

CONTROL

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*The signed original is kept by **ACCIONA**.*

OFFSET AREA MANAGEMENT PLAN – ALDOGA
NORTH - 2020/8773 ALDOGA SOLAR PROJECT –
EXPANSION AREA

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH

ALDOGA SOLAR FARM

RECORD OF CHANGES

REV.	DATE	DESCRIPTION
1	28/10/2022	NGH Report for Review
2	9/11/2022	NGH Report for Review
3	12/12/2022	NGH Report for Review
4	08/06/2023	NGH Report DCCEEW approved
5	08/05/2025	Updated to include findings from ecology field surveys and correct inconsistencies
6	09/09/2025	Updated to incorporate DCCEEW feedback

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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 Environmental Offset Policy (Department of Sustainability, Environment, Water, Population and Communities, 2012).

The offset for the Project will be delivered across two offset areas, Aldoga North, and Aldoga South. This OAMP relates to the Aldoga North 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.

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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 Minister	Table 5—1 details how the offset will meet the obligation of the 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:	
	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 and Section 3
	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

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CONDITION NUMBER	CONDITION	SECTION
	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 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:	Details of weed and feral animal control are in Sections 4.3 and 4.6. Completion

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CONDITION NUMBER	CONDITION	SECTION
	a. Weed and feral animal control;	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 Section 7.3.
	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)	The timing of monitoring is listed in Table 7.1. Monitoring reporting is listed in Table 7.2.
	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	Section 7.3.2 contains commitments relating to monitoring reporting.
	II. timing for the implementation of corrective Actions if monitoring activities indicate the interim milestones will not be, or have not been, achieved.	Table 7.8 contains corrective actions for each management action.
	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:	Section 7.2
	a. must be achieved within 20 years of the commencement of the Action; and	
	b. once achieved, must be maintained or improved for the remaining duration of the approval.	Section 7.2

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CONDITION NUMBER	CONDITION	SECTION
14	The approval holder must, within 20 business days of the 20th anniversary of the commencement of the Action: 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
	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

1.2. SUITABLY QUALIFIED ECOLOGIST

This plan was prepared by Dr Carissa Free (NGH) and Dr Jarrah Wills (NGH) and updated by Jeromy Claridge (Attexo Group), who all meet the definition of *suitably qualified ecologist* in the EPBC Act approval conditions:

Suitably qualified ecologist means a person who has relevant professional qualifications and at least three years experience designing and implementing management plans for the protected matters and can give authoritative independent assessment, advice and analysis on the management requirements of the protected matters and their habitat using the relevant protocols, standards, methods and/or literature.

Dr Carissa Free has a PhD in ecology and has 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.

Jeromy Claridge is an environmental scientist with a Master of Environmental Management and a Bachelor of Science (Honours Botany) and meets the definition of being suitably qualified by demonstrating that they have; almost 30 years of professional experience as an environmental scientist, experience preparing and implementing management plans for the conservation of habitat for relevant MNES species, and experience providing advice on habitat requirements for relevant MNES species.

1.3. OFFSET APPROACH – ALDOGA NORTH

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.

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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 North 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	OFFSET AREA (HA)
Aldoga North	1 SP307522 (Lot 1)	Minister for Economic Development Queensland	201.0	23.18
Aldoga North	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
Aldoga South	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 North Offset Site in Figure 1.1 will be secured using a Voluntary Declaration (see Section 1.4).

The Aldoga North Offset Site is located adjacent to the Aldoga Solar Farm- Expansion Area Project Area in Aldoga Queensland, approximately 20 km northwest of Gladstone, Queensland. It lies within the Gladstone State Development Area (SDA). The offset site is located on the western slopes of Mt Larcom, which is entirely covered in remnant vegetation (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.
- **Climate change refugia**: Mt Larcom is likely to increase in importance as a refuge for Koala, Greater Glider and Squatter Pigeon as temperatures increase
- **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.
- **As close to the impact site as possible**: Koalas and Greater Gliders (if present in the Project Area) and Squatter Pigeon will have adjacent habitat to move into when the impact happens.

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, 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 North offset site are located in the vicinity of the Aurizon freight rail line (to the south) and bordered to the north-west by three high-pressure CSG pipelines (APLNG, QCLNG and GLNG). A Powerlink high voltage transmission line intersects both the impact site, and Lot 30 CTN107. These linear infrastructure projects have caused substantial fragmentation to existing habitats.

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 North 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) or other suitable securement option agreed to by the Queensland Government, 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 to the voluntary declaration which will enforce compliance with the OAMP.

Acciona will notify the DCCEE 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

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- controlling invasive existing and new weeds to reduce impacts on the target species
- excluding grazing to reduce 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 ● Implement fire management and manage fuel loads to protect habitat, enhance habitat quality, improve recruitment of eucalypts suitable for Greater Glider and Koala, control weeds and promote grass cover suitable for Squatter Pigeon.	Section 4.3 and 4.4
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 or other suitable securement option agreed to by the Queensland Government.	Section 4.5
Monitoring and adaptive management	● Monitoring at regular intervals until completion criteria are met ● Reporting to identify progress to completion criteria and any triggers for management	Section 7

Figure 1.1 Aldoga North & Aldoga South offset sites - location

Figure 1.2 Aldoga North offset site – ecological context

Figure 1.3 Aldoga North & Aldoga South offset sites - landscape context

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* (DEHP, 2017¹) 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)
- 2 to 5 December 2024 (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).

¹ Note, there is a subsequent version of this document (version 1.3, 2020), however version 1.2 is specifically referenced in DCCEEW, 2022d

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, 2022) and WildNet (DES, 2022) 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. It is assumed that all of the sites will have predation threats from dogs and 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) (Table 2—1). Each impact site (Section 3.2,

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Figure 2.1) was assessed for site context, site condition and 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 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 Koala habitat, requiring offset. This is areas of scattered paddock trees, surrounded by dense Giant Rats Tail Grass. No records of Koala occur within 5 km of the Project Area including injured or dead Koalas collected by local wildlife carers.	5
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

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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
AU2	Remnant 11.7.6	3	128.92	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 5)
Koala ²							
AU1	Remnant 11.3.26	3	72.83	2.46	1.95	0.86	5.26
AU2	Remnant 11.7.6	3	128.92	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							
AU1	Remnant 11.3.26	3	72.83	2.46	1.89	2	6.35
AU2	Remnant 11.7.6	3	128.92	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)

² 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.

Figure 2.1 Assessment units and ground-truthed regional ecosystems.

3. ALDOGA NORTH OFFSET SITE VALUES

3.1. BIOREGIONAL CONTEXT

The offset sites lie within the Brigalow Belt bioregion and Mt Morgan Ranges sub-region. The eastern side of Mt Larcom lies within the South-east Queensland (SEQ) Bioregion. In this area the SEQ Bioregion extends out into The Narrows which runs between Curtis Island and Gladstone. To the north lies Rundle Range National Park. To the south, lies Kroombit Tops National Park and to the west lies the Callide Ranges.

The Aldoga North offset sites lie on the western side of Mt Larcom and although the sites are not part of a Queensland biodiversity corridor, contiguous vegetation on the eastern side of Mt Larcom lies within a State significant terrestrial biodiversity corridor.

The Aldoga North and South offset sites have been chosen strategically. 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 (NGH, 2022) of Koala within the general vicinity of the Aldoga South offset site (Figure 1.2). Both of these species are considered likely to occur at low population densities in the broad area and could be expected to move through the landscape along riparian corridors, such as Larcom Creek. 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.

The Aldoga North offset site (30CTN107a and b) borders the edge of the Gladstone SDA. Development to the east of these lots is therefore very unlikely. Lot 1SP307522b shares a border with a large patch of SEVT TEC, listed as Endangered under both the VM Act and the EPBC Act (Figure 2-1). This patch of vegetation is steep and relatively inaccessible. Whilst the SEVT is part of the Gladstone SDA, its status as a TEC provides inherent protection. This makes this site unlikely to be developed in the future and means that the offset on Lot 1SP307522b will remain part of a large, contiguous area of remnant vegetation.

Each of the Aldoga North offset sites are considered large enough to be self-sustaining in their own right, with the smallest (Lot 1 SP307522b) still being 20 ha. Connectivity between each of the three Aldoga North sites and wildlife movement opportunity will be achieved through the intact remnant vegetation to the east. The two offset sites within Lot 30CTN107 are separated by a Powerlink transmission corridor. This will not create a barrier to movement for either Squatter Pigeon or Koala. The movement potential for Greater Glider between these two areas will remain the same with or without the offset.

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.

3.2. OFFSET AREA VALUES

Mt Larcom is covered by a large contiguous patch of vegetation which is well connected to the coast. It has a range of vegetation, including mixed eucalypt woodlands, montane shrubland and semi-evergreen vine thicket (Figure 3.1). The Mt Larcom area contains numerous records of State and Commonwealth listed threatened species including:

- Mt Larcom Silkpod (*Parsonsia larcomensis*) (Endangered under the EPBC Act, Vulnerable under the *Nature Conservation Act 1994* [NC Act])
- Three-leaved Bosistoa (*Bosistoa transversa*) (Endangered under the EPBC Act)
- *Cycas megacarpa* (Endangered under the EPBC Act, Vulnerable under the NC Act)
- Wedge-leaf Tuckeroo (*Cupaniopsis shirleyana*) (Vulnerable under the EPBC Act, Vulnerable under the NC Act)
- Squatter Pigeon (Vulnerable under the EPBC Act, Vulnerable under the NC Act)

- Powerful Owl (Vulnerable under the NC Act).

Three-leaved Bosistoa, Powerful Owl and Wedge-leaf Tuckeroo have been recorded within the Aldoga North offset site. Squatter Pigeon and *C. megacarpa* have been recorded in vegetation connected to the offset sites. Figure 1.2 shows the locations of Squatter Pigeon and Koala records in the local region; there are no local records for Greater Glider.

A large part of Mt Larcom and Lot 30 contains the State and Commonwealth listed semi-evergreen vine thicket community RE 11.11.18. This community is listed as Endangered under the Queensland VM Act and a Threatened Ecological Community (TEC) under the EPBC Act (Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions). This community will be included in the legally secured offset site, despite being considered not to be suitable as an offset for Koala, Greater Glider, or Squatter Pigeon. This area is shown on Figure 3.1 as 'N/S' (Not Suitable). Locations of BioCondition survey sites are shown on Figure 3.1, which also shows assessment units 1 to 5 (AU1 to AU5). The areas shown as N/S do not contribute towards the offset area and have not been included in the calculations but will nonetheless benefit from management actions undertaken in neighbouring management unit areas. Although no management actions are proposed in these 'N/S' areas, weed and pest management undertaken on the borders with adjacent management units will protect these patches from weed incursion and indirectly benefit threatened flora and fauna within them.

Protection of these 'N/S' areas, additional to the requirement of the offset for the Project, creates clear additionality. Whilst not considered to be habitat for the MNES, there will be areas of suitable habitat for periodic foraging and movement, leading to a net benefit for these species, as well as additional threatened species and native species, including those listed above. The majority of the area shown as 'N/S' is TEC SEVT and will receive a positive conservation outcome through the protection afforded by the offset.

Based on aerial imagery, the offset sites are part of one large contiguous patch of vegetation with very little disturbance other than a high voltage powerline and some historic cattle grazing along the edges. The grazing activities ceased with no future planned grazing activities to be undertaken. The properties have few to no tracks, which would reduce weed incursion and impacts from people are likely to be very low. The offset site is connected to Targinie State Forest in the east through narrow strips of vegetation across Targinie Road as well as via the remnant vegetation across Mt Larcom. There is also some connectivity to Mount Stowe State Forest in the south-east however, movements of terrestrial species would be restricted by Gladstone-Mt Larcom Road which intersects the two patches of vegetation. Koala, if present, would move across this road but Greater Glider may be restricted from accessing suitable habitat in this patch. To the west, remnant vegetation becomes sparse but there is connectivity to Mt Larcom State Forest along riparian corridors. Greater Glider and Koala would be able to move along these corridors to access habitat in the State Forest (Figure 3.1).

Figure 3.1 Wildlife corridors and ecological values.

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, 2022f). 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.

There are patches that contain SEVT and montane shrubland, dominated by species which are not Koala food trees, although some eucalypts may be present. Due to the lack of Koala food trees, it is unlikely that these communities will be used regularly by Koala, and these have therefore been excluded from the proposed offset site area calculations. The offset site habitat along with the rest of Mt Larcom, Targinie State Forest and habitat in rural properties is considered large enough to support a breeding population of Koala that is genetically viable.

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. No database records for Koala exist within 5 km of the impact and offset sites. Given the lack of records in Gladstone, and barriers to connectivity to the south and west, it is possible that the offset properties are not currently used by Koala. Extensive searches within the impact area and along Larcom Creek adjacent to the offset site did not find evidence of Koala, despite the area be highly suitable for Koala (NGH, 2022).

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 underpass along creeks including Larcom Creek, which runs adjacent to the Project Area and connects 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.

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 1 contains 23.2 ha of habitat suitable for Koala which consists of remnant eucalypt woodlands mostly dominated by *Eucalyptus melanophloia* and *E. crebra*. One small area (3.99 ha) of non-remnant is considered suitable for assisted regeneration.

Lot 30 contains a large area (142.5 ha) of semi-evergreen vine thicket which is not suitable habitat for Koala, but the surrounding mixed eucalypt woodlands are highly suitable and contain preferred food tree species. A list of the REs found within the offset areas is in Table 3—1.

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

REGIONAL ECOSYSTEM	SHORT DESCRIPTION	AREA (HA) AVAILABLE IN LOT 1	AREA (HA) AVAILABLE IN LOT 30	TOTAL (HA)
<i>Eucalyptus crebra</i> woodlands				
11.11.4	<i>Eucalyptus crebra</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges	12.79	75.24	88.03
Mixed eucalypt woodland				
11.12.15	<i>Corymbia intermedia</i> +/- <i>Eucalyptus acmenoides</i> open forest to low woodland with lower tree layer of <i>Allocasuarina torulosa</i> , <i>Livistona decora</i> on igneous rocks. Coastal hills [^]	0	16.89	16.89
11.3.4	<i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. woodland on alluvial plains	0	2.02	2.02
11.11.3	<i>Corymbia citriodora</i> , <i>Eucalyptus crebra</i> , <i>E. acmenoides</i> open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges	0	69.95	69.95
11.8.4	<i>Eucalyptus melanophloia</i> woodland to open woodland on Cainozoic igneous rocks.	6.40	0	6.4
Non-remnant	Cleared with scattered trees	3.99	1.3	5.3
Total area		23.2	165.4	188.6

[^]this RE is in a remote part of the offset site with very difficult access. Assessments found condition to be similar to adjacent assessment units so no habitat quality sites were established here as monitoring in the future would be very difficult. The area was included as part of 11.11.3.

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 North 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	Remnant 11.11.3 ²	4	86.84	2.76	2.04	0.86	5.65
AU2	Remnant 11.3.4	2	2.02	2.06	1.93	0.86	4.84
AU3	Remnant 11.11.4	4	88.03	2.27	1.82	0.86	4.94
AU4	Non-remnant 11.3.4	2*	5.29	0.444	1.18	0.57	2.19

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AU5	Remnant 11.8.4	2	6.4^	2.66	1.82	0.86	5.33
		Total	188.6 ha			Average	4.59 (rounded to 5)

**these sites were assessed outside the offset area in the same Lot but were representative of the non-remnant area. New sites within the non-remnant area in Lot 1 will need to be established post approval.*

² A small area of RE 11.12.15 was combined with a patch of RE 11.11.3 to form AU1. 11.12.15 is suitable for Koala, but access was difficult (very steep) and therefore it was considered unsafe to establish a monitoring plot. Rapid assessment confirmed that the condition was comparable to the adjacent RE 11.11.3.

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 North offset site contributes 21.43% of the overall area needed to meet the Project's offset obligation. The remainder of the obligation will be offset at the Aldoga South offset site.

Table 3—3 The percentage of the offset obligation for Koala acquitted by the Aldoga North offset site.

IMPACT TO BE OFFSET	PROPOSED OFFSET AREA (HA)	TIME UNTIL ECOLOGICAL BENEFIT	IMPACT AREA HABITAT QUALITY	HABITAT QUALITY SCORE PRIOR TO OFFSET (START)	HQ SCORE WITHOUT OFFSET	HABITAT QUALITY SCORE AFTER OFFSET (FUTURE)	% OF THE OFFSET OBLIGATION
269.72	188.6	20	5	5	4	6	21.43

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. A precautionary approach has been applied, and all of these scores assume Koala will not be found to be present in the assessment units, despite suitable habitat. If Koala are recorded within 20 years, the gains are likely to be higher.

