how the proposed offsets meets the requirements of the EPBC Act Environmental Offsets Policy is in Table 5-1.

Table 5-1 The EPBC Act Environmental Offsets requirements.

| Policy objective | How the offsets meet the offsets framework |
|---|---|
| Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter | The Aldoga North and Aldoga South offset sites will fully acquit the offset obligation for Koala and Greater Glider. The offset sites will partially acquit the offset obligation for Squatter Pigeon, with an indirect contribution accounting for the remaining obligation (see Section 8.1).<br>The proposed offset sites contain several threatening processes including presence of introduced predators, low recruitment of foraging trees and native grasses and abundance of weeds which directly impact habitat quality for Squatter Pigeon, Koala and Greater Glider. The proposed offset site will be managed to improve habitat condition and will be monitored over 20 years following approval. |
| Suitable offsets must be built around direct offsets but may include other compensatory measures | 90.22% of the offset will be direct land-based offset, with the remainder being a contribution towards research on Squatter Pigeon. This species is very under researched despite it being impacted by a large number of projects throughout central Queensland. |
| Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter | The threat status of the three species is taken into account in the EPBC Offset Calculator. |
| Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter | The size of the offset has been calculated using the EPBC Offset Assessment Guide calculator using the assumptions listed in Appendix C, Appendix D and Appendix E. Inputs were determined based on field surveys in the impact and offset sites and habitat quality was assessed in accordance with the Species Habitat and TEC Quality- EPBC offsets and the DEHP (2017) Guide. The size of the offset takes into account the quality of the habitat as determined by surveys and the future quality. |
| Suitable offsets must effectively account for and manage the risks of the offset not succeeding | A risk assessment of the offset not succeeding is included in Table 6-1.<br>The EPBC calculator takes into the account the confidence in the offset succeeding. |
| Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs | Currently the offset site is owned by Queensland government agencies but are leased for grazing. The owners of the land are obliged to manage pest animals and control weeds, but the level of management proposed under this plan exceeds these obligations and improve condition. Refer to Section 4.3 for more details. |
| Suitable offsets must be efficient, effective, timely, transparent, scientifically | The offset area was assessed by a suitably qualified ecologist using standard Queensland and Commonwealth practices. The methodology is evidence based, scientifically robust and repeatable. |

| Policy objective | How the offsets meet the offsets framework |
|---|---|
| robust and reasonable | |
| Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced | The OAMP provides a delivery pathway to secure the offset and manage the offset that is transparent and scientifically robust. It provides the methodology for monitoring and the performance outcomes under which the offset will judged for effectiveness. The plan allows for regular auditing and provides guidance for ongoing reporting. |

# 6. Risk assessment

A risk analysis following the EPBC Act Environmental Management Plan Guidelines (DoE, 2014a) has been undertaken to identify potential risks of the management outcomes failing and the management actions required to minimise the risk. The risks have been designated as either low, medium, high or severe based on the likelihood and consequence matrix. The highest risk to the offset success is weed spread, unplanned and uncontrolled wildfires and inappropriate grazing. These threats will be managed by the measures listed in Table 6-1.

Table 6-1 Assessment of the risks which could potentially impact the success of the OAMP

| Management objective | Risk event | Risk likelihood | Risk consequence | Unmitigated risk | Trigger | Action to reduce risk | Proposed action | Mitigated risk |
|---|---|---|---|---|---|---|---|---|
| Improve habitat quality for Squatter Pigeon, Koala and Greater Glider | Uncontrolled and unplanned wildfire | Likely | Moderate | Medium | Uncontrolled and unplanned wildfire within the offset site. | Unplanned fire to be excluded from the offset site wherever possible. Install and maintain fire breaks in line with the OAOP. Manage fuel loads through managed grazing. | If an unplanned bushfire impacts the offset area, a review of the OAOP and firebreaks will be undertaken. Fuel loads will be reassessed. - | Low |
| | Overgrazing leading to reduced habitat quality | Possible | Moderate | Medium | Native ground cover reduced in two consecutive monitoring periods. | Grazing may occur at low intensities within the offset site. Riparian areas may be fenced to protect sensitive vegetation if impacts from stock are noted. Stock may be added or excluded in some areas to ensure native ground cover is 30% or less. A plan for fencing (including additional or ungraded fencing) will be included in the OAOP and then fencing will be monitored quarterly and repaired as needed. | If ground cover is overgrazed, stock will be removed (or excluded with temporary fencing) until ground cover has improved. If unauthorised entry of cattle is caused by fence breakage, this will be fixed. | Low |
| | Habitat quality | Possible | Moderate | Medium | Monitoring | Investigate cause of | Review management | Low |

| Management objective | Risk event | Risk likelihood | Risk consequence | Unmitigated risk | Trigger | Action to reduce risk | Proposed action | Mitigated risk |
|---|---|---|---|---|---|---|---|---|
| | score decreases from baseline score | | | | identifies that the habitat quality score has decreased from the baseline. | reduction. If possible, mitigate the cause (e.g., removal cattle). Repairable damage should be remediated where possible. Increase active management to ensure targets are met.<br>Review the management actions and increase monitoring. | actions and monitoring frequency. | |
| | Erosion | Likely | Minor | Low | Monitoring identifies new or expanding erosion | Cattle grazing within riparian areas has caused erosion of waterways. Riparian areas will be fenced off from grazing. Areas at risk of erosion will have cattle excluded and vegetation cover will be managed to reduce erosion.<br>Tracks will be monitored for erosion. Areas with erosion will be fenced off and vehicles will be excluded. | Any areas with significant erosion will be investigated and the cause will be managed. | Low |
| | Drought | Likely | Moderate | Medium | Monitoring indicates a reduction in habitat quality due to drought stress. | Drought could reduce the effectiveness of the proposed assisted regeneration techniques and slow habitat quality improvements. Grazing will be managed to reduce pressures on stressed plants. Fire mitigation measures will be reviewed, and changes implemented to reduce the risk of fire spread. | Allow offset to recover post drought by managing weeds and grazing. | Low |

| Management objective | Risk event | Risk likelihood | Risk consequence | Unmitigated risk | Trigger | Action to reduce risk | Proposed action | Mitigated risk |
|---|---|---|---|---|---|---|---|---|
| | Nest boxes in disrepair | Possible | Low | Low | Monitoring indicates more than 25% boxes are not in a condition suitable for Greater Glider | Monitoring yearly for the first three years and then three yearly after that. | Investigate cause of disrepair (ineffective lids, pest incursions). Increase monitoring and maintenance to once every 2 years. Revise OAOP | Low |
| Control of WONS, restricted weeds and weeds relevant to MNES | Increase in weed infestations | *Likely* | *High* | *High* | Monitoring indicates weed coverage percentage has increased by Year 3. New areas are identified to have WONS, restricted weeds or weeds relevant to MNES | Undertake baseline weed mapping to identify areas with high weed abundance and areas at high risk of new weed spread. Undertake weed monitoring annually for the first 5 years. Undertake initial weed management (spraying) in areas with high risk of weed spread (such as along creeks and waterways or along the powerline easement) within 6 months of legally securing the land). These areas should be checked within three months of the initial treatment to ensure management was successful. Spot spraying in high-risk areas should occur on a regular basis. | Investigate cause of weed spread. Review the weed management actions timing and frequency of management in the OAOP. Undertake remedial action. | Low |
| Control predation risk | Pest abundance increases | *Possible* | *Moderate* | *Medium* | Predator abundance increases for two consecutive monitoring periods | Undertake baseline pest animal monitoring to determine risk of pests on Koala, Greater Glider and Squatter Pigeon populations. Monitoring should be | If pest animal abundance continues to increase after one round of management, review of the management measures | Low |

| Management objective | Risk event | Risk likelihood | Risk consequence | Unmitigated risk | Trigger | Action to reduce risk | Proposed action | Mitigated risk |
|---|---|---|---|---|---|---|---|---|
| | | | | | | undertaken yearly for the first 5 years. Management should be immediately following an increase and monitoring should be implemented within 6 months of treatment to assess effectiveness. | should be undertaken including whether larger scale treatment should be undertaken in coordination with the regional council. | |

# 7. Monitoring and management

## 7.1 Monitoring

Monitoring is required at regular intervals to ensure that the management measures are on track to meet the management objectives (as per Condition 12 and 13 of the Approval). Monitoring will be undertaken at the intervals specified in Table 7-1. Management will be triggered by the criteria listed in Table 7-1.

The results from the monitoring will be included in the reports listed in Table 7-2 and summarised into an Offset Area Monitoring Report which will include the results of the previous 12 months monitoring activities and outline management actions that need to take place in the following 12 months. An Annual Compliance Report, which will be submitted to the Department, will report on the offset's compliance with the approval conditions and the progress that has been made to achieving the environmental outcomes. Monitoring will be undertaken until the completion criteria are met.

Table 7-1 Management actions, monitoring and performance criteria.

| Management Action | Performance criteria | Timing of monitoring | Monitoring | Management trigger | Responsible person |
|---|---|---|---|---|---|
| **Management Action 1: Environmental weed management** | | | | | |
| Manage weed spread and abundance | A reduction in introduced weeds to <5% across all monitoring sites | Weed survey to be conducted within 12 months of securing the land. Weed control and monitoring will be undertaken every year for the first 5 years. After the initial five years, monitoring and management should be undertaken every 3 years until the completion criteria are met. | Monitoring requirements and methodology will be determined by the OAOP. | An increase in the % cover score from the baseline or previous monitoring events<br>Interim performance target not attained | Proponent<br>Rehabilitation/ weed contractor commissioned by the proponent |
| **Management Action 2: Rehabilitation and regeneration** | | | | | |

| Management Action | Performance criteria | Timing of monitoring | Monitoring | Management trigger | Responsible person |
|---|---|---|---|---|---|
| Recruitment of native shrubs and trees | Increase in recruitment of native grasses, shrubs and trees by 20% at all monitoring sites. | Habitat quality monitoring will commence within one year of the offset being legally secured. Monitoring will be undertaken annually for the first three years and then once every three years until the target quality score for the species has been met. | Monitoring will be undertaken in accordance with the modified habitat quality assessment method at eleven permanent plots. | Reduction in recruitment | Rehabilitation specialist and ecologist commissioned by the proponent |
| Availability of food resources for Koala and Greater Glider | Increase of Koala and Greater Glider foraging tree height to >95% of the benchmark<br>Increase in the number of large trees | Habitat quality monitoring will commence within one year of the offset being legally secured. Monitoring will be undertaken annually for the first three years and then once every three years until the target quality score for the species has been met. | Monitoring will be undertaken in accordance with the modified habitat quality assessment method at eleven permanent plots. | No increase in tree height after 10 years<br>No increase in the number of large trees | Rehabilitation specialist and ecologist commissioned by the proponent |
| Availability of food resources for Squatter Pigeon | Increase in the native grass species richness and cover to >95% of the benchmark | Habitat quality monitoring will commence within one year of the offset being legally secured. Monitoring will be undertaken annually for the first three years and then once every three years until the target quality score for the species has been met. | Monitoring will be undertaken in accordance with the modified habitat quality assessment method at eleven permanent plots. | No increase in the cover of native grasses or native grass species richness. | Rehabilitation specialist and ecologist commissioned by the proponent |
| **Management Action 3: Legal security of the offset** | | | | | |
| Securing the offset | Offset legally secured | No monitoring | - | Offset property not secured prior to the action commencing | Proponent |

| Management Action | Performance criteria | Timing of monitoring | Monitoring | Management trigger | Responsible person |
|---|---|---|---|---|---|
| **Management Action 4: Pest management** | | | | | |
| Pest management | Pest predator abundance and distribution remains static or decreases | Baseline monitoring should be undertaken within 12 months of securing the offset site. Monitoring should be undertaken annually for the first 5 years and then every 2 years until completion criteria are met. | Permanent monitoring locations should be established and detailed in the OAOP. | Pest predator abundance increasing over 1 year. | Pest animal contractor. |
| **Management Action 5: Bushfire management** | | | | | |
| Manage the risk of uncontrolled bushfire | No uncontrolled bushfires in the offset properties | Monitoring timing will be determined by the OAOP. | Monitoring requirements will be determined by the OAOP. | Uncontrolled bushfire within the offset properties | Proponent<br>Qualified bushfire specialist commissioned by the proponent |
| Manage fire to improve habitat quality | Prescribed burns implemented as per the OABMP | Monitoring timing will be determined by the OAOP. | Monitoring requirements will be determined by the OAOP. | Prescribed burns not undertaken as per OABMP<br>Relevant habitat quality scores reduced | Proponent<br>Qualified bushfire specialist commissioned by the proponent |
| **Management Action 6: Offset habitat quality** | | | | | |
| Habitat quality improvements | Increasing habitat quality | Habitat quality monitoring will commence within one year of the offset being legally secured. Monitoring will be undertaken annually for the first three years | Monitoring will be undertaken in accordance with the modified habitat quality assessment | A reduction in habitat quality score for more than two consecutive monitoring periods | Qualified ecologist commissioned by the proponent |

| Management Action | Performance criteria | Timing of monitoring | Monitoring | Management trigger | Responsible person |
|---|---|---|---|---|---|
| | | and then once every three years until the target quality score for the species has been met. | method at eight permanent plots. | | |
| Installing nest boxes | Nest boxes installed and maintained or replaced as per the OAOP. | Nest box monitoring will commence within one year of installation. Monitoring will be undertaken annually for the first three years and then once every three years until the target quality score for the species has been met (this is in line with the habitat quality monitoring). | Monitoring will be undertaken via camera and any boxes that in disrepair will be replaced or fixed. | Review OAOP | Installing nest boxes |

## 7.2 Reporting

The reporting requirements for the management actions and the timeframes for preparation and submission (Table 7-2). This will be reported on in conjunction with the Aldoga North offset site.

Table 7-2 Reporting timeframes

| Report | Report content | Reporting period | Responsibility | Submission period |
|---|---|---|---|---|
| EPBC annual compliance report | Report on compliance with the EPBC Approval conditions | Every 12 months until completion criteria are complete or until advised by the Minister, commencing 12 months from the OAMP approval. | Acciona | Within 3 months of the 12-month anniversary of the OAMP approval. |
| Offset Area Management Report | Provides a summary of the progress of the habitat quality improvements and outlines the effectiveness of the management actions. This report will include the results of all monitoring | Every 12 months until completion criteria are complete or until advised by the Minister, commencing 12 months from the OAMP approval. | Acciona with inputs from suitably qualified ecologists | Within 3 months of the 12-month anniversary of the OAMP approval |

| Report | Report content | Reporting period | Responsibility | Submission period |
|---|---|---|---|---|
| | within the offset site. | | | |
| | Habitat quality: Provides the results of the habitat quality monitoring and the targeted surveys for the MNES species | Every 12 months for the first three years and then once every 3 years | A suitably qualified ecologist on behalf of Acciona | Within 3 months of the monitoring taking place. The report will be an appendix in the Annual Compliance Report. |
| | Weed monitoring: Provides the results of the weed monitoring undertaken and the management that has taken place in the reporting period. | Every 12 months for the first five years and then once every 3 years | A suitably qualified ecologist or weed management contractor on behalf of Acciona | Within 3 months of the monitoring taking place. The report will be an appendix in the Annual Compliance Report. |
| | Pest management: Provides the results of the pest monitoring undertaken and the management actions that have taken place. | Every 12 months for the first five years and then once every 2 years | A suitably qualified ecologist or pest management contractor on behalf of Acciona | Within 3 months of the monitoring taking place. The report will be an appendix in the Annual Compliance Report. |

### 7.2.1 Revised OAMP

The results of the baseline surveys for weeds (Section 4.4), pests (Section 4.7) and habitat quality (including threatened species abundance) (Section 4.9) will be appended to the OAMP in accordance with Condition 35 of the approval. The Department will be notified of the changes to the OAMP.

## 7.3 Performance and completion criteria

Monitoring will determine whether the performance criteria listed in Table 7-1 have been met. Management trigger criteria will indicate when performance criteria are unlikely to be met and will trigger corrective actions.

The completion criteria must be achieved within 20 years of the commencement of the action (as per Condition 13a and Condition 8). Once the completion criteria have been met, habitat quality must be maintained for the duration of the approval (until 31 December 2080) (as per Condition 13b and Condition 8).

### 7.3.1 Performance criteria

The performance criteria will measure the effectiveness of the management actions (Table 7-3).

Table 7-3 Performance criteria and completion criteria for each management action.

| Management Action | Performance criteria | Completion criteria |
|---|---|---|
| **Management Action 1: Weed management** | | |
| Manage weed spread and abundance | A reduction in introduced weeds to <5% across all monitoring sites | Observed increase in the habitat quality score in all plots in 20 years. |
| **Management Action 2: Rehabilitation and regeneration** | | |
| Recruitment of native shrubs and trees | Increase in recruitment of native grasses, shrubs and trees by 20% at all monitoring sites. | Achieving target habitat quality score for the assessment unit. |
| Availability of food resources for Koala and Greater Glider | Increase of Koala and Greater Glider foraging tree height and canopy cover to >95% of the benchmark<br>Increase in the number of large trees | Achieving target habitat quality score for the assessment unit. |
| Availability of food resources for Squatter Pigeon | Increase in the native grass and forb species richness and cover to >95% of the benchmark | Achieving target habitat quality score for the assessment unit. |
| **Management Action 3: Legal security of the offset** | | |
| Securing the offset | Offset legally secured | Offset legally secured |
| **Management Action 4: Pest Management** | | |
| Pest management | Pest predator abundance and distribution remains static or decreases. | Pest abundance considered to be negligible over two consecutive monitoring periods. |
| **Management Action 5: Bushfire management** | | |
| Manage the risk of | No uncontrolled bushfires in the | Achieving target habitat quality score for the |

| Management Action | Performance criteria | Completion criteria |
|---|---|---|
| uncontrolled bushfire | offset properties | assessment unit. |
| Manage fire to improve habitat quality | Prescribed burns implemented as per the OAOP. | Achieving target habitat quality score for the assessment unit. |
| **Management Action 6: Offset habitat quality** | | |
| Habitat quality improvements | Increasing habitat quality | Achieving target habitat quality score for the assessment unit. |
| Nest boxes installed | More than 75% of boxes in a condition suitable for use by Greater Glider | Nest boxes maintained for the life of the OAMP. |

### 7.3.2 Completion criteria

Under the Environmental Offsets Policy, the offset must provide a conservation gain (as per Condition 8). Monitoring will measure the habitat quality scores against the baseline. Interim targets and completion criteria for each assessment unit has been listed in Table 7-4. If it is found that interim targets are not being met, a revision of this OAMP and the management actions will be undertaken. The Annual Compliance Report will track the progress gains the performance targets and identify any mitigation measures or additional management that needs to be implemented to ensure that the completion criteria are met.

Acciona will submit a report to the Department detailing the area and condition of Koala, Greater Glider and Squatter Pigeon habitat in the offset sites within 20 business days of the 20-year anniversary of the commencement of the action (as per Condition 14).

If, for any reason, the completion criteria have not been met, Acciona will provide, in writing, which criteria have not been achieved and the reasons the completion criteria have not been achieved (as per Condition 14b). If the completion criteria are not likely to be achieved within the 20 years, Acciona will notify the department in writing one year prior to the 20-year anniversary of the commencement of the action (as per Condition 12c).

Table 7-4 Completion criteria and interim targets for habitat quality scores in each assessment unit for each species.

| AU | RE | Start HQ score | Interim Score targets | | | Completion Criteria |
|---|---|---|---|---|---|---|
| | | | Year 5 | Year 10 | Year 15 | Year 20 |
| **Koala** | | | | | | |
| AU1 | Remnant 11.11.3 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU2 | Remnant 11.11.4 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU3 | Regrowth 11.11.4 | 6 | 6 | 6-6.5 | 6.5 | 7 |

| AU | RE | Start HQ score | Interim Score targets | | | Completion Criteria |
|---|---|---|---|---|---|---|
| AU4 | Remnant 11.3.26 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU5 | Regrowth 11.3.26 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| **Squatter Pigeon** | | | | | | |
| AU1 | Remnant 11.11.3 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU2 | Remnant 11.11.4 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU3 | Regrowth 11.11.4 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU4 | Remnant 11.3.26 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU5 | Regrowth 11.3.26 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| **Greater Glider** | | | | | | |
| AU1 | Remnant 11.11.3 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU2 | Remnant 11.11.4 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU3 | Regrowth 11.11.4 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU4 | Remnant 11.3.26 | 6 | 6 | 6-6.5 | 6.5 | 7 |
| AU5 | Regrowth 11.3.26 | 6 | 6 | 6-6.5 | 6.5 | 7 |

The increase in habitat quality scores will be achieved through the following:

- Increasing recruitment of native shrubs and trees through:
  - reducing competition with introduced weeds
  - grazing management by reducing grazing pressure
  - protection from unplanned bushfire and implementing fire regimes that promote growth of native grasses and shrubs.
- increasing richness of shrubs and native grasses to provide foraging opportunities for Squatter Pigeon
- increase large tree counts but protecting young trees from damage from cattle and using appropriate fire regimes
- reducing exotic cover to reduce competition with native plants and increase foraging opportunities for Squatter Pigeon

- reducing threats to the species including:
    - managing introduced predators including Wild Dogs, Feral Cats and European Foxes
    - controlling other pests such as Feral Pigs which can decrease habitat quality
    - managing fire risk to protect habitat.

The habitat quality assessment has been run to model the way that the offset is expected to increase the habitat quality score over the life of the offset. These are represented for each of Koala, Greater Glider and Squatter Pigeon in Appendices B.1, B.2 and B.3.

## Conservation gains for each matter

The specific management measures for each species that will be undertaken in each assessment unit to achieve the interim targets and completion criteria are listed in Table 7-5, Table 7-6 and Table 7-7.

Table 7-5 Koala specific management actions to achieve conservation gains for each assessment unit.

| Impact AU | RE | Habitat quality prior to offset | Habitat quality after offset target | Species specific management actions |
|---|---|---|---|---|
| AU1 | Remnant 11.11.3 | 6.41 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Reduce weed cover particularly introduced grasses and Lantana which can smother native foraging species and prevent movement through the landscape- reducing the cover to less than 5% at all sites<br>• Increase tree recruitment at all sites to 100%<br>• Increase tree height and cover to 100% of the benchmark<br>**All of the above management actions will increase the score to an average score of 6.93 (rounded to a 7).** |
| AU2 | Remnant 11.11.4 | 6.44 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase tree recruitment at all sites to 100%<br>• Increase tree species richness at all sites more than 90% of the benchmark<br>• Increase tree height and cover to 100% of the benchmark<br>**All of these management actions will increase the score to an average score of 6.94 (rounded to a 7)** |
| AU3 | Regrowth 11.11.4 | 6.23 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase tree species richness to 100% of the benchmark<br>• Increase tree height and cover to 100% of the benchmark<br>**All of these management actions will increase the score to an average score of 6.77 (rounded to a 7)** |
| AU4 | Remnant 11.3.26 | 6.47 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase tree recruitment at all sites to 100%<br>• Increase tree species richness at all sites to 100% of the benchmark |

| Impact AU | RE | Habitat quality prior to offset | Habitat quality after offset target | Species specific management actions |
|---|---|---|---|---|
| | | | | • Reduce shrub cover to 100% (instead of more than 200%) to allow free movement of Koala through the landscape.<br>• Reduce weed cover particularly Rubber Vine which can smother forage and den trees- reducing the cover to less than 5% at all sites<br>**All of these management actions will increase the score to an average score of 7.06 (rounded to a 7)** |
| AU5 | Regrowth 11.3.26 | 5.75 (6) | 7 | • Increase tree recruitment at all sites to 100%<br>• Increase tree height and cover to 100% of the benchmark<br>• Reduce predation threats from moderate to negligible and maintain.<br>• Reduce weed cover particularly Rubber Vine which can smother forage and den trees- reducing the cover to less than 5% at all sites<br>**All of these management actions will increase the score to an average score of 6.52 (rounded to a 7)** |

Table 7-6 Greater Glider specific management actions to achieve conservation gains for each assessment unit.

| Impact AU | RE | Habitat quality prior to offset | Habitat quality after offset target | Species specific management actions |
|---|---|---|---|---|
| AU1 | Remnant 11.11.3 | 6.41 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase tree recruitment at all sites to 100%<br>• Increase tree height and cover to 100% of the benchmark<br>**All of the above management actions will increase the score to an average score of 6.94 (rounded to a 7).** |
| AU2 | Remnant 11.11.4 | 6.46 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain. |

| Impact AU | RE | Habitat quality prior to offset | Habitat quality after offset target | Species specific management actions |
|---|---|---|---|---|
| | | | | • Increase tree recruitment at all sites to 100%<br>• Increase tree species richness at all sites more than 90% of the benchmark<br>• Increase tree height and cover to 100% of the benchmark<br>**All of these management actions will increase the score to an average score of 6.97 (rounded to a 7)** |
| AU3 | Regrowth 11.11.4 | 6.23 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase tree height and cover to 100% of the benchmark<br>• Reduce weed cover particularly Rubber Vine which can smother forage and den trees- reducing the cover to less than 5% at all sites<br>**All of these management actions will increase the score to an average score of 6.77 (rounded to a 7)** |
| AU4 | Remnant 11.3.26 | 6.47 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase tree species richness at all sites to 100% of the benchmark<br>• Increase tree height and cover to 100% of the benchmark<br>• Reduce weed cover particularly Rubber Vine which can smother forage and den trees- reducing the cover to less than 5% at all sites<br>**All of these management actions will increase the score to an average score of 7.03 (rounded to a 7)** |
| AU5 | Regrowth 11.3.26 | 5.63 (6) | 7 | • Increase tree recruitment at all sites to 100%<br>• Increase tree height and cover to 100% of the benchmark<br>• Reduce predation threats from moderate to negligible and maintain.<br>• Reduce weed cover particularly Rubber Vine which can smother forage and den trees- reducing the cover to less than 5% at all sites<br>• Increase the habitat quality of foraging and sheltering resources from moderate to good at all sites.<br>**All of these management actions will increase the score to an average score of 6.55 (rounded to a 7)** |

Table 7-7 Squatter Pigeon specific management actions to achieve conservation gains for each assessment unit.

| Impact AU | RE | Habitat quality prior to offset | Habitat quality after offset target | Species specific management actions |
|---|---|---|---|---|
| AU1 | Remnant 11.11.3 | 6.33 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase tree recruitment at all sites to 100%<br>• Increase shrub and forb richness to 100% of the benchmark<br>**All of the above management actions will increase the score to an average score of 7.01 (rounded to a 7).** |
| AU2 | Remnant 11.11.4 | 6.45 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase tree recruitment at all sites to 100%<br>• Increase tree, shrub, grass and forb species richness at all sites more than 90% of the benchmark<br>• Increase tree height and cover to 100% of the benchmark<br>• Increase native grass to more than 90% of the benchmark<br>• Increase litter cover to 100% of the benchmark<br>**All of these management actions will increase the score to an average score of 7.12 (rounded to a 7)** |
| AU3 | Regrowth 11.11.4 | 6.23 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase forb species richness at all sites more than 90% of the benchmark<br>• Reduce weed cover particularly Rubber Vine which can smother forage and den trees- reducing the cover to less than 5% at all sites<br>**All of these management actions will increase the score to an average score of 6.81 (rounded to a 7)** |
| AU4 | Remnant 11.3.26 | 6.47 (6) | 7 | • Reduce predation threats from moderate to negligible and maintain.<br>• Increase tree species richness at all sites to more than 90% of the benchmark<br>• Increase tree recruitment at all sites to 100%<br>• Increase grass and forb species richness at all sites more than 90% of the benchmark |

| Impact AU | RE | Habitat quality prior to offset | Habitat quality after offset target | Species specific management actions |
|---|---|---|---|---|
| | | | | • Increase native grass cover to more than 90% of the benchmark<br>• Reduce weed cover particularly Rubber Vine which can smother forage and den trees- reducing the cover to less than 5% at all sites<br>**All of these management actions will increase the score to an average score of 7.09 (rounded to a 7)** |
| AU5 | Regrowth 11.3.26 | 5.7 (6) | 7 | • Increase tree recruitment at all sites to 100%<br>• Increase tree height and cover to 100% of the benchmark<br>• Increase grass and forb species richness at all sites more than 90% of the benchmark<br>• Increase tree and shrub species richness at all sites to more than 90% of the benchmark<br>• Increase shrub cover to more than 50% (but less than 200%) of the benchmark to increase foraging opportunities (seeds) but not increase predation risk.<br>• Reduce predation threats from moderate to negligible and maintain.<br>• Reduce weed cover particularly Rubber Vine which can smother forage and den trees- reducing the cover to less than 5% at all sites<br>• Increase the habitat quality of foraging and sheltering resources from moderate to good at all sites.<br>**All of these management actions will increase the score to an average score of 6.84 (rounded to a 7)** |

### 7.3.3 Corrective actions

Corrective actions will be implemented if a management trigger is triggered. Management triggers and corrective actions are listed in Table 7-8.

Table 7-8 Management triggers and corrective actions.

| Management Action | Management | Management trigger | Corrective Actions |
|---|---|---|---|
| **Management Action 1: Weed management** | | | |
| Manage weed spread and abundance | • Develop and implement the weed management actions in the OAOP.<br>• Treat weeds as per Section 4.3 or as per the OAOP. | • An increase in the % cover score from the baseline or previous monitoring events<br>• Interim performance target not attained | • Review the OAOP including weed management techniques and weed hygiene practices within 2 months of the trigger.<br>• Review timing of weed management techniques<br>• Increase weed control frequency based on advice from a qualified weed management contractor.<br>• Review the OAMP within 3 months of the trigger. |
| **Management Action 2: Rehabilitation and regeneration** | | | |
| Recruitment of native shrubs and trees | • Manage or reduce grazing<br>• Implement appropriate fire regimes<br>• Manage weeds | • Reduction in recruitment | • Review grazing practices to ensure they are appropriate within 1 month of the trigger.<br>• Review the bushfire management plan and consider implementing ecologically appropriate fire regimes within 2 months of the trigger.<br>• Review the OAOP and increase weed control if competition may be causing the reduction within 2 months of the trigger.<br>• Review the OAMP within 3 months of the trigger. |
| Availability of food resources for Koala and Greater Glider | • Manage or reduce grazing<br>• Implement appropriate fire regimes<br>• Manage weeds | • No increase in tree height after 10 years<br>• No increase in the number of large trees | • Review grazing practices to ensure they are appropriate within 1 month of the trigger.<br>• Review the bushfire management plan and consider implementing ecologically appropriate fire |

| Management Action | Management | Management trigger | Corrective Actions |
|---|---|---|---|
| | | | regimes within 2 months of the trigger.<br>• Review OAOP and increase weed control if competition may be causing the reduction within 2 months of the trigger.<br>• Review the OAMP within 3 months of the trigger. |
| Availability of food resources for Squatter Pigeon | • Manage or reduce grazing<br>• Implement appropriate fire regimes<br>• Manage weeds | • No increase in the cover of native grasses or native grass species richness. | • Review grazing practices to ensure they are appropriate within 1 month of the trigger.<br>• Review the bushfire management plan and consider implementing ecologically appropriate fire regimes within 2 months of the trigger.<br>• Review the OAOP and increase weed control if competition may be causing the reduction within 2 months of the trigger.<br>• Review the OAMP within 3 months of the trigger. |
| **Management Action 3: Legal security of the offset** | | | |
| Securing the offset | Secure offset | Offset not secured | Secure offset |
| **Management Action 4: Pest management** | | | |
| Pest management | • Pest animal management will be undertaken using best practice control methods and in consultation with the grazing lease holder<br>• Control methods will include appropriate and humane techniques including shooting, trapping and baiting in | • Increase in predator abundance above the baseline<br>• Habitat quality scores not meeting the interim targets. | • Review the pest animal management plan within 3 months of the trigger.<br>• Investigate possible reasons for increase within 1 month of the trigger.<br>• Consult neighbouring landowners and consider implementing broader scale management in conjunction with neighbouring landowners and council.<br>• Increase frequency of control techniques within 2 months of the trigger. |

| Management Action | Management | Management trigger | Corrective Actions |
|---|---|---|---|
| | accordance with the relevant legislation. | | |
| **Management Action 4: Bushfire management** | | | |
| Manage the risk of uncontrolled bushfire and manage fire to improve habitat quality. | • Develop an OAOP which includes ecologically appropriate fire regimes for the REs present<br>• Fire will be excluded from the offset site except planned ecological burns<br>• Install fire breaks to protect native vegetation | • Uncontrolled bushfire within the offset site<br>• Required burning regime not achieved<br>• Habitat quality scores not meeting the interim targets.<br>• | • Evidence of fire to be recorded during monitoring periods.<br>• Review the OAOP to assess whether more fire protection is required within 2 months of the trigger.<br>• Increase monitoring of fire breaks. Undertake maintenance if required within 4 months of the trigger.<br>• Alter grazing management to control fuel loads within 1 months of the trigger. |
| **Management Action 6: Offset habitat quality** | | | |
| Habitat quality improvements | • Undertake regular monitoring to record changes in habitat quality. Implement management actions to improve habitat quality. | • A reduction in habitat quality score for more than two consecutive monitoring periods | • Investigate reasons for decrease within 1 month of trigger<br>• Review all management actions within 1 month of trigger.<br>• Review the OAMP within 3 months of trigger |
| Nest box installation | • Undertake regular monitoring to record condition of nest boxes and undertake maintenance or replacement | • More than 25% of boxes in a condition not suitable for Greater Glider | • Investigate reasons for or disrepair (type of boxes, ineffective lids, pest species) within 1 month of trigger<br>• Review monitoring schedule within 1 month of trigger.<br>• Review the OAOP within 3 months of trigger |

### 7.3.4 Annual compliance reporting

An Annual Compliance Report will be completed annually for and will include the results of the years monitoring events. The results from the monitoring will be compared to the performance criteria for each management action and suitable corrective actions will be implemented prior to the next monitoring period.

The report will include:

- The EPBC approval number
- All activities undertaken in the previous 12 months or monitoring period
- Results of the monitoring activities including when they were undertaken and the details of the suitably qualified person undertaking them
- A description of the climatic conditions during the monitoring period, highlighting any events which could have influenced the results of the monitoring
- Results of the fauna surveys including maps (and the associated data) showing any locations of Koala, Greater Glider or Squatter Pigeon.
- Any new threats that have been identified or increases in already identified threats to the target species
- Any management triggers that were triggered and the actions required to correct them
- Recommendations for improving any of the management plans or this OAMP.

Annual compliance reports will be published on the Acciona website within 60 days following the 12-month anniversary and will notify the department that the report has been published.

# 8. Offset site summary – Aldoga North & Aldoga South

The offset sites will protect a large area of habitat for Squatter Pigeon, Koala and Greater Glider in an area that is zoned as industrial and could potentially be cleared in the future. The location adjacent to bauxite refinery makes it especially vulnerable to expansion of the refinery facilities. The offset site will not only protect the species impacted by the Project but will also protect habitat for several other threatened species including Powerful Owl and Yellow-bellied Glider and Black-breasted Button-quail. The value of the offset sites is further increased due to its location in a large patch of vegetation, with reasonable connectivity to the coast.

Management actions will be implemented to improve the habitat quality for Koala, Greater Glider and Squatter Pigeon (as well as other fauna inhabiting the area) and will include weed management, pest management, bushfire management and assisted regeneration. It is anticipated that the habitat gain will be realised after 20 years.

The Aldoga South offset site provides 82.62% of the offset obligation for Koala, 71.64% of the obligation for Squatter Pigeon and 86.11% of the offset obligation for Greater Glider (Table 8-1). Combined with Aldoga North Offset Area, the obligation for Koala and Greater Glider have been acquitted. The remaining 9.8% obligation will be acquitted through an indirect offset.

Table 8-1 Acquittal of the offset obligation for Koala, Squatter Pigeon and Greater Glider for Aldoga Solar Farm.

| Species | Impact to be offset (ha) | Proposed Offset Area (ha) | % of the offset obligation covered by Aldoga North | % offset obligation covered by Aldoga South | Total % acquitted | Fully acquitted |
|---|---|---|---|---|---|---|
| Koala | 269.72 | 188.6 | 21.43 | 82.62 | 104.05 | Yes |
| Squatter Pigeon | 259.2 | 188.6 | 18.58 | 71.64 | 90.22 | No Indirect offset will be offered to fully acquit |
| Greater Glider | 258.77 | 188.6 | 22.33 | 86.11 | 108.44 | Yes |

## 8.1 Indirect offset

The indirect offset will be in the form of a research project to investigate Squatter Pigeon in central Queensland. This species is very under researched, with much of the research available specifically on this species is old. Squatter Pigeons have and continue to be impacted by a large number of developments across Queensland, but very little is known about the species ability to adapt to changes in climate and modified habitats.

The Squatter Pigeon Workshop and research priorities in the Squatter Pigeon Conservation Advice (TSSC, 2015) identify the following areas where research would be beneficial:

- Diets and the relationship to survivability in modified habitat
- Breeding habitats and where they are located
- Movements through modified landscapes and if modified understoreys restrict movements

- Landscape scale movement patterns, particularly in relation to climate change.
- The interaction with regenerated areas within the impact area (i.e., after weeds have been removed and native grasses have been introduced).

The specific research topic which will be explored as part of the Project's indirect offset is whether Squatter Pigeon will use Aldoga Solar Farm, both during construction and operation, and whether in fact the species may benefit from the modified nature of a solar farm.

Whilst Squatter Pigeon are considered to be largely ground-dwelling (Pizzey and Knight 2003), they are capable of flight, which is fast with rapid wing-beats, interspersed by glides (NSW National Parks and Wildlife, 1999). DEWHA (2017) notes that Squatter Pigeon are locally dispersive and Pizzey and Knight (2003) observes that this species settles on tree branches. The NGH ecology team have observed Squatter Pigeon fly at 4 to 5 m, typically below tree canopy height. Perimeter fencing planned as part of the Project (details will be included as part of the OAOP) is therefore unlikely to create a barrier to movement for this species.

NGH (2022) identified that habitat within the Project footprint is typically degraded from past selective clearing, grazing and weed infestations. Much of the loss of foraging habitat is expected to be temporary during construction phase only. The Project commitment for natural regeneration of native ground cover species under and around the solar panels is expected to reinstate foraging habitat for Squatter Pigeon during the operational phase.

Whilst direct literature is not readily available about Squatter Pigeon presence at operational solar farms, the NGH ecological team are anecdotally aware of operating wind farms where Squatter Pigeon remain present in close proximity to project infrastructure.

Typical foraging and breeding habitat for Squatter Pigeon is patchy, with native tussock grasses and low forbs making up on average 33% of the ground cover, and the remainder accounted for by gravelly or dusty soil, or leaf litter/light woody debris (DAWE 2020, Crome 1976). Crome (1976) has also identified that introduced pasture species, particularly *Stylosanthes spp.*, are an important food for this species. *S. scabra* was observed on the Project area (NGH 2020). This demonstrates that Squatter Pigeon are adapted to disturbed environments and suggests that the area under and around constructed solar panels may continue to provide forage (and even breeding) habitat, although the latter is less likely.

Much of the Project site was dominated by dense Giant Rats Tail Grass, which excludes Squatter Pigeon due to high percentage ground cover. The Project will result in a reduction of this noxious weed, and therefore, may create habitat for Squatter Pigeon which was not present prior to the action.

Financial support will be provided each year for up to 10 years to undertake the research, which will commence during construction. The research will be delivered in conjunction with a research organisation.

Research findings would be shared publicly to the benefit of the renewable development industry and improved conservation outcomes for Squatter Pigeon.