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, 2022e):

“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. Creeks (Stream order 1 and above) and many farm dams in the cleared areas adjacent to the offset properties would provide mostly permanent water. The woodlands are dominated by eucalypts with native grasses in the understorey.

The SEVT and montane shrubland are not likely to provide habitat for Squatter Pigeon due to their dense cover and/or lack of native grasses and have not been included in the offset area calculations.

There are many Squatter Pigeon records in neighbouring properties, including the impact site. This species is widespread in the Gladstone area and is likely to already use the offset site.

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 and fire management to improve foraging opportunities for this species.

3.4.1. OFFSET AREA CALCULATION

There is 23.18 ha of suitable habitat available in Lot 1. Most of this area is remnant and in good condition but still has a moderate abundance of weeds which make some areas less suitable for Squatter Pigeon. A total of 165.4 ha of Squatter Pigeon habitat is available in Lot 30. This area is generally in good condition. A list of the REs suitable for Squatter Pigeon is in Table 3—4.

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

REGIONAL ECOSYSTEM	SHORT DESCRIPTION	AREA (HA) AVAILABLE IN LOT 1	AREA (HA) AVAILABLE IN LOT 30	TOTAL (HA)
<i>Eucalyptus crebra</i> woodlands				
11.11.4	<i>Eucalyptus crebra</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges	12.79	75.24	88.03
Mixed eucalypt woodland				
11.12.15 [^]	<i>Corymbia intermedia</i> +/- <i>Eucalyptus acmenoides</i> open forest to low woodland with lower tree layer of <i>Allocasuarina torulosa</i> , <i>Livistona decora</i> on igneous rocks. Coastal hills [^]	0	16.89	16.89
11.3.4	<i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. woodland on alluvial plains	0	2.02	2.02
11.11.3	<i>Corymbia citriodora</i> , <i>Eucalyptus crebra</i> , <i>E. acmenoides</i> open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges	0	69.95	69.95

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REGIONAL ECOSYSTEM	SHORT DESCRIPTION	AREA (HA) AVAILABLE IN LOT 1	AREA (HA) AVAILABLE IN LOT 30	TOTAL (HA)
11.8.4	<i>Eucalyptus melanophloia</i> woodland to open woodland on Cainozoic igneous rocks.	6.40	0	6.4
Non-remnant	Cleared with scattered trees	3.99	1.3	5.3
	Total area	23.2	165.4	188.6

[^]this RE is in a remote part of the offset site with very difficult access. Assessments found condition to be similar to adjacent assessment units so no habitat quality sites were established here as monitoring and management activities in the future would be very difficult. The area was included as part of 11.11.3 and it is assumed that any changes seen in the patch of 11.11.3 would be similar in this community. Both REs are suitable for Koala, Squatter Pigeon and Greater Glider and since both are in similar condition they are being considered one assessment unit.

The non-remnant area was considered to not be suitable for Squatter Pigeon in its current state due to weed cover, so this area was considered a separate 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 North 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	Remnant 1111.3	4	86.84	2.46	2.04	2	6.5
AU2	Remnant 11.3.4	2	2.02	2.48	1.93	2	6.4
AU3	Remnant 11.11.4	4	88.03	2.27	1.82	2	6.09
AU4	Non-remnant 11.3.4#	2*	5.29	0.48	2.02	0.57	2.07
AU5	Remnant 11.8.4	2	6.4 [^]	2.66	1.82	2	6.48
		Total	188.6			Average	5.51 (rounded to 6)

#these sites were assessed outside the offset area in the same Lot and are representative of the non-remnant area within the offset site. New BioCondition sites for ongoing monitoring will need to be established post approval within the non-remnant area in Lot 1.

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 North Offset site contributes 18.58% 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.

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

IMPACT TO BE OFFSET	PROPOSED OFFSET AREA (HA)	TIME UNTIL ECOLOGICAL BENEFIT	HABITAT QUALITY	OFFSET (START)	WIHOUT OFFSET	HABITAT QUALITY SCORE AFTER OFFSET	% OF THE OFFSET OBLIGATION
259.2	188.6	20	6	6	5	7	18.58

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 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.

There are no published records for Greater Glider on Mt Larcom or within the offset site. The closest records within connected vegetation are along the coast, more than 6 km away. Given the suitability of the habitat but the lack of records it is likely that Greater Glider would only utilise the impact and 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 1 contains 23.2 ha of habitat suitable for Greater Glider which consists of remnant eucalypt woodlands mostly dominated by *Eucalyptus melanophloia* and *E. crebra*. One small area (3.99 ha) of non-remnant is suitable for assisted regeneration.

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Lot 30 contains a large area (142.5 ha) of SEVT which is not suitable habitat for Greater Glider, but the surrounding mixed eucalypt woodlands (165.4 ha) are highly suitable and contain preferred food tree species. 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 North offset sites which are suitable for Greater Glider.

REGIONAL ECOSYSTEM	SHORT DESCRIPTION	AREA (HA) AVAILABLE IN LOT 1	AREA (HA) AVAILABLE IN LOT 30	TOTAL (HA)
<i>Eucalyptus crebra</i> woodlands				
11.11.4	<i>Eucalyptus crebra</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges	12.79	75.24	88.03
Mixed eucalypt woodland				
11.12.15^	<i>Corymbia intermedia</i> +/- <i>Eucalyptus acmenoides</i> open forest to low woodland with lower tree layer of <i>Allocasuarina torulosa</i> , <i>Livistona decora</i> on igneous rocks. Coastal hills^	0	16.89	16.89
11.3.4	<i>Eucalyptus tereticornis</i> and/or <i>Eucalyptus</i> spp. woodland on alluvial plains	0	2.02	2.02
11.11.3	<i>Corymbia citriodora</i> , <i>Eucalyptus crebra</i> , <i>E. acmenoides</i> open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges	0	69.95	69.95
11.8.4	<i>Eucalyptus melanophloia</i> woodland to open woodland on Cainozoic igneous rocks.	6.40	0	6.4
Non-remnant	Cleared with scattered trees	3.99	1.3	5.3
	Total area	23.2 ha	165.4 ha	188.6 ha

^this RE is in a remote part of the offset site with very difficult access. Assessments found condition to be similar to adjacent assessment units so no habitat quality sites were established here as monitoring and management activities in the future would be very difficult. The area was included as part of 11.11.3 and it is assumed that any changes seen in the patch of 11.11.3 would be similar in this community. Both REs are suitable for Koala, Squatter Pigeon and Greater Glider and since both are in similar condition they are being considered one assessment unit.

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

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Table 3—8 Habitat quality scores for the Aldoga North 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	Remnant 11.11.3	4	86.84	2.76	1.88	1.43	6.06
AU2	Remnant 11.3.4	2	2.02	2.06	1.77	1.43	5.25
AU3	Remnant 11.11.4	4	88.03	2.27	1.66	1.43	5.35
AU4	Non-remnant 11.3.4	2*	5.29	0.44	1.18	0.57	2.19
AU5	Remnant 11.8.4	2	6.4	2.66	1.82	1.43	5.91
		Total	188.6			Average	4.95 (rounded to 5)

*these sites were assessed outside the offset area in the same Lot but were representative of the non-remnant area. New sites within the non-remnant area in Lot 1 will need to be established post approval.

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 North Offset site contributes 22.33% of the overall area needed to meet the Projects offset obligation (Table 3—9). The remainder of the obligation will be offset at the Aldoga South offset site.

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

IMPACT TO BE OFFSET	PROPOSED OFFSET AREA (HA)	TIME UNTIL ECOLOGICAL BENEFIT	HABITAT QUALITY SCORE PRIOR TO OFFSET (START)	HQ SCORE WITHOUT OFFSET	HABITAT QUALITY SCORE AFTER OFFSET (FUTURE)	% OF THE OFFSET OBLIGATION
258.77	188.6	20	5	4	6	22.33

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—7 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 priority weeds (Giant Rats Tail Grass, Rubber Vine, Prickly Pear and Lantana) to reduce impacts on 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 <i>Phascolarctos cinereus</i> (Koala) combined populations of Queensland, New South Wales and ACT (DCCEEW, 2022f) National Recovery Plan for the Koala <i>Phascolarctos cinereus</i> (combined populations of Queensland, NSW and ACT)	Loss of climatically suitable habitat Increased intensity of drought, heatwaves, bushfire Declining nutritional value of foliage Clearing and degradation of habitat Mortality caused by dogs and vehicles Disease	The offset site protects higher altitude woodlands which may be more resilient to climate change Increased bushfire protection measures will protect habitat on and surrounding the offset sites The offset will prevent further degradation of habitat and provide improvements in habitat quality Introduced predators will be monitored and controlled
Greater Glider	Conservation Advice for the <i>Petauroides volans</i> (Greater Glider southern and central) (DCCEEW, 2022) No recovery plan is publicly available for this species.	Inappropriate fire regimes Habitat clearing and fragmentation Timber harvesting Barbed wire fencing Increased temperatures and	The offset site protects higher altitude woodlands which may be more resilient to climate change Increased bushfire protection measures will protect habitat on and surrounding the offset sites Bushfire management will ensure ecologically appropriate burns of

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SPECIES	RELEVANT CONSERVATION ADVICE OR RECOVERY PLAN	THREATS OR RECOVERY ACTIONS	PROPOSED MEASURES IN THIS OAMP
		changes in rainfall Hyper-predation by owls Competition with Sulphur-crested Cockatoos Predation by Feral Cats and European Red Fox	woodlands are implemented. The offset will prevent further degradation of habitat and provide improvements in habitat quality Introduced predators will be monitored and controlled
Squatter Pigeon	Conservation Advice <i>Geophaps scripta scripta</i> No recovery plan is publicly available for this species.	Overgrazing by livestock and introduced pests such as European Rabbit (<i>Oryctolagus cuniculus</i>) Introduced weeds Inappropriate fire regimes Thickening of understorey vegetation Trampling of nests by stock Illegal shooting Clearance of habitat Reduction in abundance of natural food plants	The offset site protects higher altitude woodlands which may be more resilient to climate change Increased bushfire protection measures will protect habitat on and surrounding the offset sites Bushfire management will ensure ecologically appropriate burns of woodlands are implemented. The offset will prevent further degradation of habitat and provide improvements in habitat quality Introduced predators will be monitored and controlled Weeds, particularly shrubs and grasses, will be managed to ensure suitability for Squatter Pigeon Fuel loads will be managed to control thickening of the undergrowth and to 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 non-remnant areas in Lot 1. These areas have few shrubs and trees and introduced grasses and would have previously supported woodland to open forest.

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- MU 2- consists of remnant vegetation. These areas have been disturbed by historical logging and continued cattle grazing but contain an intact canopy and species representative of the pre-disturbance vegetation type.
- MU 3 – consists of areas which are not suitable to offset impacts on Koala, Greater Glider, or Squatter Pigeon. These are predominantly areas of TEC SEVT. These areas will not be directly managed, but will benefit from management actions undertaken in the surrounding management unit areas; e.g., increased weed control at the ecotones, pest animal management. MU 3 does not contribute to the offset areas but will benefit from protection of surrounding patches

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

MANAGEMENT UNIT	ASSESSMENT UNITS	AREA (HA)	REPRESENTATIVE PHOTO
MU1	AU4- Non-remnant	5.3	
MU2	AU 1, 2, 3 and 5-Remnant 11.11.4, 11.11.3, 11.8.4 and 11.12.15, 11.3.4	183.3	

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MANAGEMENT UNIT	ASSESSMENT UNITS	AREA (HA)	REPRESENTATIVE PHOTO
MU3 <i>This area will not have management actions undertaken within it but will benefit indirectly from management actions in MU1 and MU2.</i>	None	161.8	

4.3. 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 Queensland *Biosecurity Act 2014* (Biosecurity Act), have been recorded across the offset sites (Table 4—3) and include the following priority weeds:

- 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)
- Giant Rats Tail Grass, *Sporobolus natalensis* (Category 3 under the Biosecurity Act).

Of these species, Lantana, Rubber Vine and Giant Rats Tail 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, Giant Rats Tail and Rubber Vine will include:

- Baseline weed mapping will be undertaken in Year 1. 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 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 Grader Grass (*Themeda quadrivalvis*) or Guinea Grass (*Megathyrsus maximus*), recorded can have local impacts on habitat quality by excluding native forage species or making movements difficult. Other weed species

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present within the offset will also be controlled through the bushfire and weed management actions proposed as part of this OAMP.

Weed management will be focussed along the western boundary of the offset sites, where edge effects are expected to be the most prevalent. Management unit areas will be further refined into weed management areas by the weed management contractor and 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.

Table 4—3 Environmental weeds recorded within the Aldoga North offset site.

BOTANICAL NAME	COMMON NAME	QLD BIOSECURITY ACT STATUS	WONS	TREATMENT METHOD
<i>Lantana camara</i>	Lantana	Restricted-Category 3	Yes	Foliar spray, cut-stump or mechanical removal.
<i>Cryptostegia grandiflora</i>	Rubber Vine	Restricted-Category 3	Yes	Foliar spray, cut-stump or basal bark.
<i>Macroptilium atropurpureum</i>	Siratro			Foliar spray
<i>Megathyrsus maximus</i>	Guinea Grass			Foliar spray
<i>Opuntia tomentosa</i>	Velvety Tree Pear	Restricted-Category 3	Yes	Cut-stump or basal bark.
<i>Passiflora suberosa</i>	Corky Passionflower			Foliar spray
<i>Phytolacca octandra</i>	Inkweed			Foliar spray
<i>Richardia brasiliensis</i>	White Eye			Foliar spray
<i>Rivina humilis</i>	Coral Berry			Foliar spray
<i>Senna pendula</i>	Easter Cassia			Foliar spray, cut-stump or basal bark.
<i>Solanum seaforthianum</i>	Brazilian Nightshade			Foliar spray, cut-stump or basal bark.
<i>Sonchus oleraceus</i>	Thistle			Foliar spray, slashing/mowing, or wick wipe
<i>Sporobolus natalensis</i>	Giant Rats Tail Grass	Restricted-Category 3		Foliar spray, slashing/mowing, or wick wipe
<i>Themeda quadrivalvis</i>	Grader Grass			Foliar spray, slashing/mowing, or wick wipe

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BOTANICAL NAME	COMMON NAME	QLD BIOSECURITY ACT STATUS	WONS	TREATMENT METHOD
<i>Triumfetta rhomboidea</i>	Chinese Bur			Foliar spray, slashing/mowing, or wick wipe
<i>Verbena bonariensis</i>	Purple top vervain			Foliar spray, slashing/mowing, or wick wipe

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)
- not move (Category 4)
- not 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) (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.

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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	✓							
Initial weed monitoring and control	✓	✓	✓	✓	✓			
Maintenance weed control and management						✓ Year 8	✓ Year 11 and 14	✓ Year 17 and 20
Interim targets/completion criteria for priority weeds		<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.

4.4. 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—5 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	5.29	Fabrication MU1 consists of non-remnant vegetation with a lack of natural regeneration that indicates that the pre-existing vegetation does not have ability to recover without active restoration (i.e., planting). The target restored community will resemble that of the pre-clear RE (11.3.4 in most cases) as well as adjacent remnant communities. MU1 will be rehabilitated by the removal of all weed species prior to planting or direct seeding. Following the initial weed removal, the area will be planted or seeded and maintained until the trees are self-sufficient and have captured the site. In the non-remnant areas where there are some remaining trees nearby which could assist with regeneration, planting or seeding may not be required but active management will still be undertaken to protect regenerating shrubs and trees. Further details on the planting/seeding palette, density and maintenance schedule are provided in Tables 5-4.
MU2	183.3	Assisted Natural Regeneration MU2 consists of remnant vegetation mostly on land zone 11, with some smaller areas of RE 11.8.4 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.
MU3	161.89	Passive Management MU3 does not directly contribute to meeting the Project’s offset requirements. This area will benefit from broad management actions, including pest management (Section 4.6) and bushfire management (Section 4.7), as well as regeneration along the boundary with MU1 and MU2. Management actions such as weed management may be undertaken on the boundaries of this management unit if management will benefit MU1 or MU2 directly e.g., a weed infestation on the edge of MU3 will be treated if it is likely to spread into MU2 or MU1.

The species selected for planting will depend on the preclear RE and position in the landscape. In most cases the preclear RE should be 11.3.4 and the species listed in Table 4—6 will be used. In cases where RE 11.3.4 is not the likely preclear RE, a qualified ecologist should be engaged to advise on species selection and densities.

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Table 4—6 Species selection and recommended spacing for MU1.

BOTANICAL NAME	COMMON NAME	SPACING (M APART)	PROPORTION OF STEMS (%)	NOTES
<i>Eucalyptus tereticornis</i>	Forest Red Gum	3	80	Preferred Koala food tree and the dominant species within the target RE
<i>Corymbia tessellaris</i>	Moreton Bay Ash	3	10	Associated species within the target RE
<i>Casuarina cunninghamiana</i>	River She-oak	3	10	Associated species within the target RE

4.4.1. MAINTENANCE SCHEDULE

MU1 should be maintained for a minimum of 24 months to ensure the survival of the plantings or direct seeding. Details of the timing and maintenance tasks are provided in Table 4—7 and Table 4—8. Watering for direct seeding will not be required as seeding relies on soil moisture and the absence of weeds to successfully germinate, however timing should align with rainfall events.

Table 4—7 Maintenance schedule for MU1.

TIMING	MAINTENANCE TASK
First 12 months after planting	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 and controlled as required, taking care not to damage planted and regenerating native species, including grasses and forbs. Watering – Water each planted stock as per watering schedule (Table 4—6) depending upon prevailing weather conditions and then monthly or as necessary until seedlings are established and self-sustaining (approximately 3 – 6 months). Any replacement seedlings should be watered weekly during the first month following planting, then water as necessary until seedlings are established (approximately 3 – 6 months after planting). General Site Maintenance – e.g., remove any rubbish found on site such as old tree guards. Replacement Planting – Replace dead or senescent plants according to the methods in this plan and continue replacement planting until 95% survival rate achieved.
13-24 months after planting	Control weeds – After the first 12 months, conduct weed checks and control as required. Replacement Planting – Replace dead or senescent plants according to the methods detailed in this plan and continue replacement planting until 95% survival rate achieved. General Site Maintenance – Remove tree guards at 24 months, or when plant has reached a suitable level of establishment.

Table 4—8 Watering schedule for MU1.

WEEK	FREQUENCY*
1 – 2	One cycle every second day
2 – 7	Two cycles per week
7 – 12	One cycle per week
12 – 20	Site to be monitored for wilting of plants and watering to be undertaken as required

*During periods where rainfall events occur watering will not be required.

4.5. 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 or other suitable securement option agreed to by the Queensland Government. The process is administered by the Department of Resources and security of the land will be undertaken within 24 months of commencement of the action (Condition 11d). 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.

4.6. MANAGEMENT ACTION 4 – PEST MANAGEMENT

Pest management actions will be developed within one year of the land being secured. 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.

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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. Baseline monitoring should be undertaken within 12 months of securing the offset (Table 4—10).
- Incidental observations of the above listed pest fauna and associated information including number of individuals and GPS location will be recorded.
- Development of pest management actions 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. Where abundance or increased distribution triggers management action, management should be undertaken by a qualified pest animal contractor. Baseline control and monitoring will be undertaken within the first 12 months of securing the offset. Further control and formal monitoring will be undertaken annually for the first three years and then every three years after that. After 15 years, monitoring will reduce to 5-yearly intervals (Table 4—10).

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

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 (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—9 Potential monitoring and control techniques to be undertaken for pest animals within the offset area. The final methods will be determined by the pest management contractor.

SPECIES	POSSIBLE METHODS USED FOR MONITORING	POSSIBLE CONTROL TECHNIQUES	MOST EFFECTIVE TIMING
Wild Dog	Trapping Spotlight counts Track counts Cameras	Soft net traps Cage traps Padded jaw traps Ground shooting Baiting (both passive and active) Fumigation of dens	No specific timing required but is most effective if carried out in conjunction with regional control.
Feral Cat	Trapping Spotlight counts Track counts Cameras	Soft net traps Cage traps Padded jaw traps Ground shooting Baiting (both passive and active) Fumigation of dens	No specific timing required

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SPECIES	POSSIBLE METHODS USED FOR MONITORING	POSSIBLE CONTROL TECHNIQUES	MOST EFFECTIVE TIMING
European Fox	Trapping Spotlight counts Track counts Cameras	Soft net traps Cage traps Padded jaw traps Ground shooting Baiting (both passive and active) Fumigation of dens	No specific timing required
Feral Pig	Aerial surveys Trapping Dung counts Spotlight counts Track counts Cameras	Trapping (best used when resources are scarce and as part of a coordinated regional program) Baiting 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 in consultation with the rehabilitation contractor will decide whether management of these species would be beneficial.

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Table 4—10 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	16-20
Undertake baseline surveys to identify pest abundance	✓							
Develop pest management plan and actions	✓							
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	Pest species abundance less than baseline	Pest species abundance less than baseline	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.

4.7. MANAGEMENT ACTION 5 – BUSHFIRE MANAGEMENT

The offset area bushfire management actions and a Bushfire Management Plan (BMP) will be developed by a qualified bushfire management specialist within one year of legally securing the land. The BMP will aim to outline the management actions needed to minimise the spread of uncontrolled wildfire and outline where ecological burns could be utilised 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 BMP will include:

- a) Maps showing locations of existing firebreaks and trails and where new firebreaks are required
- b) Current vegetation conditions and types along with a risk assessment for each type
- c) Current fuel loads and identification of high-risk areas
- d) Timeframes for fire management for each vegetation type
- e) 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 BMP 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 BMP.

As a minimum, the following are recommended to be implemented to minimise the risk of ignition and enable fire response operations within the offset area:

- Develop control measures for high-risk operations (e.g. grass slashing) to minimise risk of ignition.
- Coordinate with other stakeholders to prevent illegal access in the powerline track (e.g. install blockade-type structures).
- Demarcate bushfire protection zones within the offset area and provide maps to relevant personnel. Clear specification and width for bushfire protection zones around each solar PV panel block and manage these areas according to specification and width.
- Maintain low grass fuel levels within the solar PV panel blocks.

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- Coordinate with adjoining land managers to manage strategic fire control lines in the landscape (e.g. OCG – Flynn Rd fence line break).
- Develop maps with the offset area and tenure boundary, locations of entry (and if gated), access tracks, water points (i.e. dams or water tanks), other existing assets.
- Establish signage for water points and access gate numbering.
- Maintain general site access (i.e. functioning gates and locks, access tracks in good condition), access to water supplies (i.e. dams or water tanks) and signage within the offset area for use from first responders.

The Regional Ecosystem Fire Guidelines was developed by the Queensland Herbarium to provide specific management strategies for different ecosystems and vegetation types based on their fire requirements, including fire return intervals, intensity and season. The guidelines outline burn strategies to prevent destructive bushfire and maintain or improve ecosystem health. Controlled burns should be undertaken in accordance with the guidelines (Queensland Herbarium 2024) for the respective vegetation types present within the offset area. Where fire fuel load in the respective vegetation type triggers management action, burns will be undertaken in the optimal season. A suitably experienced bushfire consultant will be engaged to provide advice on whether burning can be undertaken safely and in a manner that will support the various vegetation types and overall habitat quality improvement strategy. Fire fuel load assessment monitoring will be undertaken at five-year intervals (Year 1, 5, 10, 15 and 20) as a minimum whilst the BMP will determine more frequent monitoring events where required. More detail on the fire fuel load assessment monitoring methodology is provided in Appendix G. Note, RE 11.11.3 will require the establishment of monitoring sites. The BMP developed for the site and the actions/measures contained within will take precedence to ensure the site is managed safely and with expert guidance.

Table 4—11 provides the vegetation type present within the offset area, the optimal timing for burning and monitoring, and triggers to undertake burns.

Table 4—11 Regional Ecosystem Fire Guidelines (Queensland Herbarium 2024) for the offset area

RE CODE	OPTIMAL SEASON	BURN INTERVAL	STRATEGY	MONITORING	TRIGGER
11.11.4	Late wet to early dry season when there is good soil moisture. Early storm season or after good spring rains.	6-15 years	Burn <30% in any year under good soil moisture and when plants actively growing. All shrubby areas will carry fire after a good season.	Year 1, 5, 10, 15 & 20	Fire fuel load assessment exceeds baseline levels
11.11.3		6-15 years			Fire fuel load assessment exceeds baseline levels
11.8.4		6-10 years	Burn <30% in any year under good soil moisture and		Fire fuel load assessment

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			when plants actively growing. Sometimes a small amount of wind may move the fire front quickly so that burn intensity is not too severe to destroy habitat trees. Protect from wildfire.		exceeds baseline levels
11.12.15		6-10 years	Maintain fire management of surrounding country.		No trigger ²
11.3.4		6-10 years	Burn <30% in any year under good soil moisture and when plants actively growing. Sometimes a small amount of wind may move the fire front quickly so that burn intensity is not too severe to destroy habitat trees.		No trigger ³

4.8. MANAGEMENT ACTION 6 – KOALA, GREATER GLIDER AND 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. Additional habitat quality sites should be placed in the non-remnant area within Lot 1 to monitor improvements in the non-remnant area.

² Three areas of RE 11.12.15 are present within the Aldoga North offset area and are 2 ha, 3 ha and 10 ha in size. These areas are too small to actively manage with fire and therefore will not be managed. Furthermore, fire management of surrounding vegetation within the offset will be maintained.

³ Two areas of RE 11.3.4 are present within the Aldoga North offset area and are <1.5 ha in size. These areas are too small to actively manage with fire and therefore will not be managed. Furthermore, fire management of surrounding vegetation within the offset will be maintained.

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Baseline habitat quality and species monitoring will be undertaken within 12 months of the land being secured. Results of the baseline surveys are presented in Table 4—13. Following on from that, habitat quality monitoring will be undertaken every five years. The habitat quality monitoring should be reported in the habitat quality monitoring report (Table 7—2) and be included as part of the Offset Monitoring 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 and the following methodology used to calculate the baseline scores. The methods used for detecting each species will be best practice and evidence based (i.e., Table 4—12).

Table 4—12 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. 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. Nocturnal spotlighting will also be undertaken (in conjunction with Greater Glider spotlighting) and will provide additional information and search effort. At least two SAT searches should be undertaken in each assessment unit.
Greater Glider	Spotlighting transects (either walking or driving) 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. 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. 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). 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. 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. In dry periods, observations at water points at dusk and dawn should be considered as the species requires regular access to water. 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.

Habitat quality assessment (HQA) and habitat quality scoring (HQS) were undertaken for the offset area and followed the same methods used in the Project impact area. A total of 16 BioCondition surveys (in

accordance with the BioCondition Assessment Manual by Eyre et al. (2015)) were undertaken within the offset area. Targeted surveys for MNES were undertaken within the offset area including balanced koala scat surveys (BKSS) for koala, spotlighting for koala and greater glider, and flushing and opportunistic roaming surveys whilst traversing the offset area for squatter pigeon. Observations from these surveys were used to inform the habitat quality assessment and scoring.

Baseline habitat quality scores for each MNES are provided below in Table 4—13.

Table 4—13 Baseline habitat quality scores for the offset area

MNES	BASLINE WEIGHTED HQS (OUT OF 10)	BASLINE HQS USED IN THE EPBC CALCULATOR (OUT OF 10)
Koala	4.59	5
Greater Glider	5.51	6
Squatter Pigeon	4.95	5

4.8.1. 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.

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4.9. SUMMARY OF MANAGEMENT ACTIONS

The timing of management actions over the period of this OAMP is shown in Table 4—14.

Table 4—14 Summary of the management actions to be undertaken at Aldoga North offset area.

MANAGEMENT ACTIONS	YEAR							
	1*	2	3	4	5	6-10	10-15	16-20
Management Action 1: Environmental weed management	Baseline management session	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	For planted stock watering and plant maintenance undertaken according to watering schedule	For planted stock watering and plant maintenance undertaken according to watering schedule	For planted stock 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						

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MANAGEMENT ACTIONS	YEAR							
Management Action 4: Pest management	Baseline management session	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 until Year 15, then management every 5 years (Table 4–10)	One management session every 5 years (Table 4–10) until completion criteria are met.
Management Action 5: Bushfire management	Bushfire fire plan to be developed within 12 months of securing the land				One monitoring event	One monitoring event year 10	One monitoring event year 15	One monitoring event year 20
Management Action 6: Habitat quality monitoring	Baseline monitoring event				One monitoring event	One monitoring event year 10	One monitoring event year 15	One monitoring event year 20

*Timeline starts from the land being secured.

Figure 4.1 Management unit areas.

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). 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. 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,	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.

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POLICY OBJECTIVE	HOW THE OFFSETS MEET THE OFFSETS FRAMEWORK
scientifically 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 be judged for effectiveness. The plan allows for regular auditing and provides guidance for ongoing reporting.

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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 and unplanned and uncontrolled wildfires. 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
The offset area is legally secured	The offset is impacted by conflicting land uses and not protected from future developments	Possible	Moderate	Medium	The offset area is not legally secured	The offset area will be legally secured under a voluntary declaration under the VM Act (see Section 4.5).	ACCIONA will take all reasonable steps so that agreements are in place so that future development activities do not occur within the offset area. ACCIONA will find an alternative approach to legally securing the offset area so that future development cannot occur.	Low
	Unauthorised access and activities have the potential to	Likely	Moderate	Medium	Evidence of trespassing by unauthorised personnel or	Offset area will be appropriately signposted, gates installed and locked. Only the landholder and	Fencing, gates and locks will be repaired as required and maintained to a	Low

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MANAGEMENT OBJECTIVE	RISK EVENT	RISK LIKELIHOOD	RISK CONSEQUENCE	UNMITIGATED RISK	TRIGGER	ACTION TO REDUCE RISK	PROPOSED ACTION	MITIGATED RISK
	degrade ecological values (i.e. 4WD access resulting in erosion, timber harvesting, dumping of rubbish, general pollution and contamination)				general public.	authorised personnel will be granted access. Offset area will be monitored for signs of damage from unauthorised access.	good working condition.	
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.	All prescribed burns will be undertaken by a suitably qualified bushfire contractor. Measures to prevent and avoid sources of ignitions, and facilitate response actions will be implemented (see Section 4.7). Fire management actions will be implemented as per the BMP. This includes but is not limited to installation and maintenance of fire	If an unplanned bushfire impacts the offset area, a review of the BMP and firebreaks will be undertaken. Fuel loads will be reassessed.	Low

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MANAGEMENT OBJECTIVE	RISK EVENT	RISK LIKELIHOOD	RISK CONSEQUENCE	UNMITIGATED RISK	TRIGGER	ACTION TO REDUCE RISK	PROPOSED ACTION	MITIGATED RISK
						breaks, access tracks, gates, watering points and signage, in line with the BMP. Conduct regular monitoring and assessment of fuel loads. Ensure QRFS are informed of the offset locations and access points.		
	Habitat quality score decreases from baseline score	Possible	Moderate	Medium	Monitoring identifies that the habitat quality score has decreased from the baseline.	Investigate cause of reduction. If possible, mitigate the cause. Repairable damage should be remediated where possible. Increase active management to ensure targets are met. Review the management actions and increase monitoring.	Review management actions and monitoring frequency.	Low
	Erosion	Likely	Minor	Low	Monitoring identifies new or expanding erosion	Vegetation cover will be managed in areas at risk of erosion. Tracks will be monitored for erosion. Areas with erosion will be fenced off	Any areas with significant erosion will be investigated and the cause will be managed.	Low

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MANAGEMENT OBJECTIVE	RISK EVENT	RISK LIKELIHOOD	RISK CONSEQUENCE	UNMITIGATED RISK	TRIGGER	ACTION TO REDUCE RISK	PROPOSED ACTION	MITIGATED RISK
						and vehicles will be excluded.		
	Drought	Likely	Moderate	Medium	Monitoring indicates a reduction in habitat quality due to drought stress.	A watering schedule will be established for rehabilitation and revegetation areas and frequency increased as necessary until seedlings are established and self-sustaining (see Section 4.4.1). Supplementary planting will be undertaken and watered as necessary until established (see Section 4.4.1). Existing vegetation will be well established, and natural recruitment will occur.	If drought conditions prevail longer than the proposed watering schedule, a review of the existing schedule will be reassessed and frequency increased as required. Allow offset to recover post drought by managing weeds, erosion and fire. Any additional management recommendations made in the 5-yearly monitoring reports will also be implemented.	Low
	Cyclones, severe tropical lows, flooding	Possible	Moderate	Medium	Cyclonic winds, rainfall and flooding occurs within	Monitoring of initial planting within the rehabilitation and revegetation sites will be undertaken during	If revegetation and rehabilitation sites are lost as a result of flooding and cyclonic conditions,	Low

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MANAGEMENT OBJECTIVE	RISK EVENT	RISK LIKELIHOOD	RISK CONSEQUENCE	UNMITIGATED RISK	TRIGGER	ACTION TO REDUCE RISK	PROPOSED ACTION	MITIGATED RISK
					the offset area.	watering and weed control implemented (see Section 4.4.1). Replacement planting will be undertaken (see Section 4.4.1). Existing vegetation will be well established, and natural recruitment will occur.	the supplementary planting will be undertaken. Any additional management recommendations made in the 5-yearly monitoring reports will also be implemented.	
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	Investigate cause of weed spread. Review the weed management actions, timing and frequency of management. Increase frequency and intensity of application where required (i.e. after heavy rains). Undertake remedial action.	Low

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MANAGEMENT OBJECTIVE	RISK EVENT	RISK LIKELIHOOD	RISK CONSEQUENCE	UNMITIGATED RISK	TRIGGER	ACTION TO REDUCE RISK	PROPOSED ACTION	MITIGATED RISK
						ensure management was successful. Spot spraying in high-risk areas should occur on a regular basis. Mitigate unauthorised access and implement effective biosecurity measures to incoming personnel/machinery.		
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 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.	If pest animal abundance continues to increase after one round of management, review of the management measures should be undertaken including whether larger scale treatment should be undertaken in coordination with the regional council.	Low

7. MONITORING AND MANAGEMENT

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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 Monitoring Report which will include the results of the previous period and outline management actions that need to take place in the following period. An Annual Compliance Report will be submitted to the Department and include information regarding the offset’s compliance with the approval conditions and the progress that has been made to achieving the environmental outcomes. The compliance report will be provided to the department within 5 days of the date of publication on the Acciona website. All compliance reports will be made publicly available until the approval expires. A full compliance report will be submitted if the public version is redacted due to sensitive ecological data.