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# Appendix A Modified Queensland Habitat Quality assessment for the impact areas

## A.1 Koala

| Assessment Unit - Regional Ecosystem | AU1- 11.3.26 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | Site 1 | | | Site 3 | | | Site 9 | | | Average | Average |
| | 11.3.26 | Raw Data | % BMK | Score | Raw Data | % BMK | Score | Raw Data | % BMK | Score | % BMK | Score |
| **Site Condition** | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 25 | 25.00 | 3 | 34 | 34 | 3 | 100 | 100 | 5 | 53.00 | 3.67 |
| Native plant species richness - trees | 3 | 4 | 133.33 | 5 | 3 | 100 | 5 | 5 | 166.67 | 5 | 133.33 | 5.00 |
| Native plant species richness - shrubs | 3 | 7 | 233.33 | 5 | 6 | 200 | 5 | 2 | 66.667 | 2.5 | 166.67 | 4.17 |
| Native plant species richness - grasses | 13 | 11 | 84.62 | 2.5 | 12 | 92.308 | 5 | 12 | 92.308 | 5 | 89.74 | 4.17 |
| Native plant species richness - forbes | 14 | 21 | 150.00 | 5 | 19 | 135.71 | 5 | 17 | 121.43 | 5 | 135.71 | 5.00 |
| Tree canopy height (average of emergent, canopy, sub-canopy | 16.5 | 16 | 96.97 | 5 | 22.2 | 134.55 | 5 | 17.5 | 106.06 | 5 | 112.53 | 5.00 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 30 | 52.3 | 174.33 | 5 | 36.35 | 121.17 | 5 | 47.2 | 157.33 | 4 | 150.94 | 4.67 |
| Shrub canopy cover | 2 | 1.8 | 90.00 | 5 | 2 | 100 | 5 | 0 | 0 | 0 | 63.33 | 3.33 |
| Native grass cover | 36 | 4.8 | 13.33 | 1 | 17 | 47.222 | 1 | 2 | 5.5556 | 0 | 22.04 | 0.67 |
| Organic litter | 32 | 75.4 | 235.63 | 3 | 72.8 | 227.5 | 3 | 80.2 | 250.63 | 3 | 237.92 | 3.00 |
| Large trees (euc plus non-euc) | 16 | 32 | 200.00 | 15 | 34 | 212.5 | 15 | 8 | 50 | 5 | 154.17 | 11.67 |
| Coarse woody debris | 535 | 858 | 160.37 | 5 | 347 | 64.86 | 5 | 612 | 114.39 | 5 | 113.21 | 5.00 |
| Non-native plant cover | 0 | 1 | 1.00 | 10 | 10 | 10 | 5 | 5 | 5 | 5 | 5.33 | 6.67 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Condition Score | | | | 89.5 | | | 87 | | | 69.5 | | 82.00 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | 100 | | *100.00* |
| **Site Condition Score - out of 3** | | | | **2.69** | | | **2.61** | | | 2.085 | | **2.46** |
| **Site Context** | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Connectedness | | | | 5 | | | 2 | | | 2 | | 3.00 |
| Context | | | | 5 | | | 4 | | | 4 | | 4.33 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 5 | | | 5 | | | 5 | | 5.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Site Context Score | | | | 39 | | | *35.00* | | | *35.00* | | 36.33 |
| *MAX Site Context Score* | | | | *56* | | | *56.00* | | | *56.00* | | *56.00* |
| **Site Context Score - out of 3** | | | | **2.09** | | | ***1.88*** | | | ***1.88*** | | **1.95** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Total SRR Score | | | | 15 | | | *15.00* | | | *15.00* | | 15 |
| *MAX SSR Score* | | | | 70 | | | *70.00* | | | *70.00* | | 70 |
| **SRR Score- out of 4** | | | | **0.86** | | | ***0.86*** | | | ***0.86*** | | **0.86** |

| Assessment Unit - Regional Ecosystem | AU2- 11.7.6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | BMK | Site 2 | | | Site 5 | | | Site 11 | | | Average | Average |
| | 11.7.6 | Raw Data | % BMK | Score | Raw Data | % BMK | Score | Raw Data | % BMK | Score | % BMK | Score |
| **Site Condition** | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 50 | 50.00 | 3 | 100 | 100.0 | 5 | 100 | 100.0 | 5 | 83.33 | 4.33 |
| Native plant species richness - trees | 6 | 4 | 66.67 | 2.5 | 4 | 66.7 | 2.5 | 5 | 83.3 | 2.5 | 72.22 | 2.50 |
| Native plant species richness - shrubs | 13 | 9 | 69.23 | 2.5 | 6 | 46.2 | 2.5 | 6 | 46.2 | 2.5 | 53.85 | 2.50 |
| Native plant species richness - grasses | 7 | 11 | 157.14 | 5 | 7 | 100.0 | 5 | 9 | 128.6 | 5 | 128.57 | 5.00 |
| Native plant species richness - forbes | 12 | 15 | 125.00 | 5 | 18 | 150.0 | 5 | 20 | 166.7 | 5 | 147.22 | 5.00 |
| Tree canopy height (average of emergent, canopy, sub-canop | 15 | 21.5 | 143.33 | 5 | 18 | 120.0 | 5 | 21.5 | 143.3 | 5 | 135.56 | 5.00 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 27.5 | 14.7 | 53.45 | 2.5 | 65.2 | 237.1 | 4 | 40.45 | 147.1 | 4 | 145.88 | 3.50 |
| Shrub canopy cover | 7 | 9.5 | 135.71 | 5 | 0.6 | 8.6 | 0 | 0.6 | 8.6 | 0 | 50.95 | 1.67 |
| Native grass cover | 15 | 0.4 | 2.67 | 0 | 2.8 | 18.7 | 1 | 15.2 | 101.3 | 5 | 40.89 | 2.00 |
| Organic litter | 65 | 85.6 | 131.69 | 5 | 86.4 | 132.9 | 5 | 70.8 | 108.9 | 5 | 124.51 | 5.00 |
| Large trees (euc plus non-euc) | 7 | 10 | 142.86 | 15 | 16 | 228.6 | 15 | 14 | 200.0 | 15 | 190.48 | 15.00 |
| Coarse woody debris | 140 | 127 | 90.71 | 5 | 258 | 184.3 | 5 | 972 | 694.3 | 2 | 323.10 | 4.00 |
| Non-native plant cover | 0 | 1 | 1.00 | 10 | 10 | 10.0 | 5 | 1 | 1.0 | 10 | 4.00 | 8.33 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Condition Score | | | | 85.5 | | | *80.00* | | | *86.00* | | 83.83 |
| *MAX Site Condition Score* | | | | *100* | | | *100.00* | | | *100.00* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.57** | | | ***2.40*** | | | ***2.58*** | | **2.52** |
| **Site Context** | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Connectedness | | | | 2 | | | 2 | | | 2 | | 2.00 |
| Context | | | | 4 | | | 5 | | | 4 | | 4.33 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role of site location to species overall population in the sta | | | | 5 | | | 5 | | | 5 | | 5.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Site Context Score | | | | 35 | | | *36.00* | | | *35.00* | | 35.33 |
| *MAX Site Context Score* | | | | *56* | | | *56.00* | | | *56.00* | | *56.00* |
| **Site Context Score - out of 3** | | | | **1.88** | | | ***1.93*** | | | ***1.88*** | | **1.89** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Total SRR Score | | | | 15 | | | 15 | | | 15 | | 15 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | 70 |
| **SRR Score- out of 4** | | | | **0.86** | | | **0.86** | | | **0.86** | | **0.86** |

| Assessment Unit - Regional Ecosystem | AU1- 11.3.4 | | | | | | | | | | | | | | | | | | Total average | Total average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | BMK | Site 4 HVR | | | Site 6 | | | Site 7 HVR | | | Site 8 | | | Site 10 HVR | | | Average | Average | | |
| Recruitment of woody perennial species in EDL | 100 | 100 | 50.00 | 5 | 100 | 100 | 5 | 80 | 80 | 5 | 100 | 100 | 5 | 100 | 100 | 5 | 86.00 | 5 | 74.11 | 4.33 |
| Native plant species richness - trees | 4 | 4 | 100.00 | 5 | 5 | 125 | 5 | 5 | 125 | 5 | 5 | 125 | 5 | 6 | 150 | 5 | 125.00 | 5 | 110.19 | 4.17 |
| Native plant species richness - shrubs | 2 | 11 | 550.00 | 5 | 6 | 300 | 5 | 3 | 150 | 5 | 10 | 500 | 5 | 7 | 350 | 5 | 370.00 | 5 | 196.84 | 3.89 |
| Native plant species richness - grasses | 7 | 7 | 100.00 | 5 | 8 | 114.3 | 5 | 5 | 71.429 | 2.5 | 14 | 200 | 5 | 9 | 128.57 | 5 | 122.86 | 4.5 | 113.72 | 4.56 |
| Native plant species richness - forbes | 10 | 21 | 210.00 | 5 | 12 | 120 | 5 | 18 | 180 | 5 | 14 | 140 | 5 | 24 | 240 | 5 | 178.00 | 5 | 153.65 | 5.00 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 17 | 19 | 111.76 | 5 | 22.5 | 132.4 | 5 | 23.5 | 138.24 | 5 | 14 | 82.353 | 5 | 15 | 88.235 | 3 | 110.59 | 4.6 | 119.56 | 4.87 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 11 | 35 | 318.18 | 3 | 52.3 | 475.5 | 3 | 22.45 | 204.09 | 4 | 59.9 | 544.55 | 3 | 43.6 | 396.36 | 3 | 387.73 | 3.2 | 228.18 | 3.79 |
| Shrub canopy cover | 1 | 2.1 | 210.00 | 3 | 2.3 | 230 | 3 | 1.3 | 130 | 5 | 1 | 100 | 5 | 15.7 | 1570 | 3 | 448.00 | 3.8 | 187.43 | 2.93 |
| Native grass cover | 43 | 4 | 9.30 | 0 | 9.6 | 22.33 | 1 | 0.4 | 0.9302 | 0 | 0.2 | 0.4651 | 0 | 4.4 | 10.233 | 1 | 8.65 | 0.4 | 23.86 | 1.02 |
| Organic litter | 20 | 65.5 | 327.50 | 3 | 80 | 400 | 3 | 58.4 | 292 | 3 | 58.6 | 293 | 3 | 81.2 | 406 | 3 | 343.70 | 3 | 235.38 | 3.67 |
| Large trees (euc plus non-euc) | 35 | 6 | 17.14 | 5 | 28 | 80 | 10 | 22 | 62.857 | 10 | 12 | 34.286 | 5 | 10 | 28.571 | 5 | 44.57 | 7 | 129.74 | 11.22 |
| Coarse woody debris | 384 | 384 | 100.00 | 2 | 578 | 150.5 | 5 | 616 | 160.42 | 5 | 368 | 95.833 | 5 | 637 | 165.89 | 5 | 134.53 | 4.4 | 190.28 | 4.47 |
| Non-native plant cover | 0 | 50 | 50.00 | 0 | 1 | 1 | 10 | 75 | 75 | 0 | 20 | 20 | 5 | 10 | 10 | 5 | 31.20 | 4 | 13.51 | 6.33 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Site Condition Score | | | | 66 | | | 85 | | | 74.5 | | | 76 | | | 73 | | 74.9 | | 80.24 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **1.98** | | | **2.55** | | | **2.24** | | | **2.28** | | | **2.19** | | **2.25** | | **2.41** |
| **Site Context** | | | | | | | | | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Connectedness | | | | 2 | | | 4 | | | 2 | | | 2 | | | 2 | | 2.4 | | 2.47 |
| Context | | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | 4 | | 4.22 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | 5 | | 5.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Site Context Score | | | | 35 | | | 37 | | | 35 | | | 35 | | | 35 | | *35.4* | | 35.69 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **1.88** | | | **1.98** | | | **1.88** | | | **1.88** | | | **1.88** | | **1.90** | | **1.91** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | 15 | | 15 |
| Approximate density (per ha) | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0 |
| Total SRR Score | | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | *15* | | 15 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | *70* | | 70 |
| **SRR Score- out of 4** | | | | **0.86** | | | **0.86** | | | **0.86** | | | **0.86** | | | **0.86** | | **0.86** | | **0.86** |

## A.2 Greater Glider

| Assessment Unit - Regional Ecosystem | AU 1- 11.3.26 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | Site 1 | | | Site 3 | | | Site 9 | | | Average % benchmar | Average |
| Native plant species richness - grasses | 13 | 11 | 84.62 | 2.5 | 12 | 92.3 | 5 | 12 | 92.3 | 5 | 89.74 | 4.17 |
| Native plant species richness - forbes | 14 | 21 | 150.00 | 5 | 19 | 135.7 | 5 | 17 | 121.4 | 5 | 135.71 | 5.00 |
| Tree canopy height (average of emergent, canopy, sub-canop | 16.5 | 16 | 96.97 | 5 | 22.2 | 134.5 | 5 | 17.5 | 106.1 | 5 | 112.53 | 5.00 |
| Tree canopy cover (average of emergent, canopy, sub-canopy | 30 | 52.3 | 174.33 | 5 | 36.35 | 121.2 | 5 | 47.2 | 157.3 | 4 | 150.94 | 4.67 |
| Shrub canopy cover | 2 | 1.8 | 90.00 | 5 | 2 | 100.0 | 5 | 0 | 0.0 | 0 | 63.33 | 3.33 |
| Native grass cover | 36 | 4.8 | 13.33 | 1 | 17 | 47.2 | 1 | 2 | 5.6 | 0 | 22.04 | 0.67 |
| Organic litter | 32 | 75.4 | 235.63 | 3 | 72.8 | 227.5 | 3 | 80.2 | 250.6 | 3 | 237.92 | 3.00 |
| Large trees (euc plus non-euc) | 16 | 32 | 200.00 | 15 | 34 | 212.5 | 15 | 8 | 50.0 | 5 | 154.17 | 11.67 |
| Coarse woody debris | 535 | 858 | 160.37 | 5 | 347 | 64.9 | 5 | 612 | 114.4 | 5 | 113.21 | 5.00 |
| Non-native plant cover | 0 | 1 | 1.00 | 10 | 10 | 10.0 | 5 | 5 | 5.0 | 5 | 5.33 | 6.67 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 5 | | | 5 | | | 5 | | 5.00 |
| Site Condition Score | | | | 84.5 | | | 82 | | | 64.5 | | 77.00 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | 100 | | *100.00* |
| **Site Condition Score - out of 3** | | | | **2.54** | | | **2.46** | | | 1.935 | | **2.31** |
| **Site Context** | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Connectedness | | | | 5 | | | 2 | | | 2 | | 3.00 |
| Context | | | | 5 | | | 4 | | | 4 | | 4.33 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 1 | | | 1 | | | 1 | | 1.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Site Context Score | | | | 35 | | | *31.00* | | | *31.00* | | 32.33 |
| *MAX Site Context Score* | | | | *56* | | | *56.00* | | | *56.00* | | *56.00* |
| **Site Context Score - out of 3** | | | | **1.88** | | | ***1.66*** | | | ***1.66*** | | **1.73** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Approximate density (per ha) | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Total SRR Score | | | | 10 | | | *10.00* | | | *10.00* | | 10 |
| *MAX SSR Score* | | | | 70 | | | *70.00* | | | *70.00* | | 70 |
| **SRR Score- out of 4** | | | | **0.57** | | | ***0.57*** | | | ***0.57*** | | **0.57** |

| Assessment Unit - Regional Ecosystem | AU 1- 11.7.6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | Site 2 | | | Site 5 | | | Site 11 | | | Average % | Average |
| Native plant species richness - grasses | 7 | 11 | 157.14 | 5 | 7 | 100.0 | 5 | 9 | 128.6 | 5 | 128.6 | 5.00 |
| Native plant species richness - forbes | 12 | 15 | 125.00 | 5 | 18 | 150.0 | 5 | 20 | 166.7 | 5 | 147.2 | 5.00 |
| Tree canopy height (average of emergent, canopy, sub-canop | 15 | 21.5 | 143.33 | 5 | 18 | 120.0 | 5 | 21.5 | 143.3 | 5 | 135.6 | 5.00 |
| Tree canopy cover (average of emergent, canopy, sub-canopy | 27.5 | 14.7 | 53.45 | 2.5 | 65.2 | 237.1 | 4 | 40.45 | 147.1 | 4 | 145.9 | 3.50 |
| Shrub canopy cover | 7 | 9.5 | 135.71 | 5 | 0.6 | 8.6 | 0 | 0.6 | 8.6 | 0 | 51.0 | 1.67 |
| Native grass cover | 15 | 0.4 | 2.67 | 0 | 2.8 | 18.7 | 1 | 15.2 | 101.3 | 5 | 40.9 | 2.00 |
| Organic litter | 65 | 85.6 | 131.69 | 5 | 86.4 | 132.9 | 5 | 70.8 | 108.9 | 5 | 124.5 | 5.00 |
| Large trees (euc plus non-euc) | 7 | 10 | 142.86 | 15 | 16 | 228.6 | 15 | 14 | 200.0 | 15 | 190.5 | 15.00 |
| Coarse woody debris | 140 | 127 | 90.71 | 5 | 258 | 184.3 | 5 | 972 | 694.3 | 2 | 323.1 | 4.00 |
| Non-native plant cover | 0 | 1 | 1.00 | 10 | 10 | 10.0 | 5 | 1 | 1.0 | 10 | 4.0 | 8.33 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 5 | | | 5 | | | 5 | | 5.00 |
| Site Condition Score | | | | 80.5 | | | *75.00* | | | *81.00* | | 78.83333 |
| *MAX Site Condition Score* | | | | *100* | | | *100.00* | | | *100.00* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.42** | | | ***2.25*** | | | ***2.43*** | | **2.37** |
| **Site Context** | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Connectedness | | | | 2 | | | 2 | | | 2 | | 2.00 |
| Context | | | | 4 | | | 5 | | | 4 | | 4.33 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role of site location to species overall population in the sta | | | | 1 | | | 1 | | | 1 | | 1.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Site Context Score | | | | 31 | | | *32.00* | | | *31.00* | | 31.33 |
| *MAX Site Context Score* | | | | *56* | | | *56.00* | | | *56.00* | | *56.00* |
| **Site Context Score - out of 3** | | | | **1.66** | | | ***1.71*** | | | ***1.66*** | | **1.68** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Approximate density (per ha) | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Total SRR Score | | | | 10 | | | 10 | | | 10 | | 10 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | 70 |
| **SRR Score- out of 4** | | | | **0.57** | | | **0.57** | | | **0.57** | | **0.57** |

| Assessment Unit - Regional Ecosystem | AU1 - 11.3.4 | | | | | | | | | | | | | | | | | | Total average % | Total average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | Site 4 HVR | | | Site 6 | | | Site 7 HVR | | | Site 8 | | | Site 10 HVR | | | Average % | Average | | |
| Native plant species richness - grasses | 7 | 7 | 100.0 | 5 | 8 | 114.3 | 5 | 5 | 71.4 | 2.5 | 14 | 200.0 | 5 | 9 | 128.57 | 5 | 122.86 | 4.5 | 113.72 | 4.56 |
| Native plant species richness - forbes | 10 | 21 | 210.0 | 5 | 12 | 120.0 | 5 | 18 | 180.0 | 5 | 14 | 140.0 | 5 | 24 | 240.00 | 5 | 178.00 | 5 | 153.65 | 5.00 |
| Tree canopy height (average of emergent, canopy, sub-canop | 17 | 19 | 111.8 | 5 | 22.5 | 132.4 | 5 | 23.5 | 138.2 | 5 | 14 | 82.4 | 5 | 15 | 88.24 | 3 | 110.59 | 4.6 | 119.56 | 4.87 |
| Tree canopy cover (average of emergent, canopy, sub-canopy | 11 | 35 | 318.2 | 3 | 52.3 | 475.5 | 3 | 22.45 | 204.1 | 4 | 59.9 | 544.5 | 3 | 43.6 | 396.36 | 3 | 387.73 | 3.2 | 228.18 | 3.79 |
| Shrub canopy cover | 1 | 2.1 | 210.0 | 3 | 2.3 | 230.0 | 3 | 1.3 | 130.0 | 5 | 1 | 100.0 | 5 | 15.7 | 1570.00 | 3 | 448.00 | 3.8 | 187.43 | 2.93 |
| Native grass cover | 43 | 4 | 9.3 | 0 | 9.6 | 22.3 | 1 | 0.4 | 0.9 | 0 | 0.2 | 0.5 | 0 | 4.4 | 10.23 | 1 | 8.65 | 0.4 | 23.86 | 1.02 |
| Organic litter | 20 | 65.5 | 327.5 | 3 | 80 | 400.0 | 3 | 58.4 | 292.0 | 3 | 58.6 | 293.0 | 3 | 81.2 | 406.00 | 3 | 343.70 | 3 | 235.38 | 3.67 |
| Large trees (euc plus non-euc) | 35 | 6 | 17.1 | 5 | 28 | 80.0 | 10 | 22 | 62.9 | 10 | 12 | 34.3 | 5 | 10 | 28.57 | 5 | 44.57 | 7 | 129.74 | 11.22 |
| Coarse woody debris | 384 | 384 | 100.0 | 2 | 578 | 150.5 | 5 | 616 | 160.4 | 5 | 368 | 95.8 | 5 | 637 | 165.89 | 5 | 134.53 | 4.4 | 190.28 | 4.47 |
| Non-native plant cover | 0 | 50 | 50.0 | 0 | 1 | 1.0 | 10 | 75 | 75.0 | 0 | 20 | 20.0 | 5 | 10 | 10.00 | 5 | 31.20 | 4 | 13.51 | 6.33 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | 5 | | 5.00 |
| Site Condition Score | | | | 61 | | | 80 | | | 69.5 | | | 71 | | | 68 | | 69.9 | | 75.24 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **1.83** | | | **2.40** | | | **2.09** | | | **2.13** | | | **2.04** | | **2.10** | | **2.26** |
| **Site Context** | | | | | | | | | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Connectedness | | | | 2 | | | 4 | | | 2 | | | 2 | | | 2 | | 2.4 | | 2.47 |
| Context | | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | 4 | | 4.22 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0.00 |
| Role of site location to species overall population in the sta | | | | 1 | | | 1 | | | 1 | | | 1 | | | 1 | | 1 | | 1.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Site Context Score | | | | 31 | | | 33 | | | 31 | | | 31 | | | 31 | | *31.4* | | 31.69 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **1.66** | | | **1.77** | | | **1.66** | | | **1.66** | | | **1.66** | | **1.68** | | **1.70** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0 |
| Species usage of the site (habitat type & evidenced usage) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10 |
| Approximate density (per ha) | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0 |
| Total SRR Score | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | *10* | | 10 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | *70* | | 70 |
| **SRR Score- out of 4** | | | | **0.57** | | | **0.57** | | | **0.57** | | | **0.57** | | | **0.57** | | **0.57** | | **0.57** |