An Offset Monitoring Report will be completed separately to the Annual Compliance Report and will be published on the Project website and made available to the Department on a 5-yearly basis. The Offset Monitoring Report will report on the management and monitoring activities undertaken within the offset area and the outcomes of habitat quality scoring, and the offset area’s progress towards meeting interim milestones and completion criteria contained within this OAMP. Monitoring will be undertaken until the completion criteria are met. Sensitive ecological data will be redacted in all publicly available reports.

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 priority weeds to <5% across all monitoring sites	Weed survey to be conducted within 12 months of securing the land. Weed control will be undertaken every year for the first 5 years. After the initial five years, management should be undertaken every 3 years until the completion criteria	Monitoring requirements and methodology will be undertaken as per weed survey methodology in Appendix G.	An increase in the % cover score from the baseline or previous monitoring events Interim performance target not attained	Proponent Rehabilitation/ weed contractor commissioned by the proponent

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MANAGEMENT ACTION	PERFORMANCE CRITERIA	TIMING OF MONITORING	MONITORING	MANAGEMENT TRIGGER	RESPONSIBLE PERSON
		are met. Monitoring will take place every 5 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.	Habitat quality monitoring will commence within one year of the offset being legally secured. Monitoring will be undertaken every five 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 14 permanent plots.	Reduction in recruitment	Rehabilitation specialist and ecologist commissioned by the proponent
Availability of food resources for Koala and Greater Glider	Increase the number of Koala and Greater Glider foraging trees 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 every five 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 14 permanent plots.	No increase in the number of foraging trees after 10 years 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 within areas mapped as Squatter Pigeon habitat	Habitat quality monitoring will commence within one year of the offset being legally secured. Monitoring will be undertaken every five 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 14 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					

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MANAGEMENT ACTION	PERFORMANCE CRITERIA	TIMING OF MONITORING	MONITORING	MANAGEMENT TRIGGER	RESPONSIBLE PERSON
Securing the offset	Offset legally secured	No monitoring	-	Offset property not secured prior to the action commencing	Proponent
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 every year for the first 3 years and then every 3 years after that. After 15 years, monitoring will reduce to 5 years until completion criteria are met.	Monitoring requirements and methodology will be undertaken as per pest survey methodology in Appendix G.	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 every 5 years.	Fire fuel load assessment monitoring as per methodology in Appendix G and timing to align with BMP and Regional Ecosystem Fire Guidelines (Queensland	Uncontrolled bushfire within the offset properties	Proponent Qualified bushfire specialist commissioned by the proponent

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MANAGEMENT ACTION	PERFORMANCE CRITERIA	TIMING OF MONITORING	MONITORING	MANAGEMENT TRIGGER	RESPONSIBLE PERSON
			Herbarium 2024) burn intervals.		
Manage fire to improve habitat quality	Prescribed burns implemented as per the BMP and Regional Ecosystem Fire Guidelines (Queensland Herbarium 2024).	Monitoring every 5 years.	Fire fuel load assessment monitoring as per methodology in Appendix G and timing to align with the BMP and Regional Ecosystem Fire Guidelines (Queensland Herbarium 2024) burn intervals.	Prescribed burns not undertaken as per BMP. Relevant habitat quality scores reduced.	Proponent Qualified bushfire specialist commissioned by the proponent.
Management Action 6: Offset habitat quality					
Habitat quality improvements	Increasing habitat quality	Habitat quality monitoring will be undertaken every five 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 14 permanent plots.	A reduction in habitat quality score for more than two consecutive monitoring periods.	Qualified ecologist commissioned by the proponent.

7.2. REPORTING

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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 South offset site.

Table 7—2 Reporting timeframes.

REPORT	REPORT CONTENT	REPORTING PERIOD	RESPONSIBILITY	SUBMISSION PERIOD
Annual Compliance Report	Report on 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 be written in accordance with the department’s <i>Annual Compliance Report Guidelines (2014)</i> or subsequent revision versions. 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.	Annually until completion criteria are complete or until advised by the Minister.	Acciona with inputs from suitably qualified ecologists	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. The compliance report will be provided to the department within 5 days of the date of publication on the Acciona website. All compliance reports will be made publicly available until the approval expires. A full compliance report will be submitted if the public version is redacted due to sensitive ecological data.

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REPORT	REPORT CONTENT	REPORTING PERIOD	RESPONSIBILITY	SUBMISSION PERIOD
	- Any management triggers that were triggered and the actions required to correct them. - Details of compliance, incidents and non-compliance with the conditions and the OAMP. - A shapefile of any clearance of any protected matters or their habitat undertaken within the relevant 12 month period. - A schedule of all plans prepared and in existence in relation to the conditions during the relevant 12 month period. - Recommendations for improving any of the management plans or this OAMP.			
Offset Monitoring Report	Report on compliance with the EPBC Approval conditions and habitat quality scoring compared with interim milestones	Every 5 years until completion criteria are complete or until advised by the Minister, commencing after the legal securing of the land.	Acciona	Within 3 months of the five year anniversary legal securing of the land.
	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 within the offset site.	Every 5 years until completion criteria are complete or until advised by the Minister, commencing after the legal securing of the land.	Acciona with inputs from suitably qualified ecologists	Within 3 months of the five year anniversary of the legal securing of the land.
	Habitat quality: Provides the results of the habitat quality monitoring and the targeted surveys for the MNES species	Every 5 years after the legal securing of the land.	A suitably qualified ecologist on behalf of Acciona	Within 3 months of the monitoring taking place. The report will be an appendix in the Offset Monitoring Report
	Weed monitoring: Provides the results of the weed monitoring undertaken and the management that has taken place in the reporting period.	Every 5 years after the legal securing of the land.	A suitably qualified ecologist or weed management	Within 3 months of the monitoring taking place. The report will be an

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REPORT	REPORT CONTENT	REPORTING PERIOD	RESPONSIBILITY	SUBMISSION PERIOD
			contractor on behalf of Acciona	appendix in the Offset Monitoring Report
	Pest management: Provides the results of the pest monitoring undertaken and the management actions that have taken place.	Every 5 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 Offset Monitoring Report.

7.2.1. REVISED OAMP

The results of the baseline surveys for weeds (Section 4.3), pests (Section 4.6) and fire fuel load assessment (Section 4.7) is presented in Appendix G. The Department will be notified of any changes to the OAMP as per Condition 35.

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 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 priority 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 the number of Koala and Greater Glider foraging trees 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 species richness and cover to >95% of the benchmark within areas mapped as Squatter Pigeon habitat	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 uncontrolled bushfire	No uncontrolled bushfires in the offset properties	Achieving target habitat quality score for the assessment unit.
Manage fire to improve habitat quality	Prescribed burns implemented as per the BMP	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.

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 Offset Monitoring 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 11.3.4	5	5	5-5.5	5.5	6
AU3	Remnant 11.11.4	5	5	5-5.5	5.5	6
AU4	Non-remnant 11.3.4	2	2	2-2.5	2.5	3
AU5	Remnant 11.11.15	5	5	5-5.5	5.5	6
Squatter Pigeon						
AU1	Remnant 11.11.3	6	6	6-6.5	6.5	7
AU2	Remnant 11.3.4	6	6	6-6.5	6.5	7
AU3	Remnant 11.11.4	6	6	6-6.5	6.5	7
AU4	Non-remnant 11.3.4	2	2	2-2.5	3	3
AU5	Remnant 11.11.15	6	6	6-6.5	6.5	7
Greater Glider						
AU1	Remnant 11.11.3	6	6	6-6.5	6.5	7

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AU	RE	START HQ SCORE	INTERIM SCORE TARGETS			COMPLETION CRITERIA
AU2	Remnant 11.3.4	5	5	5-5.5	5.5	6
AU3	Remnant 11.11.4	5	5	5-5.5	5.5	6
AU4	Non-remnant 11.3.4	3	3	3-3.5	3.5	4
AU5	Remnant 11.11.15	5	5	5-5.5	5.5	6

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
 - 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 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 presented for each of Koala, Greater Glider and Squatter Pigeon in Appendices B.1.2, B.2.2 and B.3.2.

7.3.2.1. 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	5.65 (6)	7	- Reduce predation threats from moderate to negligible and maintain. - Reduce priority weed cover to less than 5% at all sites - Increase tree recruitment at all sites to 100% - Decrease shrub canopy to less than 200% of the benchmark cover to assist with movement through the landscape. All of the above management actions will increase the score to an average score of 6.20. This is only a 0.5-point gain over 20 years, however, within 20 years Koala may inhabit the site as extrinsic pressures such as climate change, ongoing clearing and decreased connectivity force Koalas into the remaining remnant patches. Despite the small gain in this single assessment unit, the average gain over all assessment units is 1.0.
AU2	Remnant 11.3.4	4.84 (5)	6	- Reduce predation threats from moderate to negligible and maintain. - Reduce priority weed cover to less than 5% at all sites - Increase tree height to 100% of the benchmark - Increase tree cover to 100% of the benchmark - Increase number of large trees to 100% of the benchmark - Increase tree recruitment at all sites to 100% - Increase tree species richness at all sites to 100% of the benchmark All of these management actions will increase the score to an average score of 5.79 (rounded to a 6)
AU3	Remnant 11.11.4	4.94 (5)	6	- Reduce predation threats from moderate to negligible and maintain. - Increase tree recruitment at all sites to 100% - Increase tree cover to 100% of the benchmark - Reduce weed cover particularly introduced grasses and Lantana which can smother native foraging species- reducing the cover to less than 5% at all sites All of these management actions will increase the score to an average score of 5.9 (rounded to a 6)

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IMPACT AU	RE	HABITAT QUALITY PRIOR TO OFFSET	HABITAT QUALITY AFTER OFFSET TARGET	SPECIES SPECIFIC MANAGEMENT ACTIONS
AU4	Non-remnant 11.3.4	2.19 (2)	3	- Reduce predation threats from moderate to negligible and maintain. - Increase tree recruitment at all sites to 100% - Increase tree species richness at all sites to 100% of the benchmark - Increase tree height to 25% of the benchmark - Increase tree cover to 10% of the benchmark - Reduce weed cover particularly Rubber Vine which can smother forage and den trees- reducing the cover to less than 5% at all sites - Increase the availability of foraging habitat to moderate from poor All of these management actions will increase the score to an average score of 3.3 (rounded to a 3)
AU5	Remnant 11.8.4	5.33 (5)	6	- Increase tree recruitment at all sites to 100% - Increase tree species richness at all sites to 100% of the benchmark - Increase tree height to 100% of the benchmark - Reduce predation threats from moderate to negligible and maintain. All of these management actions will increase the score to an average score of 5.92 (rounded to a 6)

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Table 7—6 Squatter Pigeon specific management actions 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	6.5 (6)	7	- Reduce predation threats from moderate to negligible and maintain. - Reduce priority weed cover to less than 5% at all sites - Increase tree recruitment at all sites to 100% - Increase coarse woody debris (to provide structural complexity) to 100% of the benchmark - Reduce shrub cover (to make it more suitable for Squatter Pigeon as per the recovery actions (Table 4—1)) to less than 200% of the benchmark - Increase native grass cover to 100% of the benchmark - Increase tree canopy cover to 100% of the benchmark - Increase quality and availability of food and foraging resources from moderate to high through increasing native grass cover and reducing very high shrub cover. - Modify sheltering resources (by reducing shrub cover) to increase the quality of shelter resources from moderate to high All of these management actions will increase the score to an average score of 7.46 (rounded to a 7)
AU2	Remnant 11.3.4	6.4 (6)	7	- Reduce predation threats from moderate to negligible and maintain. - Reduce priority weed cover to less than 5% at all sites - Increase tree recruitment at all sites to 100% - Increase native grass cover to 100% of the benchmark - Increase grass species richness at all sites to 100% of the benchmark - Increase coarse woody debris (to provide structural complexity) to 100% of the benchmark All of these management actions will increase the score to an average score of 6.91 (rounded to a 7)
AU3	Remnant 11.11.4	6.09 (6)	7	- Reduce predation threats from moderate to negligible and maintain. - Increase tree recruitment at all sites to 100%

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IMPACT AU	RE	HABITAT QUALITY PRIOR TO OFFSET	HABITAT QUALITY AFTER OFFSET TARGET	SPECIES SPECIFIC MANAGEMENT ACTIONS
				• Increase native grass and forb cover to 100% of the benchmark • Increase native grass cover to 100% of the benchmark • Increase coarse woody debris (to provide structural complexity) to 100% of the benchmark • Reduce priority weed cover to less than 5% at all sites All of these management actions will increase the score to an average score of 7.27 (rounded to a 7)
AU4	Non-remnant 11.3.4	2.07 (2)	4	• Reduce predation threats from moderate to negligible and maintain. • Increase tree recruitment at all sites to 100% • Increase grass and forb species richness and cover to 100% of the benchmark • Increase native grass cover to 100% of the benchmark • Increase coarse woody debris (to provide structural complexity) to more than 10% of the benchmark • Reduce priority weed cover to less than 5% at all sites • Increase the availability of foraging habitat to high from poor • Increase the availability of shelter habitat to high from poor All of these management actions will increase the score to an average score of 4.02 (rounded to a 4)
AU5	Remnant 11.8.4	6.48 (6)	7	• Increase tree recruitment at all sites to 100% • Increase tree species richness at all sites to 100% of the benchmark • Increase large trees at all sites to 100% of the benchmark • Increase coarse woody debris (to provide structural complexity) to 100% of the benchmark • Reduce predation threats from moderate to negligible and maintain. All of these management actions will increase the score to an average score of 7.02 (rounded to a 7)

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Table 7—7 Greater Glider specific management actions 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	6.06 (6)	7	- Reduce predation threats from moderate to negligible and maintain. - Reduce priority weed cover to less than 5% at all sites - Reduce shrub cover to less than 200% of the benchmark to enable gliding - Increase tree recruitment at all sites to 100% - Increase tree canopy cover to 100% of the benchmark All of these management actions will increase the score to an average score of 6.61 (rounded to a 7)
AU2	Remnant 11.3.4	5.25 (5)	6	- Reduce predation threats from moderate to negligible and maintain. - Reduce priority weed cover to less than 5% at all sites - Increase the large tree count to 100% of the benchmark - Increase tree canopy cover to 100% of the benchmark - Increase tree species richness at all sites to 100% of the benchmark - Increase tree recruitment at all sites to 100% All of these management actions will increase the score to an average score of 6 (rounded to a 6)
AU3	Remnant 11.11.4	5.35 (5)	6	- Reduce predation threats from moderate to negligible and maintain. - Increase tree recruitment at all sites to 100% - Increase tree canopy cover to 100% of the benchmark - Reduce priority weed cover to less than 5% at all sites All of these management actions will increase the score to an average score of 6.31 (rounded to a 6)
AU4	Non-remnant 11.3.4	2.62 (3)	4	- Reduce predation threats from moderate to negligible and maintain. - Increase tree recruitment at all sites to 100% - Increase tree species richness at all sites to 100% of the benchmark

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IMPACT AU	RE	HABITAT QUALITY PRIOR TO OFFSET	HABITAT QUALITY AFTER OFFSET TARGET	SPECIES SPECIFIC MANAGEMENT ACTIONS
				• Increase tree height to more than 25% of the benchmark • Increase tree cover to more than 25% of the benchmark • Increase shrub cover to more than 25% of the benchmark • Increase shrub species richness and cover to 100% of the benchmark • Reduce priority weed cover to less than 5% at all sites • Increase the availability of foraging habitat to moderate from poor All of these management actions will increase the score to an average score of 3.63 (rounded to a 4)
AU5	Remnant 11.8.4	5.91 (6)	7	• Increase tree recruitment at all sites to 100% • Increase tree species richness at all sites to 100% of the benchmark • Increase large trees at all sites to 100% of the benchmark • Reduce predation threats from moderate to negligible and maintain. • Increase tree height to more than 100% of the benchmark • Increase shrub species richness and cover to 100% of the benchmark All of these management actions will increase the score to an average score of 6.53 (rounded to a 7)

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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 weed management actions. - Treat weeds as per Section 4.3.	- An increase in the % cover score from the baseline or previous monitoring events - Interim performance target not attained	- Review success of weed management techniques and weed hygiene practices within 2 months of the trigger. - Review timing of weed management techniques - Increase weed control frequency based on advice from a qualified weed management contractor. - Review the OAMP within 3 months of the trigger.
Management Action 2: Rehabilitation and regeneration			
Recruitment of native shrubs and trees	- Implement appropriate fire regimes - Manage weeds	Reduction in recruitment	- Review the bushfire management plan and consider implementing ecologically appropriate fire regimes within 2 months of the trigger. - Review success of current weed management actions being implemented and increase weed control if competition may be causing the reduction within 2 months of the trigger. - Review the OAMP within 3 months of the trigger.
Availability of food resources for Koala and Greater Glider	- Implement appropriate fire regimes - Manage weeds	- No increase in number of foraging trees after 10 years - No increase in the number of large trees	- Review the bushfire management plan and consider implementing ecologically appropriate fire regimes within 2 months of the trigger. - Review success of current weed management actions being implemented and increase weed control if competition may be causing the reduction within 2 months of the trigger. - Review the OAMP within 3 months of the trigger.
Availability of food	Implement appropriate fire	No increase in the cover of native	Review the bushfire management plan and consider implementing ecologically

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MANAGEMENT ACTION	MANAGEMENT	MANAGEMENT TRIGGER	CORRECTIVE ACTIONS
resources for Squatter Pigeon	regimes Manage weeds	grasses or native grass species richness.	appropriate fire regimes within 2 months of the trigger. - Review success of current weed management being implemented and increase weed control if competition may be causing the reduction within 2 months of the trigger. - 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 landowner - Control methods will include appropriate and humane techniques including shooting, trapping and baiting in accordance with the relevant legislation.	- Increase in predator abundance above the baseline - Habitat quality scores not meeting the interim targets as a result of pest impacts.	- Review the pest animal management plan within 3 months of the trigger. - Investigate possible reasons for increase within 1 month of the trigger. - Consult neighbouring landowners and consider implementing broader scale management in conjunction with neighbouring landowners and council. - Increase frequency of control techniques within 2 months of the trigger.
Management Action 4: Bushfire management			
Manage the risk of uncontrolled bushfire and manage fire to improve habitat quality.	- Suitably qualified bushfire specialist to develop a BMP which includes ecologically appropriate fire regimes for the REs present - Fire will be excluded from the	- Uncontrolled bushfire within the offset site - Required burning regime not achieved - Habitat quality scores not meeting the	- Evidence of fire to be recorded during monitoring periods. - Review the BMP to assess whether more fire protection is required within 2 months of the trigger. - Increase monitoring of fire breaks. Undertake maintenance if required within 4 months of the trigger.

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MANAGEMENT ACTION	MANAGEMENT	MANAGEMENT TRIGGER	CORRECTIVE ACTIONS
	offset site except planned ecological burns Install fire breaks to protect native vegetation	interim targets.	
Management Action 6: Offset habitat quality			
Habitat quality improvement	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 - Review all management actions within 1 month of trigger. - Review the OAMP within 3 months of trigger

7.3.4. COMPLIANCE REPORTING

Annual Compliance Report

An annual compliance report will be completed annually and will report on 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 be written in accordance with the department's Annual Compliance Report Guidelines (2014) or subsequent revision versions.

The compliance report will be provided to the department within 5 days of the date of publication on the Acciona website. All compliance reports will be made publicly available until the approval expires. A full compliance report will be submitted if the public version is redacted due to sensitive ecological data.

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.
- Details of compliance, incidents and non-compliance with the conditions and the OAMP.

- A shapefile of any clearance of any protected matters or their habitat undertaken within the relevant 12 month period.
- A schedule of all plans prepared and in existence in relation to the conditions during the relevant 12 month period.
- Recommendations for improving any of the management plans or this OAMP.

Offset Monitoring Report

An Offset Monitoring Report will be completed every 5 years and will include the results of 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 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.

Compliance reports will be published on the Acciona website within 60 days following the 5 year 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 a high impact industry precinct and would otherwise be likely to be cleared in the future. 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, Wedge-leaf Tuckeroo and Three-leaved Bosistoa. The location of the offset site adjacent to the impact area makes them valuable for fauna potentially displaced due to the action. The value of the offset sites is further increased due to its location in a large patch of vegetation, with good 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 North offset sites provide 21.43% of the offset obligation for Koala, 18.58% of the obligation for Squatter Pigeon and 22.33% of the offset obligation for Greater Glider (Table 8—1). Combined with

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Aldoga South offset sites, 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
	11.3.26	Raw Data	% BMK	Score	Raw Data	% BMK	Score	Raw Data	% BMK	Score	% BMK
Site Condition											
Recruitment of woody perennial species in EDL	100	25	25.00	3	34	34	3	100	100	5	53.00
Native plant species richness - trees	3	4	133.33	5	3	100	5	5	166.67	5	133.33
Native plant species richness - shrubs	3	7	233.33	5	6	200	5	2	66.667	2.5	166.67
Native plant species richness - grasses	13	11	84.62	2.5	12	92.308	5	12	92.308	5	89.74
Native plant species richness - forbes	14	21	150.00	5	19	135.71	5	17	121.43	5	135.71
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
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
Shrub canopy cover	2	1.8	90.00	5	2	100	5	0	0	0	63.33
Native grass cover	36	4.8	13.33	1	17	47.222	1	2	5.5556	0	22.04
Organic litter	32	75.4	235.63	3	72.8	227.5	3	80.2	250.63	3	237.92
Large trees (euc plus non-euc)	16	32	200.00	15	34	212.5	15	8	50	5	154.17
Coarse woody debris	535	858	160.37	5	347	64.86	5	612	114.39	5	113.21
Non-native plant cover	0	1	1.00	10	10	10	5	5	5	5	5.33
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				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

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

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-canopy)	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 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				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 SSR 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

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

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

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

A.2 GREATER GLIDER

Assessment Unit - Regional Ecosystem	AU 1- 11.3.26											
Site Reference	Benchmark	Site 1			Site 3			Site 9			Average % benchmark	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-canopy)	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

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

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-canopy)	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 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			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

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

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-canopy)	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 state				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

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

A.3 SQUATTER PIGEON

Assessment Unit - Regional Ecosystem	AU1- 11.3.26										
Site Reference	Benchmark	Site 1			Site 3			Site 9			Average %
	11.3.26	Raw Data	% Benchmark	Score	Raw Data	% Bench	Score	Raw Data	% Benchmark	Score	benchm
Site Condition											
Recruitment of woody perennial species in EDL	100	25	25.00	3	34	34	3	100	100	5	53.00
Native plant species richness - trees	3	4	133.33	5	3	100	5	5	166.66667	5	133.33
Native plant species richness - shrubs	3	7	233.33	5	6	200	5	2	66.66667	2.5	166.67
Native plant species richness - grasses	13	11	84.62	2.5	12	92.3077	5	12	92.307692	5	89.74
Native plant species richness - forbes	14	21	150.00	5	19	135.714	5	17	121.42857	5	135.71
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
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
Shrub canopy cover	2	1.8	90.00	5	2	100	5	0	0	0	63.33
Native grass cover	36	4.8	13.33	1	17	47.2222	1	2	5.5555556	0	22.04
Organic litter	32	75.4	235.63	3	72.8	227.5	3	80.2	250.625	3	237.92
Large trees (euc plus non-euc)	16	32	200.00	15	34	212.5	15	8	50	5	154.17
Coarse woody debris	535	858	160.37	5	347	64.8598	5	612	114.39252	5	113.21
Non-native plant cover	0	1	1.00	10	10	10	5	5	5	5	5.33
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				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 SSR 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

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU1- 11.7.6											
Site Reference	Benchmark	Site 2			Site 5			Site 11			Average %	Average
	11.7.6	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	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-canopy)	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-canopy)	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 region				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

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

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		
	11.3.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	Score	benchmark	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-canopy)	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-canopy)	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

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

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	THQ1, Lot30CTN, Rem			THQ6, Lot 30 Rem			THQ5, Lot30, Rem			THQ2, Lot30, Rem			Average %	Average
	11.11.3	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	Score
Site Condition															
Recruitment of woody perennial species in EDL	100	100	100.0	5	80	80.0	5	100	100.0	5	50	50.0	3	82.50	4.5
Native plant species richness - trees	3	4	133.3	5	5	166.7	5	4	133.3	5	4	133.3	5	141.67	5
Native plant species richness - shrubs	6	24	400.0	5	14	233.3	5	11	183.3	5	24	400.0	5	304.17	5
Native plant species richness - grasses	6	13	216.7	5	11	183.3	5	7	116.7	5	9	150.0	5	166.67	5
Native plant species richness - forbes	14	17	121.4	5	16	114.3	5	21	150.0	5	14	100.0	5	121.43	5
Tree canopy height (average of emergent, canopy, sub-canopy)	21.5	18	83.7	5	17	79.1	5	25	116.3	5	17	79.1	5	89.53	5
Tree canopy cover (average of emergent, canopy, sub-canopy)	25.5	45.7	179.2	4	47.1	184.7	4	44.5	174.5	5	43	168.6	4	176.76	4.25
Shrub canopy cover	9	33.2	368.9	3	16.4	182.2	5	39.8	442.2	3	25.75	286.1	3	319.86	3.5
Native grass cover	17	15	88.2	3	5.6	32.9	1	9	52.9	3	15	88.2	3	65.59	2.5
Organic litter	50	6	12.0	5	41.6	83.2	5	36	72.0	5	46	92.0	5	64.80	5
Large trees (euc plus non-euc)	17	28	164.7	15	66	388.2	15	68	400.0	15	56	329.4	15	320.59	15
Coarse woody debris	642	452	70.4	5	17	2.6	2	166	25.9	2	47	7.3	5	26.56	3.5
Non-native plant cover	0	14	14.0	5	3	3.0	10	1	1.0	10	1	1.0	10	4.75	8.75
Quality and availability of food and foraging habitat				10			10			10			10		10
Quality and availability of shelter				10			10			10			10		10
Site Condition Score				90			92			93			93		92
MAX Site Condition Score				100			100			100			100		100
Site Condition Score - out of 3				2.70			2.76			2.79			2.79		2.76
Site Context															
Size of patch				10			10			10			10		10
Connectedness				5			5			5			5		5
Context				5			5			5			5		5
Ecological Corridors				0			0			0			0		0
Role of site location to species overall population in the state				4			4			4			4		4
Threats to the species				7			7			7			7		7
Species mobility capacity				7			7			7			7		7
Site Context Score				38			38			38			38		38
MAX Site Context Score				56			56			56			56		56
Site Context Score - out of 3				2.04			2.04			2.04			2.04		2.04
Species Stocking Rate (SSR)															
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				0			0			0			0		0
Species usage of the site (habitat type & evidenced usage)				15			15			15			15		15
Approximate density (per ha)				0			0			0			0		0
Role/importance of species population on site*				0			0			0			0		0
Total SRR score				15			15			15			15		15
MAX SSR Score				70			70			70			70		70
SRR Score-out of 4				0.86			0.86			0.86			0.86		0.86

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU 2- 11.3.4							
Site Reference	Benchmark	THQ14, Lot 30, Rem			BC3, Lot 30, Rem			Average %
	11.3.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark
Site Condition								Score
Recruitment of woody perennial species in EDL	100	100	100.0	5	40	40.0	3	70.00
Native plant species richness - trees	4	2	50.0	2.5	5	125.0	5	87.50
Native plant species richness - shrubs	2	32	1600.0	5	1	50.0	2.5	825.00
Native plant species richness - grasses	7	5	71.4	2.5	6	85.7	2.5	78.57
Native plant species richness - forbes	10	18	180.0	5	10	100.0	5	140.00
Tree canopy height (average of emergent, canopy, sub-canopy)	17	27	158.8	5	11	64.7	4	111.76
Tree canopy cover (average of emergent, canopy, sub-canopy)	11	48.9	444.5	3	19.5	177.3	5	310.91
Shrub canopy cover	1	4.9	490.0	3	0	0.0	0	245.00
Native grass cover	43	5	11.6	1	35	81.4	3	46.51
Organic litter	20	55	275.0	3	37	185.0	5	230.00
Large trees (euc plus non-euc)	35	24	68.6	5	20	57.1	10	62.86
Coarse woody debris	384	185	48.2	2	30	7.8	0	27.99
Non-native plant cover	0	5	5.0	5	15	15.0	5	10.00
Quality and availability of food and foraging habitat				10			10	10.00
Quality and availability of shelter				10			10	10.00
Site Condition Score				67			70	68.5
MAX Site Condition Score				100			100	100
Site Condition Score - out of 3				2.01			2.10	2.06
Site Context								
Size of patch				10			10	10
Connectedness				4			4	4
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				36			36	36
MAX Site Context Score				56			56	56
Site Context Score - out of 3				1.93			1.93	1.93
Species Stocking Rate (SSR)								
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				0			0	0
Species usage of the site (habitat type & evidenced usage)				15			15	15
Approximate density (per ha)				0			0	0
Role/importance of species population on site*				0			0	0
Total SRR score				15			15	15
MAX SSR Score				70			70	70
SSR Score-out of 4				0.86			0.86	0.86

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU 3- 11.11.4														
Site Reference	Benchmark	THQ4 Lot 30, Rem			THQ10, Lot 1, Rem			THQ3, Lot30, Rem			BC1, Lot 1, Rem			Average % benchmark	Average Score
	11.11.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score		
Site Condition															
Recruitment of woody perennial species in EDL	100	100	85.00	5	100	85.00	5	100	100.00	5	18	18.00	0	67.50	3.75
Native plant species richness - trees	4	5	125.00	5	5	125.00	5	4	100.00	5	11	275.00	5	88.75	5.00
Native plant species richness - shrubs	9	9	100.00	5	27	300.00	5	22	244.44	5	3	33.33	2.5	161.74	4.38
Native plant species richness - grasses	9	11	122.22	5	6	66.67	2.5	12	133.33	5	6	66.67	2.5	81.18	3.75
Native plant species richness - forbes	21	26	123.81	5	18	85.71	2.5	27	128.57	5	11	52.38	2.5	85.15	3.75
Tree canopy height (average of emergent, canopy, sub-canopy)	16.5	14	84.85	5	20	121.21	5	15.5	93.94	5	13	78.79	5	76.25	5.00
Tree canopy cover (average of emergent, canopy, sub-canopy)	27.5	43.3	157.45	5	63	229.09	5	37.6	136.73	4	42.35	154.00	3	131.57	4.25
Shrub canopy cover	17	6.15	36.18	3	3.9	22.94	3	2.4	14.12	5	12	70.59	5	19.56	4.00
Native grass cover	25	11	44.00	1	4	16.00	1	11.4	45.60	1	16.4	65.60	3	27.15	1.50
Organic litter	28	30	107.14	5	70.4	251.43	3	27.8	99.29	5	46.6	166.43	5	115.71	4.50
Large trees (euc plus non-euc)	20	48	240.00	15	52	260.00	15	72	360.00	15	46	230.00	15	218.75	15.00
Coarse woody debris	496	162	32.66	2	892	179.84	5	166	33.47	2	362	72.98	2	61.99	2.75
Non-native plant cover	0	20	20.00	5	10	10.00	5	8	8.00	5	10	10.00	5	10.75	5.00
Quality and availability of food and foraging habitat				10			10			10	10		10		10.00
Quality and availability of shelter				10			10			10	10		10		10.00
Site Condition Score				86			82			87			75.5		82.625
MAX Site Condition Score				100			100			100			100		100
Site Condition Score - out of 3				2.58			2.46			2.61			2.27		2.48
Site Context															
Size of patch				10			10			10			10		10.00
Connectedness				5			2			5			2		3.50
Context				5			4			5			4		4.50
Ecological Corridors				0			0			0			0		0.00
Role of site location to species overall population in the state				4			4			4			4		4.00
Threats to the species				7			7			7			7		7.00
Species mobility capacity				7			7			7			7		7.00
Site Context Score				38			34			38			34		36.00
MAX Site Context Score				56			56			56			56		56.00
Site Context Score - out of 3				2.04			1.82			2.04			1.82		1.93
Species Stocking Rate (SSR)															
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				0			0			0			0		0.00
Species usage of the site (habitat type & evidenced usage)				15			15			15			15		15.00
Approximate density (per ha)				0			0			0			0		0.00
Role/importance of species population on site*				0			0			0			0		0.00
Total SRR score				15			15			15			15		15.00
MAX SSR Score				70			70			70			70		70
SSR Score-out of 4				0.86			0.86			0.86			0.86		0.86