## A.3 Squatter Pigeon

| Assessment Unit - Regional Ecosystem | AU1- 11.3.26 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | Site 1 | | | Site 3 | | | Site 9 | | | Average % | Average |
| | 11.3.26 | Raw Data | % Benchmark | Score | Raw Data | % Benchm | Score | Raw Data | % Benchm | Score | benchm | Score |
| **Site Condition** | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 25 | 25.00 | 3 | 34 | 34 | 3 | 100 | 100 | 5 | 53.00 | 3.67 |
| Native plant species richness - trees | 3 | 4 | 133.33 | 5 | 3 | 100 | 5 | 5 | 166.66667 | 5 | 133.33 | 5.00 |
| Native plant species richness - shrubs | 3 | 7 | 233.33 | 5 | 6 | 200 | 5 | 2 | 66.666667 | 2.5 | 166.67 | 4.17 |
| Native plant species richness - grasses | 13 | 11 | 84.62 | 2.5 | 12 | 92.3077 | 5 | 12 | 92.307692 | 5 | 89.74 | 4.17 |
| Native plant species richness - forbes | 14 | 21 | 150.00 | 5 | 19 | 135.714 | 5 | 17 | 121.42857 | 5 | 135.71 | 5.00 |
| Tree canopy height (average of emergent, canopy, sub-ca | 16.5 | 16 | 96.97 | 5 | 22.2 | 134.545 | 5 | 17.5 | 106.06061 | 5 | 112.53 | 5.00 |
| Tree canopy cover (average of emergent, canopy, sub-can | 30 | 52.3 | 174.33 | 5 | 36.35 | 121.167 | 5 | 47.2 | 157.33333 | 4 | 150.94 | 4.67 |
| Shrub canopy cover | 2 | 1.8 | 90.00 | 5 | 2 | 100 | 5 | 0 | 0 | 0 | 63.33 | 3.33 |
| Native grass cover | 36 | 4.8 | 13.33 | 1 | 17 | 47.2222 | 1 | 2 | 5.5555556 | 0 | 22.04 | 0.67 |
| Organic litter | 32 | 75.4 | 235.63 | 3 | 72.8 | 227.5 | 3 | 80.2 | 250.625 | 3 | 237.92 | 3.00 |
| Large trees (euc plus non-euc) | 16 | 32 | 200.00 | 15 | 34 | 212.5 | 15 | 8 | 50 | 5 | 154.17 | 11.67 |
| Coarse woody debris | 535 | 858 | 160.37 | 5 | 347 | 64.8598 | 5 | 612 | 114.39252 | 5 | 113.21 | 5.00 |
| Non-native plant cover | 0 | 1 | 1.00 | 10 | 10 | 10 | 5 | 5 | 5 | 5 | 5.33 | 6.67 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Condition Score | | | | 89.5 | | | 87 | | | 69.5 | | 82.00 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | 100 | | *100.00* |
| **Site Condition Score - out of 3** | | | | **2.69** | | | **2.61** | | | 2.085 | | **2.46** |
| **Site Context** | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Connectedness | | | | 5 | | | 2 | | | 2 | | 3.00 |
| Context | | | | 5 | | | 4 | | | 4 | | 4.33 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 1 | | | 1 | | | 1 | | 1.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Species mobility capacity | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Context Score | | | | 38 | | | *34.00* | | | *34.00* | | 35.33 |
| *MAX Site Context Score* | | | | *56* | | | *56.00* | | | *56.00* | | *56.00* |
| **Site Context Score - out of 3** | | | | **2.04** | | | ***1.82*** | | | ***1.82*** | | **1.89** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced | | | | 15 | | | 15 | | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Total SRR Score | | | | 35 | | | *35.00* | | | *35.00* | | 35 |
| *MAX SSR Score* | | | | 70 | | | *70.00* | | | *70.00* | | 70 |
| **SRR Score- out of 4** | | | | **2.00** | | | ***2.00*** | | | ***2.00*** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU1- 11.7.6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmar | Site 2 | | | Site 5 | | | Site 11 | | | Average % | Average |
| | 11.7.6 | Raw Data | % Benchr | Score | Raw Data | % Benchr | Score | Raw Data | % Benchr | Score | benchm | Score |
| **Site Condition** | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 50 | 50.00 | 3 | 100 | 100 | 5 | 100 | 100 | 5 | 83.33 | 4.33 |
| Native plant species richness - trees | 6 | 4 | 66.67 | 2.5 | 4 | 66.66667 | 2.5 | 5 | 83.3333 | 2.5 | 72.22 | 2.50 |
| Native plant species richness - shrubs | 13 | 9 | 69.23 | 2.5 | 6 | 46.15385 | 2.5 | 6 | 46.1538 | 2.5 | 53.85 | 2.50 |
| Native plant species richness - grasses | 7 | 11 | 157.14 | 5 | 7 | 100 | 5 | 9 | 128.571 | 5 | 128.57 | 5.00 |
| Native plant species richness - forbes | 12 | 15 | 125.00 | 5 | 18 | 150 | 5 | 20 | 166.667 | 5 | 147.22 | 5.00 |
| Tree canopy height (average of emergent, canopy, sub-ca | 15 | 21.5 | 143.33 | 5 | 18 | 120 | 5 | 21.5 | 143.333 | 5 | 135.56 | 5.00 |
| Tree canopy cover (average of emergent, canopy, sub-can | 27.5 | 14.7 | 53.45 | 2.5 | 65.2 | 237.0909 | 4 | 40.45 | 147.091 | 4 | 145.88 | 3.50 |
| Shrub canopy cover | 7 | 9.5 | 135.71 | 5 | 0.6 | 8.571429 | 0 | 0.6 | 8.57143 | 0 | 50.95 | 1.67 |
| Native grass cover | 15 | 0.4 | 2.67 | 0 | 2.8 | 18.66667 | 1 | 15.2 | 101.333 | 5 | 40.89 | 2.00 |
| Organic litter | 65 | 85.6 | 131.69 | 5 | 86.4 | 132.9231 | 5 | 70.8 | 108.923 | 5 | 124.51 | 5.00 |
| Large trees (euc plus non-euc) | 7 | 10 | 142.86 | 15 | 16 | 228.5714 | 15 | 14 | 200 | 15 | 190.48 | 15.00 |
| Coarse woody debris | 140 | 127 | 90.71 | 5 | 258 | 184.2857 | 5 | 972 | 694.286 | 2 | 323.10 | 4.00 |
| Non-native plant cover | 0 | 1 | 1.00 | 10 | 10 | 10 | 5 | 1 | 1 | 10 | 4.00 | 8.33 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Condition Score | | | | 85.5 | | | *80.00* | | | *86.00* | | 83.8333 |
| *MAX Site Condition Score* | | | | *100* | | | *100.00* | | | *100.00* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.57** | | | ***2.40*** | | | ***2.58*** | | **2.52** |
| **Site Context** | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Connectedness | | | | 2 | | | 2 | | | 2 | | 2.00 |
| Context | | | | 4 | | | 5 | | | 4 | | 4.33 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role of site location to species overall population in the | | | | 1 | | | 1 | | | 1 | | 1.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | 7.00 |
| Species mobility capacity | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Context Score | | | | 34 | | | *35.00* | | | *34.00* | | 34.33 |
| *MAX Site Context Score* | | | | *56* | | | *56.00* | | | *56.00* | | *56.00* |
| **Site Context Score - out of 3** | | | | **1.82** | | | ***1.88*** | | | ***1.82*** | | **1.84** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced | | | | 15 | | | 15 | | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | 10.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | 0.00 |
| Total SRR Score | | | | 35 | | | 35 | | | 35 | | 35 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | 70 |
| **SRR Score- out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU1- 11.3.4 | | | | | | | | | | | | | | | | | | Total average % benchma | Total average score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmar | Site 4 HVR | | | Site 6 | | | Site 7 HVR | | | Site 8 | | | Site 10 HVR | | | Average % benchm | Average Score | | |
| | 11.3.4 | Raw Data | % Benchr | Score | Raw Data | % Benchr | Score | Raw Data | % Benchr | Score | Raw Data | % Benchr | Score | Raw Data | % Benchr | Score | | | | |
| **Site Condition** | | | | | | | | | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 100 | 50.00 | 5 | 100 | 100 | 5 | 80 | 80 | 5 | 100 | 100 | 5 | 100 | 100 | 5 | 86.00 | 5 | 74.11 | 4.33 |
| Native plant species richness - trees | 4 | 4 | 100.00 | 5 | 5 | 125 | 5 | 5 | 125 | 5 | 5 | 125 | 5 | 6 | 150 | 5 | 125.00 | 5 | 110.19 | 4.17 |
| Native plant species richness - shrubs | 2 | 11 | 550.00 | 5 | 6 | 300 | 5 | 3 | 150 | 5 | 10 | 500 | 5 | 7 | 350 | 5 | 370.00 | 5 | 196.84 | 3.89 |
| Native plant species richness - grasses | 7 | 7 | 100.00 | 5 | 8 | 114.286 | 5 | 5 | 71.4286 | 2.5 | 14 | 200 | 5 | 9 | 128.571 | 5 | 122.86 | 4.5 | 113.72 | 4.56 |
| Native plant species richness - forbes | 10 | 21 | 210.00 | 5 | 12 | 120 | 5 | 18 | 180 | 5 | 14 | 140 | 5 | 24 | 240 | 5 | 178.00 | 5 | 153.65 | 5.00 |
| Tree canopy height (average of emergent, canopy, sub-ca | 17 | 19 | 111.76 | 5 | 22.5 | 132.353 | 5 | 23.5 | 138.235 | 5 | 14 | 82.3529 | 5 | 15 | 88.2353 | 3 | 110.59 | 4.6 | 119.56 | 4.87 |
| Tree canopy cover (average of emergent, canopy, sub-can | 11 | 35 | 318.18 | 3 | 52.3 | 475.455 | 3 | 22.45 | 204.091 | 4 | 59.9 | 544.545 | 3 | 43.6 | 396.364 | 3 | 387.73 | 3.2 | 228.18 | 3.79 |
| Shrub canopy cover | 1 | 2.1 | 210.00 | 3 | 2.3 | 230 | 3 | 1.3 | 130 | 5 | 1 | 100 | 5 | 15.7 | 1570 | 3 | 448.00 | 3.8 | 187.43 | 2.93 |
| Native grass cover | 43 | 4 | 9.30 | 0 | 9.6 | 22.3256 | 1 | 0.4 | 0.93023 | 0 | 0.2 | 0.46512 | 0 | 4.4 | 10.2326 | 1 | 8.65 | 0.4 | 23.86 | 1.02 |
| Organic litter | 20 | 65.5 | 327.50 | 3 | 80 | 400 | 3 | 58.4 | 292 | 3 | 58.6 | 293 | 3 | 81.2 | 406 | 3 | 343.70 | 3 | 235.38 | 3.67 |
| Large trees (euc plus non-euc) | 35 | 6 | 17.14 | 5 | 28 | 80 | 10 | 22 | 62.8571 | 10 | 12 | 34.2857 | 5 | 10 | 28.5714 | 5 | 44.57 | 7 | 129.74 | 11.22 |
| Coarse woody debris | 384 | 384 | 100.00 | 2 | 578 | 150.521 | 5 | 616 | 160.417 | 5 | 368 | 95.8333 | 5 | 637 | 165.885 | 5 | 134.53 | 4.4 | 190.28 | 4.47 |
| Non-native plant cover | 0 | 50 | 50.00 | 0 | 1 | 1 | 10 | 75 | 75 | 0 | 20 | 20 | 5 | 10 | 10 | 5 | 31.20 | 4 | 13.51 | 6.33 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Site Condition Score | | | | 66 | | | 85 | | | 74.5 | | | 76 | | | 73 | | 74.9 | | 80.24 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **1.98** | | | **2.55** | | | **2.24** | | | **2.28** | | | **2.19** | | **2.25** | | **2.41** |
| **Site Context** | | | | | | | | | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Connectedness | | | | 2 | | | 4 | | | 2 | | | 2 | | | 2 | | 2.4 | | 2.47 |
| Context | | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | 4 | | 4.22 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0.00 |
| Role of site location to species overall population in the | | | | 1 | | | 1 | | | 1 | | | 1 | | | 1 | | 1 | | 1.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Species mobility capacity | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Site Context Score | | | | 34 | | | 36 | | | 34 | | | 34 | | | 34 | | *34.4* | | 34.69 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **1.82** | | | **1.93** | | | **1.82** | | | **1.82** | | | **1.82** | | **1.84** | | **1.86** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10 |
| Species usage of the site (habitat type & evidenced | | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | 15 | | 15 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0 |
| Total SRR Score | | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | *35* | | 35 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | *70* | | 70 |
| **SRR Score- out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** | | **2.00** |