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU 4- 11.3.4 Non-remnant							
Site Reference	Benchmark	THQ11, Lot 1, NR			THQ9, Lot 1, NR			Average %
	11.3.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark
Site Condition								
Recruitment of woody perennial species in EDL	100	50	50	3	0	0.00	0	25.00
Native plant species richness - trees	4	2	40	2.5	4	100.00	5	70.00
Native plant species richness - shrubs	3	0	0	0	1	33.33	0.5	16.67
Native plant species richness - grasses	7	4	160	2.5	2	28.57	2.5	94.29
Native plant species richness - forbes	12	6	240	2.5	11	91.67	5	165.83
Tree canopy height (average of emergent, canopy, sub-canopy)	14	4	80	0	0	0.00	0	40.00
Tree canopy cover (average of emergent, canopy, sub-canopy)	20	0	0	0	0	0.00	0	0.00
Shrub canopy cover	3	0	0	0	6	200.00	0	100.00
Native grass cover	45	18.7	623.3	1	0	0.00	1	311.67
Organic litter	23	0	0	0	0	0.00	0	0.00
Large trees (euc plus non-euc)	17	0	0	0	0	0.00	0	0.00
Coarse woody debris	441	0	0	0	0	0.00	0	0.00
Non-native plant cover	0	64	2	0	82	2.00	0	2.00
Quality and availability of food and foraging habitat				1			1	1
Quality and availability of shelter				1			1	1
Site Condition Score				13.5			16	14.75
MAX Site Condition Score				100			100	100
Site Condition Score - out of 3				0.41			0.48	0.44
Site Context								
Size of patch				0			0	0
Connectedness				5			5	5
Context				2			2	2
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				7			7	7
Site Context Score				22			22	22
MAX Site Context Score				56			56	56
Site Context Score - out of 3				1.18			1.18	1.18
Species Stocking Rate (SSR)								
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				0			0	0
Species usage of the site (habitat type & evidenced usage)				10			10	10
Approximate density (per ha)				0			0	0
Role/importance of species population on site*				0			0	0
Total SRR score				10			10	10
MAX SSR Score				70			70	70
SSR Score-out of 4				0.57			0.57	0.57

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU5- 11.8.4								
Site Reference	Benchmark	BC2, Lot1, Rem			THQ7, Lot1 Rem			Average %	Average
	11.8.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	Score
Site Condition									
Recruitment of woody perennial species in EDL	100	40	40.0	3	100	100.0	5	70.00	4
Native plant species richness - trees	4	5	125.0	5	3	75.0	2.5	100.00	3.75
Native plant species richness - shrubs	6	1	16.7	2.5	17	283.3	5	150.00	3.75
Native plant species richness - grasses	5	6	120.0	5	6	120.0	5	120.00	5
Native plant species richness - forbes	6	10	166.7	5	20	333.3	5	250.00	5
Tree canopy height (average of emergent, canopy, sub-canopy)	11	12.5	113.6	4	14.5	131.8	5	122.73	4.5
Tree canopy cover (average of emergent, canopy, sub-canopy)	17	19.3	113.5	5	36	211.8	5	162.65	5
Shrub canopy cover	2	0	0.0	0	8.55	427.5	5	213.75	2.5
Native grass cover	45	62	137.8	5	58.2	129.3	5	133.56	5
Organic litter	24	24	100.0	5	19.4	80.8	3	90.42	4
Large trees (euc plus non-euc)	14	26	185.7	10	16	114.3	15	150.00	12.5
Coarse woody debris	128	245	191.4	5	559	436.7	2	314.06	3.5
Non-native plant cover	0	2	2.0	10	5	5.0	10	3.50	10
Quality and availability of food and foraging habitat				10			10		10
Quality and availability of shelter				10			10		10
Site Condition Score				84.5			92.5		88.5
MAX Site Condition Score				100			100		100
Site Condition Score - out of 3				2.54			2.78		2.66
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)				0			0		0
Species usage of the site (habitat type & evidenced usage)				15			15		15
Approximate density (per ha)				0			0		0
Role/importance of species population on site*				0			0		0
Total SRR score				15			15		15
MAX SSR Score				70			70		70
SSR Score-out of 4				0.86			0.86		0.86

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH

ALDOGA SOLAR FARM

Final habitat quality score (weighted)	AU1- 11.11.3	AU 2- 11.3.4	AU3- 11.11.4	AU4- 11.3.4 NR	AU 5- 11.8.4	Average/Final
Site Condition score (out of 3)	2.76	2.06	2.27	0.44	2.66	2.04
Site Context Score (out of 3)	2.04	1.93	1.82	1.18	1.82	1.76
Species Stocking Rate Score (out of 4)	0.86	0.86	0.86	0.57	0.86	0.80
Habitat Quality score (out of 10)	5.65	4.84	4.94	2.19	5.33	4.59
Assessment Unit area (ha)	86.84	2.021	88.03	5.29	6.401	188.6
Total offset area (ha) for this MNES	188.6	188.6	188.6	188.6	188.6	188.6
Size Weighting	0.46	0.01	0.47	0.03	0.03	1.00
Weighted Habitat Quality Score	2.60	0.05	2.31	0.06	0.18	5.20

B.1.2 MODELLED FUTURE HABITAT QUALITY ASSESSMENT

Final habitat quality score (weighted)	AU1- 11.11.3	AU 2- 11.3.4	AU3- 11.11.4	AU4- NR	AU 5- 11.8.4	Average/Final
Site Condition score (out of 3)	2.88	2.57	2.63	1.16	2.81	2.72
Site Context Score (out of 3)	2.46	2.36	2.25	1.61	2.25	2.33
Species Stocking Rate Score (out of 4)	0.86	0.86	0.86	0.57	0.86	0.86
Habitat Quality score (out of 10)	6.20	5.79	5.73	3.33	5.92	5.91
Assessment Unit area (ha)	86.84	2.021	88.03	5.29	6.401	188.6
Total offset area (ha) for this MNES	188.6	188.6	188.6	188.6	188.6	
Size Weighting	0.46	0.01	0.47	0.03	0.03	
Weighted Habitat Quality Score	2.86	0.06	2.68	0.09	0.20	5.89

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

B.2 GREATER GLIDER

B.2.1 HABITAT QUALITY ASSESSMENT

Assessment Unit - Regional Ecosystem	AU1- 11.11.3														
Site Reference	Benchmark	THQ1, Lot30CTN, Rem			THQ6, Lot 30 Rem			THQ5, Lot30, Rem			THQ2, Lot30, Rem			Average %	Average
	11.11.3	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	Score
Site Condition															
Recruitment of woody perennial species in EDL	100	100	100.00	5	80	80.0	5	100	100.00	5	50	50.0	3	82.50	4.5
Native plant species richness - trees	3	4	133.33	5	5	166.7	5	4	133.33	5	4	133.3	5	141.67	5
Native plant species richness - shrubs	6	24	400.00	5	14	233.3	5	11	183.33	5	24	400.0	5	304.17	5
Native plant species richness - grasses	6	13	216.67	5	11	183.3	5	7	116.67	5	9	150.0	5	166.67	5
Native plant species richness - forbes	14	17	121.43	5	16	114.3	5	21	150.00	5	14	100.0	5	121.43	5
Tree canopy height (average of emergent, canopy, sub-canopy)	21.5	18	83.72	5	17	79.1	5	25	116.28	5	17	79.1	5	89.53	5
Tree canopy cover (average of emergent, canopy, sub-canopy)	25.5	45.7	179.22	4	47.1	184.7	4	44.5	174.51	5	43	168.6	4	176.76	4.25
Shrub canopy cover	9	33.2	368.89	3	16.4	182.2	5	39.8	442.22	3	25.75	286.1	3	319.86	3.5
Native grass cover	17	15	88.24	3	5.6	32.9	1	9	52.94	3	15	88.2	3	65.59	2.5
Organic litter	50	6	12.00	5	41.6	83.2	5	36	72.00	5	46	92.0	5	64.80	5
Large trees (euc plus non-euc)	17	28	164.71	15	66	388.2	15	68	400.00	15	56	329.4	15	320.59	15
Coarse woody debris	642	452	70.40	5	17	2.6	2	166	25.86	2	47	7.3	5	26.56	3.5
Non-native plant cover	0	14	14.00	5	3	3.0	10	1	1.00	10	1	1.0	10	4.75	8.75
Quality and availability of food and foraging habitat				10			10			10			10		10
Quality and availability of shelter				10			10			10			10		10
Site Condition Score				90			92			93			93		92
MAX Site Condition Score				100			100			100			100		100
Site Condition Score - out of 3				2.70			2.76			2.79			2.79		2.76
Site Context															
Size of patch				10			10			10			10		10
Connectedness				5			5			5			5		5
Context				5			5			5			5		5
Ecological Corridors				0			0			0			0		0
Role of site location to species overall population in the state				1			1			1			1		1
Threats to the species				7			7			7			7		7
Species mobility capacity				7			7			7			7		7
Site Context Score				35			35			35			35		35
MAX Site Context Score				56			56			56			56		56
Site Context Score - out of 3				1.88			1.88			1.88			1.88		1.88
Species Stocking Rate (SSR)															
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				0			0			0			0		0
Species usage of the site (habitat type & evidenced usage)				15			15			15			15		15
Approximate density (per ha)				10			10			10			10		10
Role/importance of species population on site*				0			0			0			0		0
Total SRR score				25			25			25			25		25
MAX SSR Score				70			70			70			70		70
SRR Score-out of 4				1.43			1.43			1.43			1.43		1.43

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU2- 11.3.4							
Site Reference	Benchmark	THQ14, Lot 30, Rem			BC3, Lot 30, Rem			Average %
	11.3.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Average %
Site Condition								
Recruitment of woody perennial species in EDL	100	100	100.0	5	40	40.0	3	70.00
Native plant species richness - trees	4	2	50.0	2.5	5	125.0	5	87.50
Native plant species richness - shrubs	2	32	1600.0	5	1	50.0	2.5	825.00
Native plant species richness - grasses	7	5	71.4	2.5	6	85.7	2.5	78.57
Native plant species richness - forbes	10	18	180.0	5	10	100.0	5	140.00
Tree canopy height (average of emergent, canopy, sub-canopy)	17	27	158.8	5	11	64.7	4	111.76
Tree canopy cover (average of emergent, canopy, sub-canopy)	11	48.9	444.5	3	19.5	177.3	5	310.91
Shrub canopy cover	1	4.9	490.0	3	0	0.0	0	245.00
Native grass cover	43	5	11.6	1	35	81.4	3	46.51
Organic litter	20	55	275.0	3	37	185.0	5	230.00
Large trees (euc plus non-euc)	35	24	68.6	5	20	57.1	10	62.86
Coarse woody debris	384	185	48.2	2	30	7.8	0	27.99
Non-native plant cover	0	5	5.0	5	15	15.0	5	10.00
Quality and availability of food and foraging habitat				10			10	10.00
Quality and availability of shelter				10			10	10.00
Site Condition Score				67			70	68.5
MAX Site Condition Score				100			100	100
Site Condition Score - out of 3				2.01			2.10	2.06
Site Context								
Size of patch				10			10	10
Connectedness				4			4	4
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				7			7	7
Site Context Score				33			33	33
MAX Site Context Score				56			56	56
Site Context Score - out of 3				1.77			1.77	1.77
Species Stocking Rate (SSR)								
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				0			0	0
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				25			25	25
MAX SSR Score				70			70	70
SSR Score-out of 4				1.43			1.43	1.43

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU3- 11.11.4														
Site Reference	Benchmark	THQ4 Lot 30, Rem			THQ10, Lot 1, Rem			THQ3, Lot30, Rem			BC1, Lot 1, Rem			Average %	Average
	11.11.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	Score
Site Condition															
Recruitment of woody perennial species in EDL	100	100	85.0	5	100	85.0	5	100	100.0	5	18	18.0	0	67.50	3.75
Native plant species richness - trees	4	5	125.0	5	5	125.0	5	4	100.0	5	11	275.0	5	88.75	5.00
Native plant species richness - shrubs	9	9	100.0	5	27	300.0	5	22	244.4	5	3	33.3	2.5	161.74	4.38
Native plant species richness - grasses	9	11	122.2	5	6	66.7	2.5	12	133.3	5	6	66.7	2.5	81.18	3.75
Native plant species richness - forbes	21	26	123.8	5	18	85.7	2.5	27	128.6	5	11	52.4	2.5	85.15	3.75
Tree canopy height (average of emergent, canopy, sub-canopy)	16.5	14	84.8	5	20	121.2	5	15.5	93.9	5	13	78.8	5	76.25	5.00
Tree canopy cover (average of emergent, canopy, sub-canopy)	27.5	43.3	157.5	5	63	229.1	5	37.6	136.7	4	42.35	154.0	3	131.57	4.25
Shrub canopy cover	17	6.15	36.2	3	3.9	22.9	3	2.4	14.1	5	12	70.6	5	19.56	4.00
Native grass cover	25	11	44.0	1	4	16.0	1	11.4	45.6	1	16.4	65.6	3	27.15	1.50
Organic litter	28	30	107.1	5	70.4	251.4	3	27.8	99.3	5	46.6	166.4	5	115.71	4.50
Large trees (euc plus non-euc)	20	48	240.0	15	52	260.0	15	72	360.0	15	46	230.0	15	218.75	15.00
Coarse woody debris	496	162	32.7	2	892	179.8	5	166	33.5	2	362	73.0	2	61.99	2.75
Non-native plant cover	0	20	20.0	5	10	10.0	5	8	8.0	5	10	10.0	5	10.75	5.00
Quality and availability of food and foraging habitat				10			10			10	10		10		10.00
Quality and availability of shelter				10			10			10	10		10		10.00
Site Condition Score				86			82			87			75.5		82.625
MAX Site Condition Score				100			100			100			100		100
Site Condition Score - out of 3				2.58			2.46			2.61			2.27		2.48
Site Context															
Size of patch				10			10			10			10		10.00
Connectedness				5			2			5			2		3.50
Context				5			4			5			4		4.50
Ecological Corridors				0			0			0			0		0.00
Role of site location to species overall population in the state				1			1			1			1		1.00
Threats to the species				7			7			7			7		7.00
Species mobility capacity				7			7			7			7		7.00
Site Context Score				35			31			35			31		33.00
MAX Site Context Score				56			56			56			56		56.00
Site Context Score - out of 3				1.88			1.66			1.88			1.66		1.77
Species Stocking Rate (SSR)															
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				0			0			0			0		0.00
Species usage of the site (habitat type & evidenced usage)				15			15			15			15		15.00
Approximate density (per ha)				10			10			10			10		10.00
Role/importance of species population on site*				0			0			0			0		0.00
Total SRR score				25			25			25			25		25.00
MAX SSR Score				70			70			70			70		70
SSR Score-out of 4				1.43			1.43			1.43			1.43		1.43

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU 4- 11.3.4 Non-remnant								
Site Reference	Benchmark	THQ11, Lot 1, NR			THQ9, Lot 1, NR			Average %	Average
	11.3.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	Score
Site Condition									
Recruitment of woody perennial species in EDL	100	50	50.0	3	0	0.0	0	25.00	1.5
Native plant species richness - trees	4	2	18.2	2.5	4	100.0	5	59.09	3.75
Native plant species richness - shrubs	3	0	0.0	0	1	33.3	0.5	16.67	0.25
Native plant species richness - grasses	7	4	66.7	2.5	2	28.6	2.5	47.62	2.5
Native plant species richness - forbes	12	6	54.5	2.5	11	91.7	5	73.11	3.75
Tree canopy height (average of emergent, canopy, sub-canopy)	14	4	30.8	0	0	0.0	0	15.38	0
Tree canopy cover (average of emergent, canopy, sub-canopy)	20	0	0.0	0	0	0.0	0	0.00	0
Shrub canopy cover	3	0	0.0	0	6	200.0	0	100.00	0
Native grass cover	45	18.7	114.0	1	0	0.0	1	57.01	1
Organic litter	23	0	0.0	0	0	0.0	0	0.00	0
Large trees (euc plus non-euc)	17	0	0.0	0	0	0.0	0	0.00	0
Coarse woody debris	441	0	0.0	0	0	0.0	0	0.00	0
Non-native plant cover	0	64	2.0	0	82	2.0	0	2.00	0
Quality and availability of food and foraging habitat				1			1		1
Quality and availability of shelter				1			1		1
Site Condition Score				13.5			16		14.75
MAX Site Condition Score				100			100		100
Site Condition Score - out of 3				0.41			0.48		0.44
Site Context									
Size of patch				0			0		0
Connectedness				5			5		5
Context				2			2		2
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				7			7		7
Site Context Score				22			22		22
MAX Site Context Score				56			56		56
Site Context Score - out of 3				1.18			1.18		1.18
Species Stocking Rate (SSR)									
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				0			0		0
Species usage of the site (habitat type & evidenced usage)				10			10		10
Approximate density (per ha)				0			0		0
Role/importance of species population on site*				0			0		0
Total SRR score				10			10		10
MAX SSR Score				70			70		70
SSR Score-out of 4				0.57			0.57		0.57

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU5- 11.8.4								Total average % benchmark	Total average score
Site Reference	Benchmark	BC2, Lot1, Rem			THQ7, Lot1 Rem			Average % benchmark	Average Score	
	11.8.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			
Site Condition										
Recruitment of woody perennial species in EDL	100	40	40.0	3	100	100.0	5	70.00	4	63.00
Native plant species richness - trees	4	5	125.0	5	3	75.0	2.5	100.00	3.75	95.40
Native plant species richness - shrubs	6	1	16.7	2.5	17	283.3	5	150.00	3.75	291.51
Native plant species richness - grasses	5	6	120.0	5	6	120.0	5	120.00	5	98.81
Native plant species richness - forbes	6	10	166.7	5	20	333.3	5	250.00	5	133.94
Tree canopy height (average of emergent, canopy, sub-canopy)	11	12.5	113.6	4	14.5	131.8	5	122.73	4.5	83.13
Tree canopy cover (average of emergent, canopy, sub-canopy)	17	19.3	113.5	5	36	211.8	5	162.65	5	156.38
Shrub canopy cover	2	0	0.0	0	8.55	427.5	5	213.75	2.5	179.63
Native grass cover	45	62	137.8	5	58.2	129.3	5	133.56	5	65.96
Organic litter	24	24	100.0	5	19.4	80.8	3	90.42	4	100.19
Large trees (euc plus non-euc)	14	26	185.7	10	16	114.3	15	150.00	12.5	150.44
Coarse woody debris	128	245	191.4	5	559	436.7	2	314.06	3.5	86.12
Non-native plant cover	0	2	2.0	10	5	5.0	10	3.50	10	6.20
Quality and availability of food and foraging habitat				10			10		10	8.20
Quality and availability of shelter				10			10		10	8.20
Site Condition Score				84.5			92.5		88.5	69.275
MAX Site Condition Score				100			100		100	100
Site Condition Score - out of 3				2.54			2.78		2.66	2.08
Site Context										
Size of patch				10			10		10	8.00
Connectedness				2			2		2	3.90
Context				4			4		4	3.90
Ecological Corridors				0			0		0	0.00
Role of site location to species overall population in the state				4			4		4	1.60
Threats to the species				7			7		7	7.00
Species mobility capacity				7			7		7	7.00
Site Context Score				34			34		34	31.40
MAX Site Context Score				56			56		56	56
Site Context Score - out of 3				1.82			1.82		1.82	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)				15			15		15	14.00
Approximate density (per ha)				10			10		10	8.00
Role/importance of species population on site*				0			0		0	0.00
Total SRR score				25			25		25	22.00
MAX SSR Score				70			70		70	70
SSR Score-out of 4				1.43			1.43		1.43	1.26

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ALDOGA SOLAR FARM

Final habitat quality score (weighted)	AU1-11.11.3	AU2-11.3.4	AU3-11.11.4	AU4- 11.3.4 NR	AU5- 11.8.4	Average/Final
Site Condition score (out of 3)	2.76	2.06	2.27	0.44	2.66	2.04
Site Context Score (out of 3)	1.88	1.77	1.66	1.18	1.82	1.66
Species Stocking Rate Score (out of 4)	1.43	1.43	1.43	0.57	1.43	1.26
Habitat Quality score (out of 10)	6.06	5.25	5.35	2.19	5.91	4.95
Assessment Unit area (ha)	86.84	2.021	88.03	5.29	6.401	188.582
Total offset area (ha) for this MNES	188.6	188.6	188.6	188.6	188.6	188.58
Size Weighting	0.46	0.01	0.47	0.03	0.03	1.00
Weighted Habitat Quality Score	2.79	0.06	2.50	0.06	0.20	5.61

B.2.2 MODELLED FUTURE HABITAT QUALITY ASSESSMENT

Final habitat quality score (weighted)	AU1-11.11.3	AU2-11.3.4	Au3-11.11.4	Au4- NR	Au5- 11.8.4	Average/Final
Site Condition score (out of 3)	2.88	2.38	2.63	1.60	2.85	2.47
Site Context Score (out of 3)	2.30	2.20	2.09	1.61	2.25	2.09
Species Stocking Rate Score (out of 4)	1.43	1.43	1.43	0.57	1.43	1.26
Habitat Quality score (out of 10)	6.61	6.00	6.14	3.78	6.53	5.81
Assessment Unit area (ha)	86.84	2.021	88.03	5.29	6.401	188.582
Total offset area (ha) for this MNES	188.6	188.6	188.6	188.6	188.6	188.6
Size Weighting	0.46	0.01	0.47	0.03	0.03	1.00
Weighted Habitat Quality Score	3.04	0.06	2.87	0.11	0.22	6.30

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

B.3 SQUATTER PIGEON

B.3.1 HABITAT QUALITY ASSESSMENT

Assessment Unit - Regional Ecosystem	AU1- 11.11.3													
Site Reference	Benchmark	THQ1, Lot30, Rem			THQ6, Lot 30, Rem			THQ5, Lot30, Rem			THQ2, Lot30, Rem			Average %
	11.11.3	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark
Site Condition														
Recruitment of woody perennial species in EDL	100	100	100.0	5	80	80.0	5	100	100.0	5	50	50.0	3	82.50
Native plant species richness - trees	3	4	133.3	5	5	166.7	5	4	133.3	5	4	133.3	5	141.67
Native plant species richness - shrubs	6	24	400.0	5	14	233.3	5	11	183.3	5	24	400.0	5	304.17
Native plant species richness - grasses	6	13	216.7	5	11	183.3	5	7	116.7	5	9	150.0	5	166.67
Native plant species richness - forbes	14	17	121.4	5	16	114.3	5	21	150.0	5	14	100.0	5	121.43
Tree canopy height (average of emergent, canopy, sub-canopy)	21.5	18	83.7	5	17	79.1	5	25	116.3	5	17	79.1	5	89.53
Tree canopy cover (average of emergent, canopy, sub-canopy)	25.5	45.7	179.2	4	47.1	184.7	4	44.5	174.5	5	43	168.6	4	176.76
Shrub canopy cover	9	33.2	368.9	3	16.4	182.2	5	39.8	442.2	3	25.75	286.1	3	319.86
Native grass cover	17	15	88.2	3	5.6	32.9	1	9	52.9	3	15	88.2	3	65.59
Organic litter	50	6	12.0	5	41.6	83.2	5	36	72.0	5	46	92.0	5	64.80
Large trees (euc plus non-euc)	17	28	164.7	15	66	388.2	15	68	400.0	15	56	329.4	15	320.59
Coarse woody debris	642	452	70.4	5	17	2.6	2	166	25.9	2	47	7.3	5	26.56
Non-native plant cover	0	14	14.0	5	3	3.0	10	1	1.0	10	1	1.0	10	4.75
Quality and availability of food and foraging habitat				5			5			5			5	5
Quality and availability of shelter				5			5			5			5	5
Site Condition Score				80			82			83			83	82
MAX Site Condition Score				100			100			100			100	100
Site Condition Score - out of 3				2.40			2.46			2.49			2.49	2.46
Site Context														
Size of patch				10			10			10			10	10
Connectedness				5			5			5			5	5
Context				5			5			5			5	5
Ecological Corridors				0			0			0			0	0
Role of site location to species overall population in the state				1			1			1			1	1
Threats to the species				7			7			7			7	7
Species mobility capacity				10			10			10			10	10
Site Context Score				38			38			38			38	38
MAX Site Context Score				56			56			56			56	56
Site Context Score - out of 3				2.04			2.04			2.04			2.04	2.04
Species Stocking Rate (SSR)														
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				10			10			10			10	10
Species usage of the site (habitat type & evidenced usage)				15			15			15			15	15
Approximate density (per ha)				10			10			10			10	10
Role/importance of species population on site*				0			0			0			0	0
Total SRR score				35			35			35			35	35
MAX SSR Score				70			70			70			70	70
Species Stocking Rate Score-out of 4				2.00			2.00			2.00			2.00	2.00

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Assessment Unit - Regional Ecosystem	AU2- 11.3.4								
Site Reference	Benchmark	THQ14, Lot 30, Rem			BC3, Lot 30, Rem			Average %	Average
	11.3.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	Score
Site Condition									
Recruitment of woody perennial species in EDL	100	100	100.0	5	40	40.0	3	70.00	4.00
Native plant species richness - trees	4	2	50.0	2.5	5	125.0	5	87.50	3.75
Native plant species richness - shrubs	2	32	1600.0	5	1	50.0	2.5	825.00	3.75
Native plant species richness - grasses	7	5	71.4	2.5	6	85.7	2.5	78.57	2.50
Native plant species richness - forbes	10	18	180.0	5	10	100.0	5	140.00	5.00
Tree canopy height (average of emergent, canopy, sub-canopy)	17	27	158.8	5	11	64.7	4	111.76	4.50
Tree canopy cover (average of emergent, canopy, sub-canopy)	11	48.9	444.5	3	19.5	177.3	5	310.91	4.00
Shrub canopy cover	1	4.9	490.0	31	0	0.0	0	245.00	15.50
Native grass cover	43	5	11.6	1	35	81.4	3	46.51	2.00
Organic litter	20	55	275.0	3	37	185.0	5	230.00	4.00
Large trees (euc plus non-euc)	35	24	68.6	5	20	57.1	10	62.86	7.50
Coarse woody debris	384	185	48.2	2	30	7.8	0	27.99	1.00
Non-native plant cover	0	5	5.0	5	15	15.0	5	10.00	5.00
Quality and availability of food and foraging habitat				10			10		10.00
Quality and availability of shelter				10			10		10.00
Site Condition Score				95			70		82.5
MAX Site Condition Score				100			100		100
Site Condition Score - out of 3				2.85			2.10		2.48
Site Context									
Size of patch				10			10		10
Connectedness				4			4		4
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				36			36		36
MAX Site Context Score				56			56		56
Site Context Score - out of 3				1.93			1.93		1.93
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
Species Stocking Rate Score-out of 4				2.00			2.00		2.00

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH ALDOGA SOLAR FARM

Assessment Unit - Regional Ecosystem	AU3- 11.11.4													
Site Reference	Benchmark	THQ4 Lot 30, Rem			THQ10, Lot 1, Rem			THQ3, Lot30, Rem			BC1, Lot 1, Rem			Average %
	11.11.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark
Site Condition														Score
Recruitment of woody perennial species in EDL	100	100	85.0	5	100	85.0	5	100	100.0	5	18	18.0	0	67.50
Native plant species richness - trees	4	5	125.0	5	5	125.0	5	4	100.0	5	11	275.0	5	88.75
Native plant species richness - shrubs	9	9	100.0	5	27	300.0	5	22	244.4	5	3	33.3	2.5	161.74
Native plant species richness - grasses	9	11	122.2	5	6	66.7	2.5	12	133.3	5	6	66.7	2.5	81.18
Native plant species richness - forbes	21	26	123.8	5	18	85.7	2.5	27	128.6	5	11	52.4	2.5	85.15
Tree canopy height (average of emergent, canopy, sub-canopy)	16.5	14	84.8	5	20	121.2	5	15.5	93.9	5	13	78.8	5	76.25
Tree canopy cover (average of emergent, canopy, sub-canopy)	27.5	43.3	157.5	5	63	229.1	5	37.6	136.7	4	42.35	154.0	3	131.57
Shrub canopy cover	17	6.15	36.2	3	3.9	22.9	3	2.4	14.1	5	12	70.6	5	19.56
Native grass cover	25	11	44.0	1	4	16.0	1	11.4	45.6	1	16.4	65.6	3	27.15
Organic litter	28	30	107.1	5	70.4	251.4	3	27.8	99.3	5	46.6	166.4	5	115.71
Large trees (euc plus non-euc)	20	48	240.0	15	52	260.0	15	72	360.0	15	46	230.0	15	218.75
Coarse woody debris	496	162	32.7	2	892	179.8	5	166	33.5	2	362	73.0	2	61.99
Non-native plant cover	0	20	20.0	5	10	10.0	5	8	8.0	5	10	10.0	5	10.75
Quality and availability of food and foraging habitat				10			10			10	10		10	10.00
Quality and availability of shelter				10			10			10	10		10	10.00
Site Condition Score				86			82			87			75.5	82.625
MAX Site Condition Score				100			100			100			100	100
Site Condition Score - out of 3				2.58			2.46			2.61			2.27	2.48
Site Context														
Size of patch				10			10			10			10	10.00
Connectedness				5			2			5			2	3.50
Context				5			4			5			4	4.50
Ecological Corridors				0			0			0			0	0.00
Role of site location to species overall population in the state				1			1			1			1	1.00
Threats to the species				7			7			7			7	7.00
Species mobility capacity				10			10			10			10	10.00
Site Context Score				38			34			38			34	36.00
MAX Site Context Score				56			56			56			56	56.00
Site Context Score - out of 3				2.04			1.82			2.04			1.82	1.93
Species Stocking Rate (SSR)														
Presence detected on or adjacent to site (neighbouring property with connecting habitat)				10			10			10			10	10.00
Species usage of the site (habitat type & evidenced usage)				15			15			15			15	15.00
Approximate density (per ha)				10			10			10			10	10.00
Role/importance of species population on site*				0			0			0			0	0.00
Total SRR score				35			35			35			35	35.00
MAX SSR Score				70			70			70			70	70
Species Stocking Rate Score-out of 4				2.00			2.00			2.00			2.00	2.00

Assessment Unit - Regional Ecosystem	AU4- Non-remnant 11.3.4								
Site Reference	Benchmark	THQ11, Lot 1, NR			THQ9, Lot 1, NR			Average %	Average
	11.3.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	Score
Site Condition									
Recruitment of woody perennial species in EDL	100	50	50.0	3	0	0.0	0	25.00	1.5
Native plant species richness - trees	4	2	50.0	2.5	4	100.0	5	75.00	3.75
Native plant species richness - shrubs	3	0	0.0	0	1	33.3	0.5	16.67	0.25
Native plant species richness - grasses	7	4	57.1	2.5	2	28.6	2.5	42.86	2.5
Native plant species richness - forbes	12	6	50.0	2.5	11	91.7	5	70.83	3.75
Tree canopy height (average of emergent, canopy, sub-canopy)	14	4	28.6	0	0	0.0	0	14.29	0
Tree canopy cover (average of emergent, canopy, sub-canopy)	20	0	0.0	0	0	0.0	0	0.00	0
Shrub canopy cover	3	0	0.0	0	6	200.0	0	100.00	0
Native grass cover	45	18.7	41.6	1	0	0.0	1	20.78	1
Organic litter	23	0	0.0	0	0	0.0	0	0.00	0
Large trees (euc plus non-euc)	17	0	0.0	0	0	0.0	0	0.00	0
Coarse woody debris	441	0	0.0	0	0	0.0	0	0.00	0
Non-native plant cover	0	64	64.0	0	82	2.0	0	33.00	0
Quality and availability of food and foraging habitat				1			1		1
Quality and availability of shelter				1			1		1
Site Condition Score				13.5			16		14.75
MAX Site Condition Score				100			100		100
Site Condition Score - out of 3				0.41			0.48		0.44
Site Context									
Size of patch				0			0		0
Connectedness				5			5		5
Context				2			2		2
Ecological Corridors				0			0		0
Role of site location to species overall population in the state				1			1		1
Threats to the species				1			1		1
Species mobility capacity				10			10		10
Site Context Score				19			19		19
MAX Site Context Score				56			56		56
Site Context Score - out of 3				1.02			1.02		1.02
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)				0			0		0
Approximate density (per ha)				0			0		0
Role/importance of species population on site*				0			0		0
Total SRR score				10			10		10
MAX SSR Score				70			70		70
Species Stocking Rate Score-out of 4				0.57			0.57		0.57