# Appendix B Modified Queensland Habitat Quality assessment for the offset site

## B.1 Koala

### B.1.1 Habitat quality assessment

| Assessment Unit - Regional Ecosystem | AU1- 11.11.3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | BC6, Lot6, Rem | | | BC7, Lot45, Rem | | | Average % | Average |
| | 11.11.3 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | benchmark | Score |
| **Site Condition** | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 28 | 28.0 | 3 | 28 | 28.0 | 3 | 28.0 | 3 |
| Native plant species richness - trees | 3 | 7 | 233.3 | 5 | 7 | 233.3 | 5 | 233.3 | 5 |
| Native plant species richness - shrubs | 6 | 3 | 50.0 | 2.5 | 5 | 83.3 | 2.5 | 66.7 | 2.5 |
| Native plant species richness - grasses | 6 | 8 | 133.3 | 5 | 6 | 100.0 | 5 | 116.7 | 5 |
| Native plant species richness - forbes | 14 | 15 | 107.1 | 5 | 10 | 71.4 | 2.5 | 89.3 | 3.75 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 21.5 | 12.5 | 58.1 | 4 | 14 | 65.1 | 4 | 61.6 | 4 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 25.5 | 39.15 | 153.5 | 5 | 48.4 | 189.8 | 4 | 171.7 | 4.5 |
| Shrub canopy cover | 9 | 5 | 55.6 | 5 | 6.1 | 67.8 | 5 | 61.7 | 5 |
| Native grass cover | 17 | 15.6 | 91.8 | 5 | 18 | 105.9 | 5 | 98.8 | 5 |
| Organic litter | 50 | 67.4 | 134.8 | 5 | 46 | 92.0 | 5 | 113.4 | 5 |
| Large trees (euc plus non-euc) | 17 | 18 | 105.9 | 15 | 6 | 35.3 | 5 | 70.6 | 10 |
| Coarse woody debris | 642 | 540 | 84.1 | 5 | 135 | 21.0 | 2 | 52.6 | 3.5 |
| Non-native plant cover | 0 | 1 | 1.0 | 10 | 1 | 1.0 | 10 | 1.0 | 10 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | 10 |
| Quality and availability of shelter | | | | 10 | | | 10 | | 10 |
| Site Condition Score | | | | 94.5 | | | 78 | | 86.25 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.84** | | | **2.34** | | **2.59** |
| **Site Context** | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | 10 |
| Connectedness | | | | 2 | | | 2 | | 2 |
| Context | | | | 4 | | | 4 | | 4 |
| Ecological Corridors | | | | 0 | | | 0 | | 0 |
| Role of site location to species overall population in the state | | | | 4 | | | 4 | | 4 |
| Threats to the species | | | | 7 | | | 7 | | 7 |
| Species mobility capacity | | | | 7 | | | 7 | | 7 |
| Site Context Score | | | | 34 | | | 34 | | 34 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **1.82** | | | **1.82** | | **1.82** |
| Species Stocking Rate (SSR) | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | 10 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | 15 |
| Approximate density (per ha) | | | | 10 | | | 10 | | 10 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | 0 |
| **Total SRR score** | | | | 35 | | | 35 | | 35 |
| *MAX SSR Score* | | | | 70 | | | 70 | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU2-11.11.4 | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | BC9,Lot45, Rem | | | THQ2a, Lot45, Rem | | | THQ8a, Lot6, HVR | | | THQ6a, Lot 6, Rem | | | THQ9a, Lot6, Rem | | | THQ7a, Lot 6, Rem | | | THQ1a, Lot 45, Rem | | | Average | Average |
| | 11.11.4 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchm | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | % | Score |
| **Site Condition** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 16.6 | 16.6 | 3 | 100 | 100.0 | 5 | 100 | 100.0 | 5 | 100 | 100.0 | 5 | 60 | 60.0 | 3 | 100 | 100.0 | 5 | 100 | 100.0 | 5 | 82.4 | 4.4 |
| Native plant species richness - trees | 4 | 6 | 150.0 | 5 | 3 | 75.0 | 2.5 | 2 | 50.0 | 2.5 | 3 | 75.0 | 2.5 | 5 | 125.0 | 5 | 4 | 100.0 | 5 | 2 | 50.0 | 2.5 | 89.3 | 3.6 |
| Native plant species richness - shrubs | 9 | 7 | 77.8 | 2.5 | 11 | 122.2 | 5 | 11 | 122.2 | 5 | 18 | 200.0 | 5 | 22 | 244.4 | 5 | 14 | 155.6 | 5 | 29 | 322.2 | 5 | 177.8 | 4.6 |
| Native plant species richness - grasses | 9 | 6 | 66.7 | 2.5 | 6 | 66.7 | 2.5 | 9 | 100.0 | 5 | 7 | 77.8 | 2.5 | 15 | 166.7 | 5 | 7 | 77.8 | 2.5 | 9 | 100.0 | 5 | 93.7 | 3.6 |
| Native plant species richness - forbes | 21 | 12 | 57.1 | 2.5 | 13 | 61.9 | 2.5 | 19 | 90.5 | 2.5 | 14 | 66.7 | 2.5 | 16 | 76.2 | 2.5 | 9 | 42.9 | 2.5 | 17 | 81.0 | 5 | 68.0 | 2.9 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 14 | 84.8 | 4 | 13.5 | 81.8 | 5 | 16 | 97.0 | 5 | 18 | 109.1 | 5 | 17 | 103.0 | 5 | 13 | 78.8 | 5 | 13 | 78.8 | 5 | 90.5 | 4.9 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 27.5 | 42.45 | 154.4 | 4 | 27.4 | 99.6 | 5 | 44.3 | 161.1 | 4 | 26.4 | 96.0 | 5 | 42.1 | 153.1 | 4 | 36.2 | 131.6 | 4 | 33.75 | 122.7 | 2.5 | 131.2 | 4.1 |
| Shrub canopy cover | 17 | 1.6 | 9.4 | 0 | 13 | 76.5 | 5 | 20.65 | 121.5 | 5 | 15.5 | 91.2 | 5 | 10.7 | 62.9 | 5 | 7 | 41.2 | 3 | 30.7 | 180.6 | 5 | 83.3 | 4.0 |
| Native grass cover | 25 | 52.4 | 209.6 | 5 | 15.8 | 63.2 | 3 | 45.4 | 181.6 | 5 | 27 | 108.0 | 5 | 3.8 | 15.2 | 1 | 31 | 124.0 | 5 | 8.8 | 35.2 | 1 | 105.3 | 3.6 |
| Organic litter | 28 | 33 | 117.9 | 5 | 48.4 | 172.9 | 5 | 46.4 | 165.7 | 5 | 34.4 | 122.9 | 5 | 61.8 | 220.7 | 3 | 51.2 | 182.9 | 5 | 22 | 78.6 | 5 | 151.6 | 4.7 |
| Large trees (euc plus non-euc) | 20 | 34 | 170.0 | 15 | 22 | 110.0 | 15 | 6 | 30.0 | 5 | 20 | 100.0 | 10 | 44 | 220.0 | 15 | 18 | 90.0 | 5 | 0 | 0.0 | 0 | 102.9 | 9.3 |
| Coarse woody debris | 496 | 400 | 80.6 | 5 | 66.4 | 13.4 | 5 | 50.2 | 10.1 | 5 | 475 | 95.8 | 5 | 313 | 63.1 | 5 | 241 | 48.6 | 2 | 217 | 43.8 | 2 | 50.8 | 4.1 |
| Non-native plant cover | 0 | 1 | 1.0 | 10 | 2 | 2.0 | 10 | 1 | 1.0 | 10 | 2 | 2.0 | 10 | 1 | 1.0 | 10 | 1 | 1.0 | 10 | 1 | 1.0 | 10 | 1.3 | 10.0 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Condition Score | | | | 83.5 | | | 90.5 | | | 84 | | | 87.5 | | | 88.5 | | | 79 | | | 73 | | 83.7143 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.51** | | | **2.72** | | | **2.52** | | | **2.63** | | | **2.66** | | | **2.37** | | | **2.19** | | **2.51** |
| **Site Context** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 7 | | | 10 | | | 10 | | | 10 | | | 10 | | 9.50 |
| Connectedness | | | | 2 | | | 4 | | | 2 | | | 5 | | | 2 | | | 5 | | | 5 | | 3.83 |
| Context | | | | 4 | | | 5 | | | 5 | | | 5 | | | 4 | | | 5 | | | 4 | | 4.67 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | 4.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7.00 |
| Site Context Score | | | | 34 | | | 37 | | | 32 | | | 38 | | | 34 | | | 38 | | | 37 | | 36.00 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | *56.00* |
| **Site Context Score - out of 3** | | | | **1.82** | | | **1.98** | | | **1.71** | | | **2.04** | | | **1.82** | | | **2.04** | | | **1.98** | | **1.93** |
| Species Stocking Rate (SSR) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0.00 |
| **Total SRR score** | | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | 35.00 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU3-11.11.4 HVR | | | | |
|---|---|---|---|---|---|
| Site Reference | THQ8a, Lot6, HVR | | | Average | Average |
| | Raw Data | % Benchm | Score | % | Score |
| **Site Condition** | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 100.0 | 5 | 100.0 | 5.0 |
| Native plant species richness - trees | 2 | 2.0 | 2.5 | 2.0 | 2.5 |
| Native plant species richness - shrubs | 11 | 7.1 | 5 | 7.1 | 5.0 |
| Native plant species richness - grasses | 9 | 11.6 | 5 | 11.6 | 5.0 |
| Native plant species richness - forbes | 19 | 44.3 | 2.5 | 44.3 | 2.5 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16 | 20.3 | 5 | 20.3 | 5.0 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 44.3 | 33.7 | 4 | 33.7 | 4.0 |
| Shrub canopy cover | 20.65 | 50.2 | 5 | 50.2 | 5.0 |
| Native grass cover | 45.4 | 36.6 | 5 | 36.6 | 5.0 |
| Organic litter | 46.4 | 25.4 | 5 | 25.4 | 5.0 |
| Large trees (euc plus non-euc) | 6 | 6.7 | 5 | 6.7 | 5.0 |
| Coarse woody debris | 50.2 | 103.3 | 5 | 103.3 | 5.0 |
| Non-native plant cover | 1 | 1.0 | 10 | 1.0 | 10.0 |
| Quality and availability of food and foraging habitat | | | 10 | | 10.00 |
| Quality and availability of shelter | | | 10 | | 10.00 |
| Site Condition Score | | | 84 | | 84 |
| *MAX Site Condition Score* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | **2.52** | | **2.52** |
| **Site Context** | | | | | |
| Size of patch | | | 7 | | 7.00 |
| Connectedness | | | 2 | | 2.00 |
| Context | | | 5 | | 5.00 |
| Ecological Corridors | | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | 4 | | 4.00 |
| Threats to the species | | | 7 | | 7.00 |
| Species mobility capacity | | | 7 | | 7.00 |
| Site Context Score | | | 32 | | 32.00 |
| *MAX Site Context Score* | | | *56* | | *56.00* |
| **Site Context Score - out of 3** | | | **1.71** | | **1.71** |
| Species Stocking Rate (SSR) | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced usage) | | | 15 | | 15.00 |
| Approximate density (per ha) | | | 10 | | 10.00 |
| Role/importance of species population on site* | | | 0 | | 0.00 |
| **Total SRR score** | | | 35 | | 35.00 |
| *MAX SSR Score* | | | 70 | | 70 |
| **SSR Score-out of 4** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU4 - 11.3.26 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchma | THQ5a, Lot45, Rem | | | BC8, Lot45, Rem | | | THQ3a, Lot 45, Rem | | | Average | Average |
| | 11.3.26 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | % | Score |
| **Site Condition** | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 100 | 100.0 | 5 | 25 | 25.0 | 3 | 100 | 100.0 | 5 | 75.0 | 4.3 |
| Native plant species richness - trees | 3 | 1 | 33.3 | 2.5 | 4 | 133.3 | 5 | 1 | 33.3 | 2.5 | 66.7 | 3.3 |
| Native plant species richness - shrubs | 3 | 8 | 266.7 | 5 | 8 | 266.7 | 5 | 9 | 300.0 | 5 | 277.8 | 5.0 |
| Native plant species richness - grasses | 13 | 11 | 84.6 | 2.5 | 9 | 69.2 | 2.5 | 14 | 107.7 | 5 | 87.2 | 3.3 |
| Native plant species richness - forbes | 14 | 16 | 114.3 | 5 | 18 | 128.6 | 5 | 31 | 221.4 | 5 | 154.8 | 5.0 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 21 | 127.3 | 5 | 12.5 | 75.8 | 5 | 21 | 127.3 | 5 | 110.1 | 5.0 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 30 | 38.5 | 128.3 | 4 | 37.5 | 125.0 | 5 | 25.9 | 86.3 | 5 | 113.2 | 4.7 |
| Shrub canopy cover | 2 | 5.45 | 272.5 | 3 | 5 | 250.0 | 3 | 3 | 150.0 | 5 | 224.2 | 3.7 |
| Native grass cover | 36 | 37 | 102.8 | 5 | 32 | 88.9 | 3 | 40 | 111.1 | 5 | 100.9 | 4.3 |
| Organic litter | 32 | 41 | 128.1 | 5 | 34.8 | 108.8 | 5 | 38 | 118.8 | 5 | 118.5 | 5.0 |
| Large trees (euc plus non-euc) | 16 | 24 | 150.0 | 15 | 12 | 75.0 | 10 | 12 | 75.0 | 5 | 100.0 | 10.0 |
| Coarse woody debris | 535 | 352 | 65.8 | 5 | 150 | 28.0 | 2 | 331 | 61.9 | 5 | 51.9 | 4.0 |
| Non-native plant cover | 0 | 2 | 2.5 | 10 | 12 | 12.0 | 5 | 2 | 2.0 | 10 | 5.5 | 8.3 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | 10 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | 10 |
| Site Condition Score | | | | 92 | | | 78.5 | | | 87.5 | | 86 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.76** | | | **2.36** | | | **2.63** | | **2.58** |
| **Site Context** | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | 10 |
| Connectedness | | | | 5 | | | 2 | | | 2 | | 3 |
| Context | | | | 5 | | | 4 | | | 4 | | 4.3 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | 0.0 |
| Role of site location to species overall population in the state | | | | 4 | | | 4 | | | 4 | | 4.0 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | 7.0 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | 7.0 |
| Site Context Score | | | | 38 | | | 34 | | | 34 | | 35.3 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **2.04** | | | **1.82** | | | **1.82** | | **1.89** |
| Species Stocking Rate (SSR) | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | 10 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | 15 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | 10 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | 0 |
| **Total SRR score** | | | | 35 | | | 35 | | | 35 | | *35* |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | *70* |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU5- 11.3.26 HVR | | | | | | | | | | | | | | | | | Total average % benchmark | Total average score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmar | THQ10a, Lot 6, HVR | | | THQ4a, Lot6, HVR | | | BC5, Lot 6, HVR | | | BC4, Lot 6, HVR | | | BC10, Lot 6, HVR | | | Average | Average | Average % | Average |
| | 11.3.26 | Raw Data | % Benchm | Score | Raw Data | % Benchm | Score | Raw Data | % Benchma | Score | Raw Data | % Benchma | Score | Raw Data | % Benchm | Score | % | Score | benchmark | Score |
| **Site Condition** | | | | | | | | | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 100 | 100.0 | 5 | 50 | 50.0 | 3 | 25 | 25.0 | 3 | 25 | 25.0 | 3 | 50 | 50.0 | 3 | 50.0 | 3.4 | 67.1 | 4.0 |
| Native plant species richness - trees | 3 | 3 | 100.0 | 5 | 4 | 133.3 | 5 | 4 | 133.3 | 5 | 4 | 133.3 | 5 | 4 | 133.3 | 5 | 126.7 | 5 | 103.6 | 3.9 |
| Native plant species richness - shrubs | 3 | 9 | 300.0 | 5 | 11 | 366.7 | 5 | 2 | 66.7 | 2.5 | 3 | 100.0 | 5 | 6 | 200.0 | 5 | 206.7 | 4.5 | 147.2 | 4.3 |
| Native plant species richness - grasses | 13 | 11 | 84.6 | 5 | 12 | 92.3 | 5 | 7 | 53.8 | 2.5 | 10 | 76.9 | 2.5 | 8 | 61.5 | 2.5 | 73.8 | 3.5 | 76.6 | 4.1 |
| Native plant species richness - forbes | 14 | 18 | 128.6 | 5 | 16 | 114.3 | 5 | 6 | 42.9 | 2.5 | 6 | 42.9 | 2.5 | 17 | 121.4 | 5 | 90.0 | 4 | 89.3 | 3.6 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 19 | 115.2 | 5 | 19.5 | 118.2 | 5 | 10 | 60.6 | 3 | 11.5 | 69.7 | 4 | 10.5 | 63.6 | 3 | 85.5 | 4 | 73.6 | 4.6 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 30 | 20 | 66.7 | 3.5 | 27.9 | 93.0 | 4 | 21.85 | 72.8 | 3.5 | 19.2 | 64.0 | 2.5 | 14.5 | 48.3 | 3.5 | 69.0 | 3.4 | 103.7 | 4.1 |
| Shrub canopy cover | 2 | 1.75 | 87.5 | 5 | 3.6 | 180.0 | 5 | 1 | 50.0 | 5 | 0 | 0.0 | 0 | 0.4 | 20.0 | 3 | 67.5 | 3.6 | 97.4 | 4.3 |
| Native grass cover | 36 | 50 | 138.9 | 5 | 38.1 | 105.8 | 5 | 18 | 50.0 | 3 | 14 | 38.9 | 1 | 7.8 | 21.7 | 1 | 71.1 | 3 | 82.5 | 4.2 |
| Organic litter | 32 | 30.4 | 95.0 | 5 | 44 | 137.5 | 5 | 36.4 | 113.8 | 5 | 38 | 118.8 | 5 | 57.8 | 180.6 | 5 | 129.1 | 5 | 107.6 | 4.9 |
| Large trees (euc plus non-euc) | 16 | 2 | 12.5 | 5 | 0 | 0.0 | 0 | 2 | 12.5 | 5 | 0 | 0.0 | 0 | 8 | 50.0 | 5 | 15.0 | 3 | 59.0 | 7.5 |
| Coarse woody debris | 535 | 0 | 0.0 | 0 | 360 | 67.3 | 5 | 25 | 4.7 | 0 | 20 | 3.7 | 0 | 35 | 6.5 | 0 | 16.4 | 1 | 55.0 | 3.5 |
| Non-native plant cover | 0 | 2 | 5.0 | 10 | 2 | 2.0 | 10 | 5 | 5.0 | 5 | 5 | 5.0 | 5 | 18 | 18.0 | 5 | 7.0 | 7 | 3.2 | 9.1 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 5 | | | 5 | | | 5 | | 7 | | 9.40 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 5 | | | 5 | | | 5 | | 7 | | 9.40 |
| Site Condition Score | | | | 83.5 | | | 82 | | | 55 | | | 45.5 | | | 56 | | 64.4 | | 80.8729 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.51** | | | **2.46** | | | **1.65** | | | **1.37** | | | **1.68** | | **1.93** | | **2.43** |
| **Site Context** | | | | | | | | | | | | | | | | | | | | |
| Size of patch | | | | 7 | | | 7 | | | 10 | | | 10 | | | 10 | | 8.8 | | 9.06 |
| Connectedness | | | | 2 | | | 2 | | | 2 | | | 2 | | | 2 | | 2 | | 2.57 |
| Context | | | | 5 | | | 4 | | | 4 | | | 4 | | | 4 | | 4.2 | | 4.44 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | 4 | | 4.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Site Context Score | | | | 32 | | | 31 | | | 34 | | | 34 | | | 34 | | 33 | | 34.07 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **1.71** | | | **1.66** | | | **1.82** | | | **1.82** | | | **1.82** | | **1.77** | | **1.83** |
| Species Stocking Rate (SSR) | | | | | | | | | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0.00 |
| **Total SRR score** | | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | *35* | | 35.00 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | *70* | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** | | **2.00** |

| Final habitat quality score (weighted) | AU1- 11.11.3 | AU2- 11.11.4 Rem | AU3- 11.11.4 HVR | AU4- 11.3.26 | AU5- 11.3.26 HVR | Average/Final |
|---|---|---|---|---|---|---|
| Site Condition score (out of 3) | 2.59 | 2.51 | 2.52 | 2.58 | 1.93 | 2.55 |
| Site Context Score (out of 3) | 1.82 | 1.93 | 1.71 | 1.89 | 1.82 | 1.84 |
| Species Stocking Rate Score (out of 4) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Habitat Quality score (out of 10) | *6.41* | *6.44* | *6.23* | *6.47* | *5.75* | *6.26* |
| Assessment Unit area (ha) | 2.52 | 460.83 | 1.38 | 151.87 | 110.52 | 727.13 |
| Total offset area (ha) for this MNES | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 |
| Size Weighting | 0.00 | 0.63 | 0.00 | 0.21 | 0.15 | 1.00 |
| ***Weighted Habitat Quality Score*** | ***0.02*** | ***4.08*** | ***0.01*** | ***1.35*** | ***0.87*** | ***6.34*** |

## B.1.2 Modelled future habitat quality assessment

| Final habitat quality score (weighted) | AU1- 11.11.3 | J2- 11.11.4 Re | AU3- 11.11.4 HVI | AU4- 11.3.26 | AU5- 11.3.26 HVR | Average/Final |
|---|---|---|---|---|---|---|
| Site Condition score (out of 3) | 2.68 | 2.58 | 2.63 | 2.74 | 2.33 | 2.66 |
| Site Context Score (out of 3) | 2.25 | 2.36 | 2.14 | 2.32 | 2.25 | 2.27 |
| Species Stocking Rate Score (out of 4) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Habitat Quality score (out of 10) | *6.93* | *6.94* | *6.77* | *7.06* | *6.58* | *6.86* |
| Assessment Unit area (ha) | 2.52 | 460.83 | 1.38 | 151.87 | 110.52 | 727.13 |
| Total offset area (ha) for this MNES | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 |
| Size Weighting | 0.00 | 0.63 | 0.00 | 0.21 | 0.15 | 1.00 |
| ***Weighted Habitat Quality Score*** | ***0.02*** | ***4.40*** | ***0.01*** | ***1.47*** | ***1.00*** | ***6.91*** |

## B.2 Greater Glider

### B.2.1 Habitat quality assessment

| Assessment Unit - Regional Ecosystem | AU1- 11.11.3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | BC6, Lot6, Rem | | | BC7, Lot45, Rem | | | Average % | Average |
| | 11.11.3 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | benchmark | Score |
| **Site Condition** | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 28 | 28.0 | 3 | 28 | 28.0 | 3 | 28.0 | 3 |
| Native plant species richness - trees | 3 | 7 | 233.3 | 5 | 7 | 233.3 | 5 | 233.3 | 5 |
| Native plant species richness - shrubs | 6 | 3 | 50.0 | 2.5 | 5 | 83.3 | 2.5 | 66.7 | 2.5 |
| Native plant species richness - grasses | 6 | 8 | 133.3 | 5 | 6 | 100.0 | 5 | 116.7 | 5 |
| Native plant species richness - forbes | 14 | 15 | 107.1 | 5 | 10 | 71.4 | 2.5 | 89.3 | 3.75 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 21.5 | 12.5 | 58.1 | 4 | 14 | 65.1 | 4 | 61.6 | 4 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 25.5 | 39.15 | 153.5 | 5 | 48.4 | 189.8 | 4 | 171.7 | 4.5 |
| Shrub canopy cover | 9 | 5 | 55.6 | 5 | 6.1 | 67.8 | 5 | 61.7 | 5 |
| Native grass cover | 17 | 15.6 | 91.8 | 5 | 18 | 105.9 | 5 | 98.8 | 5 |
| Organic litter | 50 | 67.4 | 134.8 | 5 | 46 | 92.0 | 5 | 113.4 | 5 |
| Large trees (euc plus non-euc) | 17 | 18 | 105.9 | 15 | 6 | 35.3 | 5 | 70.6 | 10 |
| Coarse woody debris | 642 | 540 | 84.1 | 5 | 135 | 21.0 | 2 | 52.6 | 3.5 |
| Non-native plant cover | 0 | 1 | 1.0 | 10 | 1 | 1.0 | 10 | 1.0 | 10 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | 10 |
| Quality and availability of shelter | | | | 10 | | | 10 | | 10 |
| Site Condition Score | | | | 94.5 | | | 78 | | 86.25 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.84** | | | **2.34** | | **2.59** |
| **Site Context** | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | 10 |
| Connectedness | | | | 2 | | | 2 | | 2 |
| Context | | | | 4 | | | 4 | | 4 |
| Ecological Corridors | | | | 0 | | | 0 | | 0 |
| Role of site location to species overall population in the state | | | | 4 | | | 4 | | 4 |
| Threats to the species | | | | 7 | | | 7 | | 7 |
| Species mobility capacity | | | | 7 | | | 7 | | 7 |
| Site Context Score | | | | 34 | | | 34 | | 34 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **1.82** | | | **1.82** | | **1.82** |
| Species Stocking Rate (SSR) | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | 10 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | 15 |
| Approximate density (per ha) | | | | 10 | | | 10 | | 10 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | 0 |
| **Total SRR score** | | | | 35 | | | 35 | | 35 |
| *MAX SSR Score* | | | | 70 | | | 70 | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU2- 11.11.4 | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | BC9,Lot45, Rem | | | THQ2a, Lot45, Rem | | | THQ6a, Lot 6, Rem | | | THQ9a, Lot6, Rem | | | THQ7a, Lot 6, Rem | | | THQ1a, Lot 45, Rem | | | Average | Average |
| | 11.11.4 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | % | Score |
| **Site Condition** | | | | | | | | | | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 16.6 | 16.6 | 3 | 100 | 100.0 | 5 | 100 | 100.0 | 5 | 60 | 60.0 | 3 | 100 | 100.0 | 5 | 100 | 100.0 | 5 | 79.4 | 4.3 |
| Native plant species richness - trees | 4 | 6 | 150.0 | 5 | 3 | 75.0 | 2.5 | 3 | 75.0 | 2.5 | 5 | 125.0 | 5 | 4 | 100.0 | 5 | 2 | 50.0 | 2.5 | 95.8 | 3.8 |
| Native plant species richness - shrubs | 9 | 7 | 77.8 | 2.5 | 11 | 122.2 | 5 | 18 | 200.0 | 5 | 22 | 244.4 | 5 | 14 | 155.6 | 5 | 29 | 322.2 | 5 | 187.0 | 4.6 |
| Native plant species richness - grasses | 9 | 6 | 66.7 | 2.5 | 6 | 66.7 | 2.5 | 7 | 77.8 | 2.5 | 15 | 166.7 | 5 | 7 | 77.8 | 2.5 | 9 | 100.0 | 5 | 92.6 | 3.3 |
| Native plant species richness - forbes | 21 | 12 | 57.1 | 2.5 | 13 | 61.9 | 2.5 | 14 | 66.7 | 2.5 | 16 | 76.2 | 2.5 | 9 | 42.9 | 2.5 | 17 | 81.0 | 5 | 64.3 | 2.9 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 14 | 84.8 | 4 | 13.5 | 81.8 | 5 | 18 | 109.1 | 5 | 17 | 103.0 | 5 | 13 | 78.8 | 5 | 13 | 78.8 | 5 | 89.4 | 4.8 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 27.5 | 42.45 | 154.4 | 4 | 27.4 | 99.6 | 5 | 26.4 | 96.0 | 5 | 42.1 | 153.1 | 4 | 36.2 | 131.6 | 4 | 33.75 | 122.7 | 2.5 | 126.2 | 4.1 |
| Shrub canopy cover | 17 | 1.6 | 9.4 | 0 | 13 | 76.5 | 5 | 15.5 | 91.2 | 5 | 10.7 | 62.9 | 5 | 7 | 41.2 | 3 | 30.7 | 180.6 | 5 | 77.0 | 3.8 |
| Native grass cover | 25 | 52.4 | 209.6 | 5 | 15.8 | 63.2 | 3 | 27 | 108.0 | 5 | 3.8 | 15.2 | 1 | 31 | 124.0 | 5 | 8.8 | 35.2 | 1 | 92.5 | 3.3 |
| Organic litter | 28 | 33 | 117.9 | 5 | 48.4 | 172.9 | 5 | 34.4 | 122.9 | 5 | 61.8 | 220.7 | 3 | 51.2 | 182.9 | 5 | 22 | 78.6 | 5 | 149.3 | 4.7 |
| Large trees (euc plus non-euc) | 20 | 34 | 170.0 | 15 | 22 | 110.0 | 15 | 20 | 100.0 | 10 | 44 | 220.0 | 15 | 18 | 90.0 | 5 | 0 | 0.0 | 0 | 115.0 | 10.0 |
| Coarse woody debris | 496 | 400 | 80.6 | 5 | 66.4 | 13.4 | 5 | 475 | 95.8 | 5 | 313 | 63.1 | 5 | 241 | 48.6 | 2 | 217 | 43.8 | 2 | 57.5 | 4.0 |
| Non-native plant cover | 0 | 1 | 1.0 | 10 | 2 | 2.0 | 10 | 2 | 2.0 | 10 | 1 | 1.0 | 10 | 1 | 1.0 | 10 | 1 | 1.0 | 10 | 1.3 | 10.0 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Condition Score | | | | 83.5 | | | 90.5 | | | 87.5 | | | 88.5 | | | 79 | | | 73 | | 83.6667 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.51** | | | **2.72** | | | **2.63** | | | **2.66** | | | **2.37** | | | **2.19** | | **2.51** |
| **Site Context** | | | | | | | | | | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Connectedness | | | | 2 | | | 4 | | | 5 | | | 2 | | | 5 | | | 5 | | 3.83 |
| Context | | | | 4 | | | 5 | | | 5 | | | 4 | | | 5 | | | 4 | | 4.50 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | 4.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7.00 |
| Site Context Score | | | | 34 | | | 37 | | | 38 | | | 34 | | | 38 | | | 37 | | 36.33 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | *56.00* |
| **Site Context Score - out of 3** | | | | **1.82** | | | **1.98** | | | **2.04** | | | **1.82** | | | **2.04** | | | **1.98** | | **1.95** |
| Species Stocking Rate (SSR) | | | | | | | | | | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0.00 |
| **Total SRR score** | | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | 35.00 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU3- 11.11.4 HVR | | | | | |
|---|---|---|---|---|---|---|
| Site Reference | Benchmark | THQ8a, Lot6, HVR | | | Average | Average |
| | 11.11.4 | Raw Data | % Benchmark | Score | % | Score |
| **Site Condition** | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 100 | 100.0 | 5 | 100.0 | 5.00 |
| Native plant species richness - trees | 4 | 2 | 50.0 | 2.5 | 50.0 | 2.50 |
| Native plant species richness - shrubs | 9 | 11 | 122.2 | 5 | 122.2 | 5.00 |
| Native plant species richness - grasses | 9 | 9 | 100.0 | 5 | 100.0 | 5.00 |
| Native plant species richness - forbes | 21 | 19 | 90.5 | 2.5 | 90.5 | 2.50 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 16 | 97.0 | 5 | 97.0 | 5.00 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 27.5 | 44.3 | 161.1 | 4 | 161.1 | 4.00 |
| Shrub canopy cover | 17 | 20.65 | 121.5 | 5 | 121.5 | 5.00 |
| Native grass cover | 25 | 45.4 | 181.6 | 5 | 181.6 | 5.00 |
| Organic litter | 28 | 46.4 | 165.7 | 5 | 165.7 | 5.00 |
| Large trees (euc plus non-euc) | 20 | 6 | 30.0 | 5 | 30.0 | 5.00 |
| Coarse woody debris | 496 | 50.2 | 10.1 | 5 | 10.1 | 5.00 |
| Non-native plant cover | 0 | 1 | 1.0 | 10 | 1.0 | 10.00 |
| Quality and availability of food and foraging habitat | | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | 10.00 |
| Site Condition Score | | | | 84 | | 84 |
| *MAX Site Condition Score* | | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.52** | | **2.52** |
| **Site Context** | | | | | | |
| Size of patch | | | | 7 | | 7.00 |
| Connectedness | | | | 2 | | 2.00 |
| Context | | | | 5 | | 5.00 |
| Ecological Corridors | | | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 4 | | 4.00 |
| Threats to the species | | | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | 7.00 |
| Site Context Score | | | | 32 | | 32.00 |
| *MAX Site Context Score* | | | | *56* | | *56.00* |
| **Site Context Score - out of 3** | | | | **1.71** | | **1.71** |
| Species Stocking Rate (SSR) | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 10 | | 10.00 |
| Role/importance of species population on site* | | | | 0 | | 0.00 |
| **Total SRR score** | | | | 35 | | 35.00 |
| *MAX SSR Score* | | | | 70 | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU4- 11.3.26 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | THQ5a, Lot45, Rem | | | BC8, Lot45, Rem | | | THQ3a, Lot 45, Rem | | | Average | Average |
| | 11.3.26 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | % | Score |
| **Site Condition** | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 100 | 100.0 | 5 | 25 | 25.0 | 3 | 100 | 100.0 | 5 | 75.0 | 4.3 |
| Native plant species richness - trees | 3 | 1 | 33.3 | 2.5 | 4 | 133.3 | 5 | 1 | 33.3 | 2.5 | 66.7 | 3.3 |
| Native plant species richness - shrubs | 3 | 8 | 266.7 | 5 | 8 | 266.7 | 5 | 9 | 300.0 | 5 | 277.8 | 5.0 |
| Native plant species richness - grasses | 13 | 11 | 84.6 | 2.5 | 9 | 69.2 | 2.5 | 14 | 107.7 | 5 | 87.2 | 3.3 |
| Native plant species richness - forbes | 14 | 16 | 114.3 | 5 | 18 | 128.6 | 5 | 31 | 221.4 | 5 | 154.8 | 5.0 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 21 | 127.3 | 5 | 12.5 | 75.8 | 5 | 21 | 127.3 | 5 | 110.1 | 5.0 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 30 | 38.5 | 128.3 | 4 | 37.5 | 125.0 | 5 | 25.9 | 86.3 | 5 | 113.2 | 4.7 |
| Shrub canopy cover | 2 | 5.45 | 272.5 | 3 | 5 | 250.0 | 3 | 3 | 150.0 | 5 | 224.2 | 3.7 |
| Native grass cover | 36 | 37 | 102.8 | 5 | 32 | 88.9 | 3 | 40 | 111.1 | 5 | 100.9 | 4.3 |
| Organic litter | 32 | 41 | 128.1 | 5 | 34.8 | 108.8 | 5 | 38 | 118.8 | 5 | 118.5 | 5.0 |
| Large trees (euc plus non-euc) | 16 | 24 | 150.0 | 15 | 12 | 75.0 | 10 | 12 | 75.0 | 5 | 100.0 | 10.0 |
| Coarse woody debris | 535 | 352 | 65.8 | 5 | 150 | 28.0 | 2 | 331 | 61.9 | 5 | 51.9 | 4.0 |
| Non-native plant cover | 0 | 2 | 2.5 | 10 | 12 | 12.0 | 5 | 2 | 2.0 | 10 | 5.5 | 8.3 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | 10 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | 10 |
| Site Condition Score | | | | 92 | | | 78.5 | | | 87.5 | | 86 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.76** | | | **2.36** | | | **2.63** | | **2.58** |
| **Site Context** | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | 10.0 |
| Connectedness | | | | 5 | | | 2 | | | 2 | | 3.0 |
| Context | | | | 5 | | | 4 | | | 4 | | 4.3 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | 0.0 |
| Role of site location to species overall population in the state | | | | 4 | | | 4 | | | 4 | | 4.0 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | 7.0 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | 7.0 |
| Site Context Score | | | | 38 | | | 34 | | | 34 | | 35.3 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | *56.0* |
| **Site Context Score - out of 3** | | | | **2.04** | | | **1.82** | | | **1.82** | | **1.89** |
| Species Stocking Rate (SSR) | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | 10 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | 15 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | 10 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | 0 |
| **Total SRR score** | | | | 35 | | | 35 | | | 35 | | *35* |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | *70* |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU5- 11.3.26 HVR | | | | | | | | | | | | | | | | | Total average % benchmark | Total average score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | THQ10a, Lot 6, HVR | | | THQ4a, Lot6, HVR | | | BC5, Lot 6, HVR | | | BC4, Lot 6, HVR | | | BC10, Lot 6, HVR | | | Average | Average | Average % | Average |
| | 11.3.26 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | % | Score | benchmark | Score |
| **Site Condition** | | | | | | | | | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 100 | 100.0 | 5 | 50 | 50.0 | 3 | 25 | 25.0 | 3 | 25 | 25.0 | 3 | 50 | 50.0 | 3 | 50.0 | 3.4 | 66.5 | 4.01 |
| Native plant species richness - trees | 3 | 3 | 100.0 | 5 | 4 | 133.3 | 5 | 4 | 133.3 | 5 | 4 | 133.3 | 5 | 4 | 133.3 | 5 | 126.7 | 5 | 114.5 | 3.92 |
| Native plant species richness - shrubs | 3 | 9 | 300.0 | 5 | 11 | 366.7 | 5 | 2 | 66.7 | 2.5 | 3 | 100.0 | 5 | 6 | 200.0 | 5 | 206.7 | 4.5 | 172.1 | 4.32 |
| Native plant species richness - grasses | 13 | 11 | 84.6 | 5 | 12 | 92.3 | 5 | 7 | 53.8 | 2.5 | 10 | 76.9 | 2.5 | 8 | 61.5 | 2.5 | 73.8 | 3.5 | 94.1 | 4.03 |
| Native plant species richness - forbes | 14 | 18 | 128.6 | 5 | 16 | 114.3 | 5 | 6 | 42.9 | 2.5 | 6 | 42.9 | 2.5 | 17 | 121.4 | 5 | 90.0 | 4 | 97.8 | 3.63 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 19 | 115.2 | 5 | 19.5 | 118.2 | 5 | 10 | 60.6 | 3 | 11.5 | 69.7 | 4 | 10.5 | 63.6 | 3 | 85.5 | 4 | 88.7 | 4.57 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 30 | 20 | 66.7 | 3.5 | 27.9 | 93.0 | 4 | 21.85 | 72.8 | 3.5 | 19.2 | 64.0 | 2.5 | 14.5 | 48.3 | 3.5 | 69.0 | 3.4 | 128.2 | 4.13 |
| Shrub canopy cover | 2 | 1.75 | 87.5 | 5 | 3.6 | 180.0 | 5 | 1 | 50.0 | 5 | 0 | 0.0 | 0 | 0.4 | 20.0 | 3 | 67.5 | 3.6 | 110.4 | 4.22 |
| Native grass cover | 36 | 50 | 138.9 | 5 | 38.1 | 105.8 | 5 | 18 | 50.0 | 3 | 14 | 38.9 | 1 | 7.8 | 21.7 | 1 | 71.1 | 3 | 109.0 | 4.13 |
| Organic litter | 32 | 30.4 | 95.0 | 5 | 44 | 137.5 | 5 | 36.4 | 113.8 | 5 | 38 | 118.8 | 5 | 57.8 | 180.6 | 5 | 129.1 | 5 | 135.2 | 4.93 |
| Large trees (euc plus non-euc) | 16 | 2 | 12.5 | 5 | 0 | 0.0 | 0 | 2 | 12.5 | 5 | 0 | 0.0 | 0 | 8 | 50.0 | 5 | 15.0 | 3 | 66.1 | 7.60 |
| Coarse woody debris | 535 | 0 | 0.0 | 0 | 360 | 67.3 | 5 | 25 | 4.7 | 0 | 20 | 3.7 | 0 | 35 | 6.5 | 0 | 16.4 | 1 | 37.7 | 3.50 |
| Non-native plant cover | 0 | 2 | 5.0 | 10 | 2 | 2.0 | 10 | 5 | 5.0 | 5 | 5 | 5.0 | 5 | 18 | 18.0 | 5 | 7.0 | 7 | 3.2 | 9.07 |
| Quality and availability of food and foraging habitat | | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | 5 | | 9.00 |
| Quality and availability of shelter | | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | 5 | | 9.00 |
| Site Condition Score | | | | 73.5 | | | 72 | | | 55 | | | 45.5 | | | 56 | | 60.4 | | 80.0633 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.21** | | | **2.16** | | | **1.65** | | | **1.37** | | | **1.68** | | **1.81** | | **2.40** |
| **Site Context** | | | | | | | | | | | | | | | | | | | | |
| Size of patch | | | | 7 | | | 7 | | | 10 | | | 10 | | | 10 | | 8.8 | | 9.16 |
| Connectedness | | | | 2 | | | 2 | | | 2 | | | 2 | | | 2 | | 2 | | 2.57 |
| Context | | | | 5 | | | 4 | | | 4 | | | 4 | | | 4 | | 4.2 | | 4.41 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 4 | | | 4 | | | 4 | | | 4 | | | 4 | | 4 | | 4.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Species mobility capacity | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Site Context Score | | | | 32 | | | 31 | | | 34 | | | 34 | | | 34 | | 33 | | 34.13 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **1.71** | | | **1.66** | | | **1.82** | | | **1.82** | | | **1.82** | | **1.77** | | **1.83** |
| Species Stocking Rate (SSR) | | | | | | | | | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0.00 |
| **Total SRR score** | | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | *35* | | 35.00 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | *70* | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** | | **2.00** |

| Final habitat quality score (weighted) | AU1-11.11.3 | AU2- 11.11.4 Rem | AU3-11.11.4 HVR | AU4-11.3.26 | AU5-11.3.26 HVR | Average/Final |
|---|---|---|---|---|---|---|
| Site Condition score (out of 3) | 2.59 | 2.51 | 2.52 | 2.58 | 1.81 | 2.55 |
| Site Context Score (out of 3) | 1.82 | 1.95 | 1.71 | 1.89 | 1.82 | 1.84 |
| Species Stocking Rate Score (out of 4) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Habitat Quality score (out of 10) | *6.41* | *6.46* | *6.23* | *6.47* | *5.63* | *6.24* |
| Assessment Unit area (ha) | 2.52 | 460.83 | 1.38 | 151.87 | 110.52 | 727.13 |
| Total offset area (ha) for this MNES | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 |
| Size Weighting | 0.00 | 0.63 | 0.00 | 0.21 | 0.15 | 1.00 |
| ***Weighted Habitat Quality Score*** | ***0.02*** | ***4.09*** | ***0.01*** | ***1.35*** | ***0.86*** | ***6.33*** |

## B.2.2 Modelled future habitat quality assessment

| Final habitat quality score (weighted) | AU1-11.11.3 | Au2- 11.11.4 Rem | AU3-11.11.4 HVR | AU4-11.3.26 | AU5-11.3.26 HVR | Average/Final |
|---|---|---|---|---|---|---|
| Site Condition score (out of 3) | 2.69 | 2.60 | 2.63 | 2.71 | 2.32 | 2.66 |
| Site Context Score (out of 3) | 2.25 | 2.38 | 2.14 | 2.32 | 2.25 | 2.27 |
| Species Stocking Rate Score (out of 4) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Habitat Quality score (out of 10) | *6.94* | *6.97* | *6.77* | *7.03* | *6.57* | *6.86* |
| Assessment Unit area (ha) | 2.52 | 460.83 | 1.38 | 151.87 | 110.52 | |
| Total offset area (ha) for this MNES | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 | |
| Size Weighting | 0.00 | 0.63 | 0.00 | 0.21 | 0.15 | |
| ***Weighted Habitat Quality Score*** | ***0.02*** | ***4.42*** | ***0.01*** | ***1.47*** | ***1.00*** | ***6.92*** |

# B.3 Squatter Pigeon

## B.3.1 Habitat quality assessment

| Assessment Unit - Regional Ecosystem | AU1- 11.11.3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | BC6, Lot6, Rem | | | BC7, Lot45, Rem | | | Average % | Average |
| | 11.11.3 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | benchmark | Score |
| **Site Condition** | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 28 | 28.0 | 3 | 28 | 28.0 | 3 | 28.0 | 3 |
| Native plant species richness - trees | 3 | 7 | 233.3 | 5 | 7 | 233.3 | 5 | 233.3 | 5 |
| Native plant species richness - shrubs | 6 | 3 | 50.0 | 2.5 | 5 | 83.3 | 2.5 | 66.7 | 2.5 |
| Native plant species richness - grasses | 6 | 8 | 133.3 | 5 | 6 | 100.0 | 5 | 116.7 | 5 |
| Native plant species richness - forbes | 14 | 15 | 107.1 | 5 | 10 | 71.4 | 2.5 | 89.3 | 3.75 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 21.5 | 12.5 | 58.1 | 4 | 14 | 65.1 | 4 | 61.6 | 4 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 25.5 | 39.15 | 153.5 | 5 | 48.4 | 189.8 | 4 | 171.7 | 4.5 |
| Shrub canopy cover | 9 | 5 | 55.6 | 5 | 6.1 | 67.8 | 5 | 61.7 | 5 |
| Native grass cover | 17 | 15.6 | 91.8 | 5 | 18 | 105.9 | 5 | 98.8 | 5 |
| Organic litter | 50 | 67.4 | 134.8 | 5 | 46 | 92.0 | 5 | 113.4 | 5 |
| Large trees (euc plus non-euc) | 17 | 18 | 105.9 | 15 | 6 | 35.3 | 5 | 70.6 | 10 |
| Coarse woody debris | 642 | 540 | 84.1 | 5 | 135 | 21.0 | 2 | 52.6 | 3.5 |
| Non-native plant cover | 0 | 1 | 1.0 | 10 | 1 | 1.0 | 10 | 1.0 | 10 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | 10 |
| Quality and availability of shelter | | | | 10 | | | 10 | | 10 |
| Site Condition Score | | | | 94.5 | | | 78 | | 86.25 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.84** | | | **2.34** | | **2.59** |
| **Site Context** | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | 10 |
| Connectedness | | | | 2 | | | 2 | | 2 |
| Context | | | | 4 | | | 4 | | 4 |
| Ecological Corridors | | | | 0 | | | 0 | | 0 |
| Role of site location to species overall population in the state | | | | 1 | | | 1 | | 1 |
| Threats to the species | | | | 7 | | | 7 | | 7 |
| Species mobility capacity | | | | 10 | | | 10 | | 10 |
| Site Context Score | | | | 34 | | | 34 | | 34 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **1.82** | | | **1.82** | | **1.82** |
| Species Stocking Rate (SSR) | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | 10 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | 15 |
| Approximate density (per ha) | | | | 10 | | | 10 | | 10 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | 0 |
| **Total SRR score** | | | | 35 | | | 35 | | 35 |
| *MAX SSR Score* | | | | 70 | | | 70 | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU2- 11.11.4 | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | BC9,Lot45, Rem | | | THQ2a, Lot45, Rem | | | THQ6a, Lot 6, Rem | | | THQ9a, Lot6, Rem | | | THQ7a, Lot 6, Rem | | | THQ1a, Lot 45, Rem | | | Average | Average |
| | 11.11.4 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | % | Score |
| **Site Condition** | | | | | | | | | | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 16.6 | 16.6 | 3 | 100 | 100.0 | 5 | 100 | 100.0 | 5 | 60 | 60.0 | 3 | 100 | 100.0 | 5 | 100 | 100.0 | 5 | 79.4 | 4.3 |
| Native plant species richness - trees | 4 | 6 | 150.0 | 5 | 3 | 75.0 | 2.5 | 3 | 75.0 | 2.5 | 5 | 125.0 | 5 | 4 | 100.0 | 5 | 2 | 50.0 | 2.5 | 95.8 | 3.8 |
| Native plant species richness - shrubs | 9 | 7 | 77.8 | 2.5 | 11 | 122.2 | 5 | 18 | 200.0 | 5 | 22 | 244.4 | 5 | 14 | 155.6 | 5 | 29 | 322.2 | 5 | 187.0 | 4.6 |
| Native plant species richness - grasses | 9 | 6 | 66.7 | 2.5 | 6 | 66.7 | 2.5 | 7 | 77.8 | 2.5 | 15 | 166.7 | 5 | 7 | 77.8 | 2.5 | 9 | 100.0 | 5 | 92.6 | 3.3 |
| Native plant species richness - forbes | 21 | 12 | 57.1 | 2.5 | 13 | 61.9 | 2.5 | 14 | 66.7 | 2.5 | 16 | 76.2 | 2.5 | 9 | 42.9 | 2.5 | 17 | 81.0 | 5 | 64.3 | 2.9 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 14 | 84.8 | 4 | 13.5 | 81.8 | 5 | 18 | 109.1 | 5 | 17 | 103.0 | 5 | 13 | 78.8 | 5 | 13 | 78.8 | 5 | 89.4 | 4.8 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 27.5 | 42.45 | 154.4 | 4 | 27.4 | 99.6 | 5 | 26.4 | 96.0 | 5 | 42.1 | 153.1 | 4 | 36.2 | 131.6 | 4 | 33.75 | 122.7 | 2.5 | 126.2 | 4.1 |
| Shrub canopy cover | 17 | 1.6 | 9.4 | 0 | 13 | 76.5 | 5 | 15.5 | 91.2 | 5 | 10.7 | 62.9 | 5 | 7 | 41.2 | 3 | 30.7 | 180.6 | 5 | 77.0 | 3.8 |
| Native grass cover | 25 | 52.4 | 209.6 | 5 | 15.8 | 63.2 | 3 | 27 | 108.0 | 5 | 3.8 | 15.2 | 1 | 31 | 124.0 | 5 | 8.8 | 35.2 | 1 | 92.5 | 3.3 |
| Organic litter | 28 | 33 | 117.9 | 5 | 48.4 | 172.9 | 5 | 34.4 | 122.9 | 5 | 61.8 | 220.7 | 3 | 51.2 | 182.9 | 5 | 22 | 78.6 | 5 | 149.3 | 4.7 |
| Large trees (euc plus non-euc) | 20 | 34 | 170.0 | 15 | 22 | 110.0 | 15 | 20 | 100.0 | 10 | 44 | 220.0 | 15 | 18 | 90.0 | 5 | 0 | 0.0 | 0 | 115.0 | 10.0 |
| Coarse woody debris | 496 | 400 | 80.6 | 5 | 66.4 | 13.4 | 5 | 475 | 95.8 | 5 | 313 | 63.1 | 5 | 241 | 48.6 | 2 | 217 | 43.8 | 2 | 57.5 | 4.0 |
| Non-native plant cover | 0 | 1 | 1.0 | 10 | 2 | 2.0 | 10 | 2 | 2.0 | 10 | 1 | 1.0 | 10 | 1 | 1.0 | 10 | 1 | 1.0 | 10 | 1.3 | 10.0 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Condition Score | | | | 83.5 | | | 90.5 | | | 87.5 | | | 88.5 | | | 79 | | | 73 | | 83.6667 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.51** | | | **2.72** | | | **2.63** | | | **2.66** | | | **2.37** | | | **2.19** | | **2.51** |
| **Site Context** | | | | | | | | | | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Connectedness | | | | 2 | | | 4 | | | 5 | | | 2 | | | 5 | | | 5 | | 3.83 |
| Context | | | | 4 | | | 5 | | | 5 | | | 4 | | | 5 | | | 4 | | 4.50 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 1 | | | 1 | | | 1 | | | 1 | | | 1 | | | 1 | | 1.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7.00 |
| Species mobility capacity | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Site Context Score | | | | 34 | | | 37 | | | 38 | | | 34 | | | 38 | | | 37 | | 36.33 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | *56.00* |
| **Site Context Score - out of 3** | | | | **1.82** | | | **1.98** | | | **2.04** | | | **1.82** | | | **2.04** | | | **1.98** | | **1.95** |
| **Species Stocking Rate (SSR)** | | | | | | | | | | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0.00 |
| **Total SRR score** | | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | 35.00 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU3- 11.11.4 HVR | | | | |
|---|---|---|---|---|---|
| Site Reference | THQ8a, Lot6, HVR | | | Average % | Average |
| | Raw Data | % Benchmark | Score | benchmark | Score |
| **Site Condition** | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 100.0 | 5 | 100.0 | 5.00 |
| Native plant species richness - trees | 2 | 2.0 | 2.5 | 2.0 | 2.50 |
| Native plant species richness - shrubs | 11 | 7.1 | 5 | 7.1 | 5.00 |
| Native plant species richness - grasses | 9 | 11.6 | 5 | 11.6 | 5.00 |
| Native plant species richness - forbes | 19 | 44.3 | 2.5 | 44.3 | 2.50 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16 | 20.3 | 5 | 20.3 | 5.00 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 44.3 | 33.7 | 4 | 33.7 | 4.00 |
| Shrub canopy cover | 20.65 | 50.2 | 5 | 50.2 | 5.00 |
| Native grass cover | 45.4 | 36.6 | 5 | 36.6 | 5.00 |
| Organic litter | 46.4 | 25.4 | 5 | 25.4 | 5.00 |
| Large trees (euc plus non-euc) | 6 | 6.7 | 5 | 6.7 | 5.00 |
| Coarse woody debris | 50.2 | 103.3 | 5 | 103.3 | 5.00 |
| Non-native plant cover | 1 | 1.0 | 10 | 1.0 | 10.00 |
| Quality and availability of food and foraging habitat | | | 10 | | 10.00 |
| Quality and availability of shelter | | | 10 | | 10.00 |
| Site Condition Score | | | 84 | | 84 |
| *MAX Site Condition Score* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | **2.52** | | **2.52** |
| **Site Context** | | | | | |
| Size of patch | | | 7 | | 7.00 |
| Connectedness | | | 2 | | 2.00 |
| Context | | | 5 | | 5.00 |
| Ecological Corridors | | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | 1 | | 1.00 |
| Threats to the species | | | 7 | | 7.00 |
| Species mobility capacity | | | 10 | | 10.00 |
| Site Context Score | | | 32 | | 32.00 |
| *MAX Site Context Score* | | | *56* | | *56.00* |
| **Site Context Score - out of 3** | | | **1.71** | | **1.71** |
| Species Stocking Rate (SSR) | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced usage) | | | 15 | | 15.00 |
| Approximate density (per ha) | | | 10 | | 10.00 |
| Role/importance of species population on site* | | | 0 | | 0.00 |
| **Total SRR score** | | | 35 | | 35.00 |
| *MAX SSR Score* | | | 70 | | 70 |
| **SSR Score-out of 4** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU4- 11.3.26 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | THQ5a, Lot45, Rem | | | THQ3a, Lot 45, Rem | | | BC8, Lot45, Rem | | | Average | Average |
| | 11.3.26 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | % | Score |
| **Site Condition** | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 100 | 100.0 | 5 | 100 | 100.0 | 5 | 25 | 25.0 | 3 | 75.0 | 4.3 |
| Native plant species richness - trees | 3 | 1 | 33.3 | 2.5 | 1 | 33.3 | 2.5 | 4 | 133.3 | 5 | 66.7 | 3.3 |
| Native plant species richness - shrubs | 3 | 8 | 266.7 | 5 | 9 | 300.0 | 5 | 8 | 266.7 | 5 | 277.8 | 5.0 |
| Native plant species richness - grasses | 13 | 11 | 84.6 | 2.5 | 14 | 107.7 | 5 | 9 | 69.2 | 2.5 | 87.2 | 3.3 |
| Native plant species richness - forbes | 14 | 16 | 114.3 | 5 | 31 | 221.4 | 5 | 18 | 128.6 | 5 | 154.8 | 5.0 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 21 | 127.3 | 5 | 21 | 127.3 | 5 | 12.5 | 75.8 | 5 | 110.1 | 5.0 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 30 | 38.5 | 128.3 | 4 | 25.9 | 86.3 | 5 | 37.5 | 125.0 | 5 | 113.2 | 4.7 |
| Shrub canopy cover | 2 | 5.45 | 272.5 | 3 | 3 | 150.0 | 5 | 5 | 250.0 | 3 | 224.2 | 3.7 |
| Native grass cover | 36 | 37 | 102.8 | 5 | 40 | 111.1 | 5 | 32 | 88.9 | 3 | 100.9 | 4.3 |
| Organic litter | 32 | 41 | 128.1 | 5 | 38 | 118.8 | 5 | 34.8 | 108.8 | 5 | 118.5 | 5.0 |
| Large trees (euc plus non-euc) | 16 | 24 | 150.0 | 15 | 12 | 75.0 | 5 | 12 | 75.0 | 10 | 100.0 | 10.0 |
| Coarse woody debris | 535 | 352 | 65.8 | 5 | 331 | 61.9 | 5 | 150 | 28.0 | 2 | 51.9 | 4.0 |
| Non-native plant cover | 0 | 2 | 2.5 | 10 | 2 | 2.0 | 10 | 12 | 12.0 | 5 | 5.5 | 8.3 |
| Quality and availability of food and foraging habitat | | | | 10 | | | 10 | | | 10 | | 10 |
| Quality and availability of shelter | | | | 10 | | | 10 | | | 10 | | 10 |
| Site Condition Score | | | | 92 | | | 87.5 | | | 78.5 | | 86 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.76** | | | **2.63** | | | **2.36** | | **2.58** |
| **Site Context** | | | | | | | | | | | | |
| Size of patch | | | | 10 | | | 10 | | | 10 | | 10.0 |
| Connectedness | | | | 5 | | | 2 | | | 2 | | 3.0 |
| Context | | | | 5 | | | 4 | | | 4 | | 4.3 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | 0.0 |
| Role of site location to species overall population in the state | | | | 1 | | | 1 | | | 1 | | 1.0 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | 7.0 |
| Species mobility capacity | | | | 10 | | | 10 | | | 10 | | 10.0 |
| Site Context Score | | | | 38 | | | 34 | | | 34 | | 35.3 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **2.04** | | | **1.82** | | | **1.82** | | **1.89** |
| Species Stocking Rate (SSR) | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | 10 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | 15 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | 10 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | 0 |
| **Total SRR score** | | | | 35 | | | 35 | | | 35 | | *35* |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | *70* |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** |

| Assessment Unit - Regional Ecosystem | AU5- 11.3.26 HVR | | | | | | | | | | | | | | | | | Total average % benchmark | Total average score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Reference | Benchmark | THQ4a, Lot6, HVR | | | THQ10a, Lot 6, HVR | | | BC4, Lot 6, HVR | | | BC5, Lot 6, HVR | | | BC10, Lot 6, HVR | | | Average % | Average | Average % | Average |
| | 11.3.26 | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | Raw Data | % Benchmark | Score | benchmar | Score | benchmark | Score |
| **Site Condition** | | | | | | | | | | | | | | | | | | | | |
| Recruitment of woody perennial species in EDL | 100 | 50 | 50.0 | 3 | 100 | 100.0 | 5 | 25 | 25.0 | 3 | 25 | 25.0 | 3 | 50 | 50.0 | 3 | 50.0 | 3.4 | 66.5 | 4.01 |
| Native plant species richness - trees | 3 | 4 | 133.3 | 5 | 3 | 100.0 | 5 | 4 | 133.3 | 5 | 4 | 133.3 | 5 | 4 | 133.3 | 5 | 126.7 | 5 | 104.9 | 3.92 |
| Native plant species richness - shrubs | 3 | 11 | 366.7 | 5 | 9 | 300.0 | 5 | 3 | 100.0 | 5 | 2 | 66.7 | 2.5 | 6 | 200.0 | 5 | 206.7 | 4.5 | 149.0 | 4.32 |
| Native plant species richness - grasses | 13 | 12 | 92.3 | 5 | 11 | 84.6 | 5 | 10 | 76.9 | 2.5 | 7 | 53.8 | 2.5 | 8 | 61.5 | 2.5 | 73.8 | 3.5 | 76.4 | 4.03 |
| Native plant species richness - forbes | 14 | 16 | 114.3 | 5 | 18 | 128.6 | 5 | 6 | 42.9 | 2.5 | 6 | 42.9 | 2.5 | 17 | 121.4 | 5 | 90.0 | 4 | 88.5 | 3.63 |
| Tree canopy height (average of emergent, canopy, sub-canopy) | 16.5 | 19.5 | 118.2 | 5 | 19 | 115.2 | 5 | 11.5 | 69.7 | 4 | 10 | 60.6 | 3 | 10.5 | 63.6 | 3 | 85.5 | 4 | 73.4 | 4.57 |
| Tree canopy cover (average of emergent, canopy, sub-canopy) | 30 | 27.9 | 93.0 | 4 | 20 | 66.7 | 3.5 | 19.2 | 64.0 | 2.5 | 21.85 | 72.8 | 3.5 | 14.5 | 48.3 | 3.5 | 69.0 | 3.4 | 102.8 | 4.13 |
| Shrub canopy cover | 2 | 3.6 | 180.0 | 5 | 1.75 | 87.5 | 5 | 0 | 0.0 | 0 | 1 | 50.0 | 5 | 0.4 | 20.0 | 3 | 67.5 | 3.6 | 96.1 | 4.22 |
| Native grass cover | 36 | 38.1 | 105.8 | 5 | 50 | 138.9 | 5 | 14 | 38.9 | 1 | 18 | 50.0 | 3 | 7.8 | 21.7 | 1 | 71.1 | 3 | 80.0 | 4.13 |
| Organic litter | 32 | 44 | 137.5 | 5 | 30.4 | 95.0 | 5 | 38 | 118.8 | 5 | 36.4 | 113.8 | 5 | 57.8 | 180.6 | 5 | 129.1 | 5 | 107.1 | 4.93 |
| Large trees (euc plus non-euc) | 16 | 0 | 0.0 | 0 | 2 | 12.5 | 5 | 0 | 0.0 | 0 | 2 | 12.5 | 5 | 8 | 50.0 | 5 | 15.0 | 3 | 61.5 | 7.60 |
| Coarse woody debris | 535 | 360 | 67.3 | 5 | 0 | 0.0 | 0 | 20 | 3.7 | 0 | 25 | 4.7 | 0 | 35 | 6.5 | 0 | 16.4 | 1 | 56.4 | 3.50 |
| Non-native plant cover | 0 | 2 | 2.0 | 10 | 2 | 2.0 | 10 | 5 | 5.0 | 5 | 5 | 5.0 | 5 | 18 | 18.0 | 5 | 6.4 | 7 | 3.0 | 9.07 |
| Quality and availability of food and foraging habitat | | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | 5 | | 9.00 |
| Quality and availability of shelter | | | | 5 | | | 5 | | | 5 | | | 5 | | | 5 | | 5 | | 9.00 |
| Site Condition Score | | | | 72 | | | 73.5 | | | 45.5 | | | 55 | | | 56 | | 60.4 | | 80.06 |
| *MAX Site Condition Score* | | | | *100* | | | *100* | | | *100* | | | *100* | | | *100* | | *100* | | *100* |
| **Site Condition Score - out of 3** | | | | **2.16** | | | **2.21** | | | **1.37** | | | **1.65** | | | **1.68** | | **1.81** | | **2.40** |
| **Site Context** | | | | | | | | | | | | | | | | | | | | |
| Size of patch | | | | 7 | | | 7 | | | 10 | | | 10 | | | 10 | | 8.8 | | 9.16 |
| Connectedness | | | | 2 | | | 2 | | | 2 | | | 2 | | | 2 | | 2 | | 2.57 |
| Context | | | | 4 | | | 5 | | | 4 | | | 4 | | | 4 | | 4.2 | | 4.41 |
| Ecological Corridors | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0.00 |
| Role of site location to species overall population in the state | | | | 1 | | | 1 | | | 1 | | | 1 | | | 1 | | 1 | | 1.00 |
| Threats to the species | | | | 7 | | | 7 | | | 7 | | | 7 | | | 7 | | 7 | | 7.00 |
| Species mobility capacity | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Site Context Score | | | | 31 | | | 32 | | | 34 | | | 34 | | | 34 | | 33 | | 34.13 |
| *MAX Site Context Score* | | | | *56* | | | *56* | | | *56* | | | *56* | | | *56* | | *56* | | *56* |
| **Site Context Score - out of 3** | | | | **1.66** | | | **1.71** | | | **1.82** | | | **1.82** | | | **1.82** | | **1.77** | | **1.83** |
| Species Stocking Rate (SSR) | | | | | | | | | | | | | | | | | | | | |
| Presence detected on or adjacent to site (neighbouring property with connecting habitat) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Species usage of the site (habitat type & evidenced usage) | | | | 15 | | | 15 | | | 15 | | | 15 | | | 15 | | 15 | | 15.00 |
| Approximate density (per ha) | | | | 10 | | | 10 | | | 10 | | | 10 | | | 10 | | 10 | | 10.00 |
| Role/importance of species population on site* | | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 | | 0 | | 0.00 |
| **Total SRR score** | | | | 35 | | | 35 | | | 35 | | | 35 | | | 35 | | *35* | | 35.00 |
| *MAX SSR Score* | | | | 70 | | | 70 | | | 70 | | | 70 | | | 70 | | *70* | | 70 |
| **SSR Score-out of 4** | | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | | **2.00** | | **2.00** | | **2.00** |

| Final habitat quality score (weighted) | AU1-11.11.3 | AU2- 11.11.4 | AU3- 11.11.4 HVR | AU4- 11.3.26 Rem | AU5- 11.3.26 HVR | Average/Final |
|---|---|---|---|---|---|---|
| Site Condition score (out of 3) | 2.59 | 2.51 | 2.52 | 2.58 | 1.81 | 2.55 |
| Site Context Score (out of 3) | 1.82 | 1.95 | 1.71 | 1.89 | 1.77 | 1.84 |
| Species Stocking Rate Score (out of 4) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Habitat Quality score (out of 10) | *6.41* | *6.46* | *6.23* | *6.47* | *5.58* | *6.23* |
| Assessment Unit area (ha) | 2.52 | 460.83 | 1.38 | 151.87 | 110.52 | 727.13 |
| Total offset area (ha) for this MNES | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 |
| Size Weighting | 0.00 | 0.63 | 0.00 | 0.21 | 0.15 | 1.00 |
| ***Weighted Habitat Quality Score*** | ***0.02*** | ***4.09*** | ***0.01*** | ***1.35*** | ***0.85*** | ***6.33*** |

## B.3.2 Modelled future habitat quality assessment

| Final habitat quality score (weighted) | AU1-11.11.3 | AU2- 11.11.4 | AU3- 11.11.4 HVR | AU4- 11.3.26 Rem | AU5- 11.3.26 HVR | Average/Final |
|---|---|---|---|---|---|---|
| Site Condition score (out of 3) | 2.76 | 2.74 | 2.67 | 2.77 | 2.64 | 2.74 |
| Site Context Score (out of 3) | 2.25 | 2.38 | 2.14 | 2.32 | 2.20 | 2.27 |
| Species Stocking Rate Score (out of 4) | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Habitat Quality score (out of 10) | *7.01* | *7.12* | *6.81* | *7.09* | *6.84* | *6.97* |
| Assessment Unit area (ha) | 2.52 | 460.83 | 1.38 | 151.87 | 110.52 | |
| Total offset area (ha) for this MNES | 727.13 | 727.13 | 727.13 | 727.13 | 727.13 | |
| Size Weighting | 0.00 | 0.63 | 0.00 | 0.21 | 0.15 | |
| ***Weighted Habitat Quality Score*** | ***0.02*** | ***4.51*** | ***0.01*** | ***1.48*** | ***1.04*** | ***7.07*** |

# Appendix C EPBC offset calculator results: Koala

Assumptions for the Koala offset calculator

| Factor | Response | Explanation |
|---|---|---|
| Area to be offset | 269 ha | Area of Koala habitat within the Project footprint. |
| Quality of the habitat in the Project footprint | 5 | Condition was assessed using the modified habitat quality guide which included a BioCondition assessment. Although the offset site contains suitable foraging trees, there are few records of Koala near the offset site and in Gladstone in general. The site also has a moderate level of threats including Wild Dogs and a major road and rail line adjacent. |
| Time over which loss is averted | 20 years | |
| Start area (ha) | 727.2 | This is the area suitable for Koala within the offset site. This includes an area of high value regrowth which will be suitable for Koala in the future. |
| Time to ecological benefit | 20 | This is the time expected that it will take to achieve the gain. |
| Risk of loss (%) without offset | 0.34% | The proposed offset site is known to contain threatened species and/or communities which would require offset if cleared. There is no credible evidence to suggest that a development would be constructed in the offset area in the foreseeable future although the property is within the Gladstone Development Area which makes it vulnerable to future clearing. The risk of loss is therefore deemed to be the average annual background rate of loss for Gladstone Regional Council (Maseyk et al. 2017). |
| Risk of loss (%) with offset | 0.34% | The proposed offset site is likely to contain threatened species and/or communities which would require offsets if cleared. The tenure status of the Lots will not need to be changed to secure protection as it is Freehold. Therefore the offset is not an averted loss offset and the risk of loss is the same as without offset (same at the background rate of loss) (Maseyk et al. 2017). |
| Confidence of risk of loss | 100% | The risk of loss was determined using the background rate of loss (as per Maseyk et al. 2017) which is the general rate of loss for Gladstone per year and therefore should be accurate. |

| Factor | Response | Explanation |
|---|---|---|
| Start quality | 6 | The offset lots have moderate weed abundance. Selective logging has taken place in the past many of the sites have less than benchmark value for large trees. Predation threats including Wild Dog and European Foxes are moderate. |
| Future quality without offset | 4 | Part of the offset site has been cleared for agriculture and it is zoned as industrial as part of the Gladstone State Development Area. Edge effects from the neighbouring refinery and the impacts on grazing are likely to increase It is likely without the offset the quality could decrease through more weed incursion and increased predators. |
| Future quality with offset | 7 | Active weed management and assisted regeneration will increase native grass cover, eucalypt recruitment and reduce weed cover. Pest control will reduce predator abundance and protect Koalas from introduced predators. |
| Confidence in achieving the gain | 80% | The majority of the offset is remnant so achieving gains could be difficult especially with an uncertain climate ahead, however, the management actions planned are achievable and realistic and habitat quality gains will primarily come through controlling threats, weeds and bushfire. |

# Offsets Assessment Guide

For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999
2 October 2012

| *Matter of National Environmental Significance* | |
|---|---|
| **Name** | Koala |
| **EPBC Act status** | Vulnerable |
| **Annual probability of extinction**<br>Based on IUCN category definitions | 0.2% |

## Impact calculator

### *Ecological communities*

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | | Information source |
|---|---|---|---|---|---|
| **Area of community** | Yes | | Area *(Hectares)* | | |
| | | | Quality *(Scale 0-10)* | | |
| | | Total quantum of impact *(Adjusted Hectares)* | | 0.00 | |

### *Threatened species habitat*

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | | Information source |
|---|---|---|---|---|---|
| **Area of habitat** | Yes | | Area *(Hectares)* | 269.72 | |
| | | | Quality *(Scale 0-10)* | 5 | |
| | | Total quantum of impact *(Adjusted Hectares)* | | 134.86 | |

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | Information source |
|---|---|---|---|---|
| **Number of features**<br>e.g. Nest hollows, habitat trees | No | | | |
| **Condition of habitat**<br>Change in habitat condition, but no change in extent | No | | | |

### *Threatened species*

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | Information source |
|---|---|---|---|---|
| **Birth rate**<br>e.g. Change in nest success | No | | | |
| **Mortality rate**<br>e.g Change in number of road kills per year | No | | | |
| **Number of individuals**<br>e.g. Individual plants/animals | No | | | |

## Offset calculator

### *Ecological Communities*

| Protected matter attributes | Attribute relevant to case? | Total quantum of impact *(Adjusted Hectares)* | Proposed offset | Time Horizon *(Years)* | | Start area and quality | | Future area and quality without offset *(adjusted hectares)* | | Future area and quality with offset *(adjusted hectares)* | | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value *(adjusted hectares)* | Offset Result | | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area of community** | Yes | 0.00 | | Risk-related time horizon *(max. 20 years)* | 20 | Start area *(hectares)* | | Risk of loss without offset *(%)* | | Risk of loss with offset *(%)* | | 0.00 | 100% | 0.00 | 0.00 | Overall net present value | 0.00 | | |
| | | | | Time until ecological benefit | 20 | Start quality *(scale of 0-10)* | | Future quality without offset *(scale of 0-10)* | | Future quality with offset *(scale of 0-10)* | | 0.00 | 80% | 0.00 | 0.00 | % of impact offset | 0.00% | | |
| | | | | | | | | Future area without offset | 0.0 | Future area with offset | 0.0 | | | Minimum (90%) direct offset requirement met? | | | FALSE | | |

### *Threatened species habitat*

| Protected matter attributes | Attribute relevant to case? | Total quantum of impact *(Adjusted Hectares)* | Proposed offset | Time Horizon *(Years)* | | Start area and quality | | Future area and quality without offset *(adjusted hectares)* | | Future area and quality with offset *(adjusted hectares)* | | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value *(adjusted hectares)* | Offset Result | | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area of habitat** | Yes | 134.86 | 727.22 | Risk-related time horizon *(max. 20 years)* | 20 | Start area *(hectares)* | 727.22 | Risk of loss without offset *(%)* | 0% | Risk of loss with offset *(%)* | 0% | 0.00 | 100% | 0.00 | 0.00 | Overall net present value | 111.42 | | |
| | | | | Time until ecological benefit | 20 | Start quality *(scale of 0-10)* | 6 | Future quality without offset *(scale of 0-10)* | 5 | Future quality with offset *(scale of 0-10)* | 7 | 2.00 | 80% | 1.60 | 1.54 | % of impact offset | 82.62% | | |
| | | | | | | | | Future area without offset | 724.7 | Future area with offset | 724.7 | | | Minimum (90%) direct offset requirement met? | | | FALSE | | |

| Protected matter attributes | Attribute relevant to case? | Quantum of impact | Proposed offset | Time horizon *(years)* | Start Value | Future value without offset | Future value with offset | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value | % of impact offset | Minimum (90%) direct offset requirement met? | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Number of features**<br>e.g. Nest hollows, habitat trees | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |
| **Condition of habitat**<br>Change in habitat condition, but no change in extent | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |

### *Threatened species*

| Protected matter attributes | Attribute relevant to case? | Quantum of impact | Proposed offset | Time horizon *(years)* | Start Value | Future value without offset | Future value with offset | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value | % of impact offset | Minimum (90%) direct offset requirement met? | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Birth rate**<br>e.g. Change in nest success | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |
| **Mortality rate**<br>e.g Change in number of road kills per year | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |
| **Number of individuals**<br>e.g. Individual plants/animals | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |

## Summary

| | | | | | Cost ($) | | |
|---|---|---|---|---|---|---|---|
| **Protected matter attributes** | **Quantum of impact** | **Net present value** | **% of impact offset** | **Direct offset adequate?** | **Direct offset** | **Other compensatory measures** | **Total** |
| **Birth rate** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Mortality rate** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Number of individuals** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Number of features** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Condition of habitat** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Area of habitat** | 134.86 | 111.42 | 0.83 | FALSE | 0.00 | #DIV/0! | #DIV/0! |
| **Area of community** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| | | | | | **$0.00** | **#DIV/0!** | **#DIV/0!** |

# Appendix D EPBC offset calculator results: Squatter Pigeon

Assumptions for the Squatter Pigeon offset calculator

| Factor | Response | Explanation |
|---|---|---|
| Area to be offset | 259.2 ha | Area of Squatter Pigeon breeding and foraging habitat within the Project Footprint. |
| Quality of the habitat in the Project Footprint | 6 | Condition was assessed using the modified habitat quality guide which included a BioCondition assessment. The majority of the vegetation in the remnant areas is suitable for Squatter Pigeon but weeds particularly introduced grasses have degraded many areas so that they are unsuitable for Squatter Pigeon. Many records of Squatter Pigeon have been recorded in or near the Project Area. The site also has a moderate level of threats including Wild Dogs and a major road and rail line adjacent. See Appendix A.3 for baseline data for the impact area. |
| Time over which loss is averted | 20 years | |
| Start area (ha) | 727.2 | This is the vegetation within 1 km (breeding) and 3 km (foraging) of water within the offset site. This includes around 104 ha of high value regrowth that is suitable for rehabilitation. |
| Time to ecological benefit | 20 | The impacts of weed and predator control, fire protection and removal of grazing will be realised in 20 years. |
| Risk of loss (%) without offset | 0.34% | The site is likely to contain threatened species and/or communities which would require offsets if cleared. There is no credible evidence to suggest that a development would be constructed in the offset site in the foreseeable future although the properties are within the Gladstone Development Area. The risk of loss is therefore deemed to be the average annual background rate of loss for Gladstone Regional Council (Maseyk et al. 2017). |
| Risk of loss (%) with offset | 0.34% | The offset site is likely to contain threatened species and/or communities which would require offset if cleared. The tenure status of the offset site will not need to be changed to secure protection as it is Freehold. Therefore the offset in not an averted loss offset and the risk of loss is the same as without offset (same at the background rate of loss) (Maseyk et al. 2017). |
| Confidence of risk of loss | 100% | The risk of loss was determined using the background rate of loss (as per Maseyk et al. 2017) which is the general rate of loss for Gladstone per year and therefore should be accurate. |
| Start quality | 6 | Some of the offset site has a high abundance of weeds (particularly Lantana) Some areas have native grass cover which is low due to grazing. Several areas have shrub cover which is greater than preferred (and more than 200% of the benchmark) which is not suitable for |

| Factor | Response | Explanation |
|---|---|---|
| | | Squatter Pigeon Recruitment of trees is lower than the benchmark also due to grazing. |
| Future quality without offset | 5 | Weeds are likely to increase and would reduce foraging opportunities for Squatter Pigeon. Introduced predators are also likely to increase as development edges closes to the offset sites. Climate change is also likely to increase the frequency and intensity of fires which would impact both foraging and breeding habitat. |
| Future quality with offset | 7 | Weed and predator control will improve habitat quality and reduce the risks of predation by introduced species. Fire management, including managing fire for ecological benefits, will protect and enhance Squatter Pigeon habitat. |
| Confidence in achieving the gain | 80% | The majority of the offset is remnant so achieving gains could be difficult especially with an uncertain climate ahead, however, the management actions planned are achievable and realistic and habitat quality gains will primarily come through controlling threats, weeds and bushfire. |

# Offsets Assessment Guide

For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999
2 October 2012

| *Matter of National Environmental Significance* | |
|---|---|
| **Name** | Squatter Pigeon |
| **EPBC Act status** | Vulnerable |
| **Annual probability of extinction**<br>Based on IUCN category definitions | 0.2% |

## Impact calculator

### *Ecological communities*

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | | Information source |
|---|---|---|---|---|---|
| **Area of community** | Yes | | Area *(Hectares)* | | |
| | | | Quality *(Scale 0-10)* | | |
| | | Total quantum of impact *(Adjusted Hectares)* | | 0.00 | |

### *Threatened species habitat*

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | | Information source |
|---|---|---|---|---|---|
| **Area of habitat** | Yes | Lot 30 | Area *(Hectares)* | 259.2 | |
| | | | Quality *(Scale 0-10)* | 6 | |
| | | Total quantum of impact *(Adjusted Hectares)* | | 155.52 | |

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | Information source |
|---|---|---|---|---|
| **Number of features**<br>e.g. Nest hollows, habitat trees | No | | | |
| **Condition of habitat**<br>Change in habitat condition, but no change in extent | No | | | |

### *Threatened species*

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | Information source |
|---|---|---|---|---|
| **Birth rate**<br>e.g. Change in nest success | No | | | |
| **Mortality rate**<br>e.g Change in number of road kills per year | No | | | |
| **Number of individuals**<br>e.g. Individual plants/animals | No | | | |

## Offset calculator

### *Ecological Communities*

| Protected matter attributes | Attribute relevant to case? | Total quantum of impact *(Adjusted Hectares)* | Proposed offset | Time Horizon *(Years)* | | Start area and quality | | Future area and quality without offset *(adjusted hectares)* | | Future area and quality with offset *(adjusted hectares)* | | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value *(adjusted hectares)* | Offset Result | | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area of community** | Yes | 0.00 | | Risk-related time horizon *(max. 20 years)* | | Start area *(hectares)* | | Risk of loss without offset *(%)* | | Risk of loss with offset *(%)* | | 0.00 | 100% | 0.00 | 0.00 | Overall net present value | 0.00 | | |
| | | | | Time until ecological benefit | | Start quality *(scale of 0-10)* | | Future quality without offset *(scale of 0-10)* | | Future quality with offset *(scale of 0-10)* | | 0.00 | | 0.00 | 0.00 | % of impact offset | 0.00% | | |
| | | | | | | | | Future area without offset | 0.0 | Future area with offset | 0.0 | | | Minimum (90%) direct offset requirement met? | | | FALSE | | |

### *Threatened species habitat*

| Protected matter attributes | Attribute relevant to case? | Total quantum of impact *(Adjusted Hectares)* | Proposed offset | Time Horizon *(Years)* | | Start area and quality | | Future area and quality without offset *(adjusted hectares)* | | Future area and quality with offset *(adjusted hectares)* | | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value *(adjusted hectares)* | Offset Result | | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area of habitat** | Yes | 155.52 | 727.2 | Risk-related time horizon *(max. 20 years)* | 20 | Start area *(hectares)* | 727.2 | Risk of loss without offset *(%)* | 0% | Risk of loss with offset *(%)* | 0% | 0.00 | 100% | 0.00 | 0.00 | Overall net present value | 111.41 | | |
| | | | | Time until ecological benefit | 20 | Start quality *(scale of 0-10)* | 6 | Future quality without offset *(scale of 0-10)* | 5 | Future quality with offset *(scale of 0-10)* | 7 | 2.00 | 80% | 1.60 | 1.54 | % of impact offset | 71.64% | | |
| | | | | | | | | Future area without offset | 724.7 | Future area with offset | 724.7 | | | Minimum (90%) direct offset requirement met? | | | FALSE | | |

| Protected matter attributes | Attribute relevant to case? | Quantum of impact | Proposed offset | Time horizon *(years)* | Start Value | Future value without offset | Future value with offset | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value | % of impact offset | Minimum (90%) direct offset requirement met? | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Number of features**<br>e.g. Nest hollows, habitat trees | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |
| **Condition of habitat**<br>Change in habitat condition, but no change in extent | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |

### *Threatened species*

| Protected matter attributes | Attribute relevant to case? | Quantum of impact | Proposed offset | Time horizon *(years)* | Start Value | Future value without offset | Future value with offset | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value | % of impact offset | Minimum (90%) direct offset requirement met? | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Birth rate**<br>e.g. Change in nest success | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |
| **Mortality rate**<br>e.g Change in number of road kills per year | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |
| **Number of individuals**<br>e.g. Individual plants/animals | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |

## Summary

| | | | | | Cost ($) | | |
|---|---|---|---|---|---|---|---|
| **Protected matter attributes** | **Quantum of impact** | **Net present value** | **% of impact offset** | **Direct offset adequate?** | **Direct offset** | **Other compensatory measures** | **Total** |
| **Birth rate** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Mortality rate** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Number of individuals** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Number of features** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Condition of habitat** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Area of habitat** | 155.52 | 111.41 | 0.72 | FALSE | 0.00 | #DIV/0! | #DIV/0! |
| **Area of community** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| | | | | | **$0.00** | **#DIV/0!** | **#DIV/0!** |

# Appendix E EPBC offset calculator results: Greater Glider

Assumptions for the Greater Glider offset calculator

| Factor | Response | Explanation |
|---|---|---|
| Area to be offset | 258.77 ha | Area of Greater Glider habitat within the Project footprint |
| Quality of the habitat in the Project footprint | 5 | Condition was assessed using the modified habitat quality guide which included a BioCondition assessment. Although the offset site contains suitable foraging trees, there was very few hollow bearing trees (indicative of areas with few large trees) and no records of Greater Glider within the local area. The site also has a moderate level of threats including Wild Dogs and a major road and rail line adjacent. |
| Time over which loss is averted | 20 years | |
| Start area (ha) | 727.2 | This is the area suitable for Greater Glider within offset site. This includes around 104 of high value regrowth which has limited habitat value for Greater Glider in its present state. |
| Time to ecological benefit | 20 | This is the time expected that it will take to achieve the gain. |
| Risk of loss (%) without offset | 0.34% | The offset site is known to contain threatened species and/or communities which would require offset if cleared. There is no credible evidence to suggest that a development would be constructed in the offset area in the foreseeable future although the property is within the Gladstone Development Area which makes it vulnerable to future clearing. The risk of loss is therefore deemed to be the average annual background rate of loss for Gladstone Regional Council (Maseyk et al. 2017). |
| Risk of loss (%) with offset | 0.34% | The offset site is likely to contain threatened species and/or communities which would require offsets if cleared. The tenure status of the Lot will not need to be changed to secure protection as it is Freehold. Therefore the offset is not an averted loss offset and the risk of loss is the same as without offset (same at the background rate of loss) (Maseyk et al. 2017). |
| Confidence of risk of loss | 100% | The risk of loss was determined using the background rate of loss (as per Maseyk et al. 2017) which is the general rate of loss for Gladstone per year and therefore should be accurate. |
| Start quality | 6 | The offset site has been previously logged and many had only moderate abundance of large trees. Weeds were scattered throughout the site. Non-native plant cover is moderate in patches. Recruitment of new trees was low in some areas presumably as a result of fire regime and grazing. |

| Factor | Response | Explanation |
|---|---|---|
| Future quality without offset | 5 | Weeds are likely to increase and would reduce foraging opportunities for Squatter Pigeon. Introduced predators are also likely to increase as development edges closes to the offset sites. Climate change is also likely to increase the frequency and intensity of fires which would impact both foraging and breeding habitat. |
| Future quality with offset | 7 | Active weed management and assisted regeneration will increase eucalypt recruitment and reduce weed cover. |
| Confidence in achieving the gain | 80% | The majority of the offset is remnant so achieving gains could be difficult especially with an uncertain climate ahead, however, the management actions planned are achievable and realistic and habitat quality gains will primarily come through controlling threats, weeds and bushfire. |

# Offsets Assessment Guide

For use in determining offsets under the Environment Protection and Biodiversity Conservation Act 1999
2 October 2012

| *Matter of National Environmental Significance* | |
|---|---|
| **Name** | Greater Glider |
| **EPBC Act status** | Vulnerable |
| **Annual probability of extinction**<br>Based on IUCN category definitions | 0.2% |

## Impact calculator

### *Ecological communities*

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | | Information source |
|---|---|---|---|---|---|
| **Area of community** | Yes | | Area *(Hectares)* | | |
| | | | Quality *(Scale 0-10)* | | |
| | | Total quantum of impact *(Adjusted Hectares)* | | 0.00 | |

### *Threatened species habitat*

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | | Information source |
|---|---|---|---|---|---|
| **Area of habitat** | Yes | | Area *(Hectares)* | 258.77 | |
| | | | Quality *(Scale 0-10)* | 5 | |
| | | Total quantum of impact *(Adjusted Hectares)* | | 129.39 | |

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | Information source |
|---|---|---|---|---|
| **Number of features**<br>e.g. Nest hollows, habitat trees | No | | | |
| **Condition of habitat**<br>Change in habitat condition, but no change in extent | No | | | |

### *Threatened species*

| Protected matter attributes | Attribute relevant to case? | Description | Quantum of impact | Information source |
|---|---|---|---|---|
| **Birth rate**<br>e.g. Change in nest success | No | | | |
| **Mortality rate**<br>e.g Change in number of road kills per year | No | | | |
| **Number of individuals**<br>e.g. Individual plants/animals | No | | | |

## Offset calculator

### *Ecological Communities*

| Protected matter attributes | Attribute relevant to case? | Total quantum of impact *(Adjusted Hectares)* | Proposed offset | Time Horizon *(Years)* | | Start area and quality | | Future area and quality without offset *(adjusted hectares)* | | Future area and quality with offset *(adjusted hectares)* | | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value *(adjusted hectares)* | Offset Result | | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area of community** | Yes | 0.00 | | Risk-related time horizon *(max. 20 years)* | | Start area *(hectares)* | | Risk of loss without offset *(%)* | | Risk of loss with offset *(%)* | 0% | 0.00 | 100% | 0.00 | 0.00 | Overall net present value | 0.00 | | |
| | | | | Time until ecological benefit | | Start quality *(scale of 0-10)* | | Future quality without offset *(scale of 0-10)* | | Future quality with offset *(scale of 0-10)* | | 0.00 | 80% | 0.00 | 0.00 | % of impact offset | 0.00% | | |
| | | | | | | | | Future area without offset | 0.0 | Future area with offset | 0.0 | | | Minimum (90%) direct offset requirement met? | | | FALSE | | |

### *Threatened species habitat*

| Protected matter attributes | Attribute relevant to case? | Total quantum of impact *(Adjusted Hectares)* | Proposed offset | Time Horizon *(Years)* | | Start area and quality | | Future area and quality without offset *(adjusted hectares)* | | Future area and quality with offset *(adjusted hectares)* | | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value *(adjusted hectares)* | Offset Result | | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Area of habitat** | Yes | 129.39 | 727.2 | Risk-related time horizon *(max. 20 years)* | 20 | Start area *(hectares)* | 727.2 | Risk of loss without offset *(%)* | 0% | Risk of loss with offset *(%)* | 0% | 0.00 | 100% | 0.00 | 0.00 | Overall net present value | 111.41 | | |
| | | | | Time until ecological benefit | 20 | Start quality *(scale of 0-10)* | 6 | Future quality without offset *(scale of 0-10)* | 5 | Future quality with offset *(scale of 0-10)* | 7 | 2.00 | 80% | 1.60 | 1.54 | % of impact offset | 86.11% | | |
| | | | | | | | | Future area without offset | 724.7 | Future area with offset | 724.7 | | | Minimum (90%) direct offset requirement met? | | | FALSE | | |

| Protected matter attributes | Attribute relevant to case? | Quantum of impact | Proposed offset | Time horizon *(years)* | Start Value | Future value without offset | Future value with offset | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value | % of impact offset | Minimum (90%) direct offset requirement met? | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Number of features**<br>e.g. Nest hollows, habitat trees | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |
| **Condition of habitat**<br>Change in habitat condition, but no change in extent | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |

### *Threatened species*

| Protected matter attributes | Attribute relevant to case? | Quantum of impact | Proposed offset | Time horizon *(years)* | Start Value | Future value without offset | Future value with offset | Raw gain | Confidence in result *(%)* | Adjusted gain | Net present value | % of impact offset | Minimum (90%) direct offset requirement met? | Cost *($ total)* | Information source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Birth rate**<br>e.g. Change in nest success | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |
| **Mortality rate**<br>e.g Change in number of road kills per year | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |
| **Number of individuals**<br>e.g. Individual plants/animals | No | | | | | | | 0.00 | | 0.00 | 0.00 | 0.00% | FALSE | | |

## Summary

| | | | | | Cost ($) | | |
|---|---|---|---|---|---|---|---|
| **Protected matter attributes** | **Quantum of impact** | **Net present value** | **% of impact offset** | **Direct offset adequate?** | **Direct offset** | **Other compensatory measures** | **Total** |
| **Birth rate** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Mortality rate** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Number of individuals** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Number of features** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Condition of habitat** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| **Area of habitat** | 129.39 | 111.41 | 0.86 | FALSE | 0.00 | #DIV/0! | #DIV/0! |
| **Area of community** | 0.00 | 0.00 | 0.00 | FALSE | 0.00 | N/A | 0.00 |
| | | | | | **$0.00** | **#DIV/0!** | **#DIV/0!** |

# Appendix F Coordinates for the offset sites

| Site Name | Lot on Plan | Offset area (ha) | Vertex Latitude | Vertex Longitude |
|---|---|---|---|---|
| Aldoga South | 45 CTN198 a | 127.6881 | -23.8990746 | 151.1024594 |
| | | | -23.89941704 | 151.1024053 |
| | | | -23.90972546 | 151.088338 |
| | | | -23.90957932 | 151.0882027 |
| | | | -23.89675163 | 151.0847775 |
| | | | -23.89896476 | 151.1016066 |
| | | | -23.8990746 | 151.1024594 |
| | 45 CTN198 b | 85.50892 | -23.91509733 | 151.0999566 |
| | | | -23.91517578 | 151.0997295 |
| | | | -23.9169204 | 151.0969735 |
| | | | -23.91769958 | 151.0964612 |
| | | | -23.91471925 | 151.0949432 |
| | | | -23.91441932 | 151.0926003 |
| | | | -23.91179847 | 151.0902227 |
| | | | -23.91504998 | 151.0946732 |
| | | | -23.91509733 | 151.0999566 |
| | 6 SP20087 a | 145.4306 | -23.91588188 | 151.0846036 |
| | | | -23.91578479 | 151.0847818 |
| | | | -23.9120294 | 151.0899148 |
| | | | -23.9147598 | 151.092389 |
| | | | -23.91504998 | 151.0946732 |
| | | | -23.91724884 | 151.0957901 |
| | | | -23.91784866 | 151.0961054 |
| | | | -23.91822122 | 151.0962964 |
| | | | -23.92460555 | 151.0985504 |
| | | | -23.92487516 | 151.0984482 |
| | | | -23.92711362 | 151.0976591 |
| | | | -23.92593819 | 151.0880699 |

| Site Name | Lot on Plan | Offset area (ha) | Vertex Latitude | Vertex Longitude |
|---|---|---|---|---|
| | | | -23.92462605 | 151.0878338 |
| | | | -23.92355814 | 151.0876335 |
| | | | -23.92135985 | 151.0872926 |
| | | | -23.91783646 | 151.0856748 |
| | | | -23.91588188 | 151.0846036 |
| | 6 SP20087 b | 368.5997 | -23.89502657 | 151.0854609 |
| | | | -23.89506633 | 151.0850282 |
| | | | -23.89672844 | 151.0843654 |
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| | | | -23.89710069 | 151.0729685 |
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| | | | -23.89289767 | 151.0733254 |
| | | | -23.88923367 | 151.0720245 |
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| | | | -23.88619925 | 151.066934 |
| | | | -23.88211069 | 151.0656201 |
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| | | | -23.88281447 | 151.0807213 |
| | | | -23.88274449 | 151.0816257 |
| | | | -23.88333127 | 151.081617 |
| | | | -23.88564046 | 151.0821623 |
| | | | -23.886707 | 151.0815279 |

| Site Name | Lot on Plan | Offset area (ha) | Vertex Latitude | Vertex Longitude |
|---|---|---|---|---|
| | | | -23.91504998 | 151.0946732 |
| | | | -23.88917458 | 151.0831903 |
| | | | -23.89007585 | 151.0830592 |
| | | | -23.89070754 | 151.0837569 |
| | | | -23.89196929 | 151.0835714 |
| | | | -23.89502657 | 151.0854609 |