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Assessment Unit - Regional Ecosystem	AU5- 11.8.4								
Site Reference	Benchmark	BC2, Lot1, Rem			THQ7, Lot1 Rem			Average %	Average
	11.8.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	benchmark	Score
Site Condition									
Recruitment of woody perennial species in EDL	100	40	40.0	3	100	100.0	5	70.00	4
Native plant species richness - trees	4	5	125.0	5	3	75.0	2.5	100.00	3.75
Native plant species richness - shrubs	6	1	16.7	2.5	17	283.3	5	150.00	3.75
Native plant species richness - grasses	5	6	120.0	5	6	120.0	5	120.00	5
Native plant species richness - forbes	6	10	166.7	5	20	333.3	5	250.00	5
Tree canopy height (average of emergent, canopy, sub-canopy)	11	12.5	113.6	4	14.5	131.8	5	122.73	4.5
Tree canopy cover (average of emergent, canopy, sub-canopy)	17	19.3	113.5	5	36	211.8	5	162.65	5
Shrub canopy cover	2	0	0.0	0	8.55	427.5	5	213.75	2.5
Native grass cover	45	62	137.8	5	58.2	129.3	5	133.56	5
Organic litter	24	24	100.0	5	19.4	80.8	3	90.42	4
Large trees (euc plus non-euc)	14	26	185.7	10	16	114.3	15	150.00	12.5
Coarse woody debris	128	245	191.4	5	559	436.7	2	314.06	3.5
Non-native plant cover	0	2	2.0	10	5	5.0	10	3.50	10
Quality and availability of food and foraging habitat				10			10		10
Quality and availability of shelter				10			10		10
Site Condition Score				84.5			92.5		88.5
MAX Site Condition Score				100			100		100
Site Condition Score - out of 3				2.54			2.78		2.66
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
Species Stocking Rate Score-out of 4				2.00			2.00		2.00

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Final habitat quality score (weighted)	AU1- 11.11.3	AU2- 11.3.4	AU3- 11.11.4	AU4- 11.3.4 NR	AU5- 11.8.4	Average/Final
Site Condition score (out of 3)	2.46	2.48	2.27	0.48	2.66	2.07
Site Context Score (out of 3)	2.04	1.93	1.82	1.02	1.82	1.73
Species Stocking Rate Score (out of 4)	2.00	2.00	2.00	0.57	2.00	1.71
Habitat Quality score (out of 10)	6.50	6.40	6.09	2.07	6.48	5.51
Assessment Unit area (ha)	86.84	2.021	88.03	5.29	6.401	188.582
Total offset area (ha) for this MNES	188.6	188.6	188.6	188.6	188.6	188.6
Size Weighting	0.46	0.01	0.47	0.03	0.03	1
Weighted Habitat Quality Score	2.99	0.07	2.84	0.06	0.22	6.18

B.3.2 MODELLED FUTURE HABITAT QUALITY ASSESSMENT

Final habitat quality score (weighted)	AU1- 11.11.3	AU2- 11.3.4	AU3- 11.11.4	AU5- 11.8.4	AU4- 11.3.4 NR	Average/Final
Site Condition score (out of 3)	3.00	2.56	2.87	2.77	1.73	2.58
Site Context Score (out of 3)	2.46	2.36	2.25	2.25	1.77	2.22
Species Stocking Rate Score (out of 4)	2.00	2.00	2.00	2.00	0.57	1.71
Habitat Quality score (out of 10)	7.46	6.91	7.12	7.02	4.06	6.52
Assessment Unit area (ha)	86.84	2.021	88.03	6.401	5.29	188.582
Total offset area (ha) for this MNES	188.6	188.6	188.6	188.6	188.6	188.6
Size Weighting	0.46	0.01	0.47	0.03	0.03	1
Weighted Habitat Quality Score	3.44	0.07	3.32	0.24	0.11	7.18

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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)	188.6	This is the area suitable for Koala within the offset site. This includes a small area of non-remnant 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.
Start quality	5	The offset lots have significant edge effects including significant weed incursion. Selective logging has taken place in the past and few old trees remain. Predation threats including Wild Dog and European Foxes are moderate. A major road lies in the vicinity and connectivity to vegetation in the south is low due to the presence of the road and a major rail line. There are no records of Koala within 5 km and very few in the Gladstone area in general.

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ALDOGA SOLAR FARM

FACTOR	RESPONSE	EXPLANATION
Future quality without offset	4	The remainder of this Lot has been cleared for agriculture and it is zoned as industrial. The agricultural area It is likely to be cleared for industry (including potentially solar panels) in the future which would increase edge effects. It is likely without the offset the quality could decrease through more weed incursion and increased predators.
Future quality with offset	6	Active weed management and assisted regeneration will increase native grass cover, 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.

Calculator results - Koala

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 O for baseline data for the impact area.
Time over which loss is averted	20 years	
Start area (ha)	188.6	This is the vegetation within 1 km (breeding) and 3 km (foraging) of water within the offset site. The patches of non-remnant are currently not suitable for Squatter Pigeon but will become suitable after the removal of weeds.
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 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	Some of the offset site has a high abundance of weeds (particularly introduced grasses) Some areas have native shrub and grass cover which is low due to grazing. Recruitment of trees is lower than the benchmark also due to grazing.
Future quality without offset	5	Weeds (particularly introduced grasses) are likely to increase and would reduce foraging by 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.

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH

ALDOGA SOLAR FARM

FACTOR	RESPONSE	EXPLANATION
Future quality with offset	7	Weed and predator control will improve habitat quality. 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.

Calculator results - Squatter Pigeon

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH

ALDOGA SOLAR FARM

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)	23.2	This is the area suitable for Greater Glider within offset site. This includes a small area of non-remnant which will be suitable for Greater Glider 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 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	5	The offset site has been previously logged and many had only moderate abundance of large trees. Weeds were scattered throughout the site and were most abundant on the southern edge of the offset site where it meets non-remnant areas or near the access tracks. Non-native plant cover was 20% in some areas. Recruitment was generally average most likely due to grazing.
Future quality without offset	4	The remainder of this Lot has been cleared for agriculture and it is zoned as industrial. It is likely to be cleared for industry (including potentially solar panels) in the future which would increase edge effects. It is likely without the offset the quality could decrease through more weed incursion and increased predators.
Future quality with offset	6	Active weed management and assisted regeneration will increase native grass cover, eucalypt recruitment and reduce weed cover.

OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH

ALDOGA SOLAR FARM

FACTOR	RESPONSE	EXPLANATION
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.

Calculator results - Greater Glider

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OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH

APPENDIX F COORDINATES FOR THE OFFSETS

SITE NAME	LOT ON PLAN	OFFSET AREA (HA)	VERTEX LATITUDE	VERTEX LONGITUDE
Aldoga North	1 SP307522 b	29.9681	-23.78739807	151.0635809
			-23.787421	151.0646893
			-23.79349166	151.0671015
			-23.79487747	151.064569
			-23.79748749	151.0646186
			-23.79954654	151.0632143
			-23.80162529	151.0633797
			-23.80820155	151.0686698
			-23.80871358	151.0677397
			-23.80199125	151.0623243
			-23.79932474	151.0620891
			-23.79721203	151.0635335
			-23.79432217	151.063488
			-23.79305981	151.0657832
			-23.78739807	151.0635809
	30CTN107 a	165.3594	-23.81897947	151.083644
			-23.81881137	151.083195
			-23.81874439	151.0828917
			-23.8182943	151.0757535
			-23.81611033	151.0743921
			-23.8140176	151.073108
			-23.81252521	151.072178
			-23.8110639	151.0708453
			-23.80311315	151.0820124
			-23.80346033	151.0845195
			-23.80428927	151.0843798
			-23.80466671	151.084963
			-23.80586418	151.0854165
			-23.80610352	151.0857859
			-23.91504998	151.0946732
			-23.80786303	151.0849652
			-23.80871686	151.0846485
			-23.81144901	151.0843532
			-23.8123082	151.0844682
			-23.81321143	151.0844942
			-23.81509695	151.0836421

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OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH

SITE NAME	LOT ON PLAN	OFFSET AREA (HA)	VERTEX LATITUDE	VERTEX LONGITUDE
			-23.8163714	151.0844772
			-23.81897947	151.083644
	30 CTN107 b	155.1127	-23.83253045	151.0813346
			-23.83136759	151.0800364
			-23.83001334	151.0793202
			-23.8285887	151.0787523
			-23.82718689	151.0785668
			-23.82637481	151.0793346
			-23.82637542	151.0793836
			-23.82610692	151.0795741
			-23.82600982	151.0797522
			-23.82585783	151.0798722
			-23.82578524	151.0798438
			-23.82545147	151.0798683
			-23.82513466	151.0798043
			-23.82499851	151.0797474
			-23.82478185	151.0797506
			-23.82245262	151.0783225
			-23.82112397	151.0774882
			-23.82143786	151.0823909
			-23.91504998	151.0946732
			-23.82397186	151.0864954
			-23.82493458	151.088405
			-23.82507963	151.088452
			-23.82891564	151.0897993
			-23.82947783	151.0914498
			-23.83037993	151.0921139
			-23.83299015	151.0907212
			-23.83376709	151.0914852
			-23.83504032	151.091496
			-23.83798834	151.0896762
			-23.83792393	151.089579
			-23.83712418	151.0884325
			-23.83692997	151.0880623
			-23.83666367	151.087703
			-23.83597589	151.0868493
			-23.8356192	151.0857552

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OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH

SITE NAME	LOT ON PLAN	OFFSET AREA (HA)	VERTEX LATITUDE	VERTEX LONGITUDE
			-23.83452042	151.0837984
			-23.83369611	151.0828584
			-23.83253045	151.0813346

APPENDIX G WEED, PEST AND FIRE FUEL LOAD ASSESSMENT METHODOLOGY

Weed Cover Methodology

A total of 9 baseline weed surveys were conducted between 2 and 5 December 2024 (Attexo 2024) as illustrated in **Error! Reference source not found.** The objective of the survey was to establish baseline weed cover (%) of target weed species within each Management Unit (and Assessment Unit) prior to implementing control measures.

The number of baseline weed survey sites completed within the Aldoga North offset is provided in Table 9—1.

Table 9—1 Baseline weed survey sites within Aldoga North offset area

MANAGEMENT UNIT	ASSOCIATED ASSESSMENT UNIT AND REGIONAL ECOSYSTEM	AREA (HA)	NUMBER OF SITES	SITE ID
MU2	AU1, AU2, AU3, AU5	183.3	9	A1, A03, A04, A05, A06, A07, A08, A09, A21

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OFFSET AREA MANAGEMENT PLAN – ALDOGA NORTH

Figure 9.1 Weed survey site locations within the offset area

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Baseline weed cover (%) of target weed species was recorded following the BioCondition Assessment Manual (version 2.2) methodology used to estimate tree canopy cover however, was adapted into a belt transect method. Hence, weed cover (%) was measured within a 100 m x 5 m plot (500 m²). This approach was used to best capture weed abundance that may be influenced by environmental gradients. Weed cover (%) of target weed species was measured by recording the start and end distance of the target weed that overlapped the 100 m transect line. The weed cover (%) of target weed species and overall weed cover was then extrapolated to estimate weed cover (%) for the representative Management Unit.

Priority weed species include those identified as likely to occur within the offset and are listed under the Queensland Biosecurity Act 2014 (Biosecurity Act), Weeds of National Significance (WoNS) and Gladstone Regional Council Biosecurity Plan 2021-25 for invasive Plant and Animals (GRC Biosecurity Plan) and are considered to potentially impact to MNES values.

At survey site the following was recorded:

- Site ID
- GPS location
- Weed species
- Strata the weed species occurred in (i.e. S1, S2, S3, T1, T2, T3)
- Start and end distance along transect
- Notes.

Using data collected during baseline weed surveys, weed cover (%) was calculated for each species to inform species-specific management actions and expressed as an overall weed cover (%) for each Management Unit to inform areas that should be priorities for management. The following method was used:

- Calculate the total weed cover (%) for each target species found within the site (sum of total distance for that species recorded along the 100 m intercept divided by 100 [metres but essentially a percentage out of 100]). For example, lantana was recorded in Site 1 from 0 to 1 m. So, 1 m / 100 m give 0.01 % weed cover for lantana.
- Repeat for all sites where target species was recorded. Average these to get the overall weed cover (%) for the target species recorded at different sites. For example, lantana had 0.01 % in Site 1 and 0.05 % in Site 2 and only occurred in these sites, therefore $(0.01 + 0.05) / 2 = 0.03$ % is the overall weed cover (%) for lantana within the Management Unit.
- Sum the overall weed cover (%) for each target weed species to get the grand total weed cover (%) for the Management Unit. For example, 0.03 % (lantana overall weed cover) + 0.08 % (corky passionflower overall weed cover) = 0.11 % for Management Unit 1.

Weed Cover Baseline Results

A total of three target weed species were observed within the offset during the baseline weed surveys. Table 9—2 lists the weed species identified, their status under the Biosecurity Act, WoNS and GRC Biosecurity Plan and their baseline weed cover (%).

Table 9—2 Baseline weed cover (%) of each target weed species within Aldoga North offset area

WEED SPECIES		BIOSECURITY ACT STATUS	WONS	GRC BIOSECURITY PLAN STATUS	BASILINE WEED COVER
Lantana camara)	(Lantana	Category 3	Yes	Natural Asset Protection/Local Control Invasive Species	37.1

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WEED SPECIES	BIOSECURITY ACT STATUS	WONS	GRC BIOSECURITY PLAN STATUS	BASELINE WEED COVER
Rubber vine (<i>Cryptostegia grandiflora</i>)	Category 3	Yes	Containment Invasive Species	8.6
Giant rats tail grass (<i>Sporobolus natalensis</i>)	Category 3	-	Containment Invasive Species	9.9
Total weed cover (%)				55.6

The results will be used to inform species-specific management actions, interim milestones and completion criteria and will be used to assess the ongoing success of weed management.

Pest Fauna Activity Methodology

Remote sensing camera traps were deployed at 9 sites to determine the baseline pest fauna activity within the offset area (Figure 9.2). Cameras were deployed between 2 and 5 December 2024 and were collected between 29 and 31 January 2025. The objective of the survey was to establish baseline pest fauna activity within each Management Unit (and Assessment Unit) prior to implementing control measures.

The number of baseline pest fauna activity survey sites completed within Aldoga North offset is provided in Table 9—3.

Table 9—3 Baseline pest fauna surveys within Aldoga North offset area

MANAGEMENT UNIT	ASSOCIATED ASSESSMENT UNIT	AREA (HA)	NUMBER OF SITES	SITE ID
MU 2	AU1, AU2, AU3, AU5	183.3	8	UC SDCC, Unit9 SD 9, U28 SD26, U11 SD27, U26 SD122, U17 SD17, U11T1 SD31, U7 SD07
MU3	-	161.8	1	U02 SD02

The activity index for target pest fauna (wild dogs, foxes, feral pigs and cats) in the offset area was developed in accordance with the protocol recommended by Kays, et al. (2020). The activity index provides a measure of relative abundance for each species. Camera traps were unbaited to avoid interference with predator behaviour and false increases in activity indices. Camera traps were set at 1 m above the ground on a post or tree, and if on a track, at an angle of 45 degrees to the track to increase detection rates. Camera trap locations were selected in the field, with cameras generally placed at a minimum spacing of 1 km, with several cameras placed at 200 m spacing due to poor access conditions and difficult terrain. A range of habitat types were selected to target pests. Cameras were set in riparian areas, vehicle tracks and fence lines, and remnant woodland.

At each camera trap location, the following data was recorded:

- site ID
- GPS location
- survey type (i.e. camera)
- deployed date
- collected date.

To determine species activity indices for applicable pest fauna, the following methodology was applied to the camera trap images:

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- All photos from cameras were analysed using EcoAssist (software for identifying photos containing fauna vs empty photos) followed by manual validation to identify species recorded.
- Camera events for each site were combined into 30-minute intervals to ensure multiple counts of the same individual triggering the camera were removed to produce unique species individual events. For example, Camera 1 was triggered by 3 separate visits of feral cat from 6 am to 6:30 am, from 6:31 am to 7 am Camera 1 was again triggered by 6 separate visits of feral cat. Camera 1 had a total of two camera events between 6:00 am and 7:00 am.
- The number of species individual events were totalled at each camera site (e.g. Camera 1 had a total of two 9 camera events for feral cat [the two identified between 6 am and 7 am plus an additional 7 at other times]). Where there were multiple individuals (e.g. 2 separate cats) within a single photo or 30-min interval photo set, these were counted as multiple individuals (e.g. 2 feral cat events).
- The number of species individual events were totalled at each offset area (Aldoga North and Aldoga South). For example, within Aldoga North offset, Camera 1 had 9 detections of feral cat whilst Camera 2 had one detection of feral cat, therefore 10 detections of feral cat occurred in Aldoga North.
- The number of species individual events were totalled for the entire offset area. For example, Aldoga North had 10 detections of feral cat and Aldoga South had 2 detections of feral cat, therefore the offset had 12 detections.
- These total species individual events were then divided by the total camera days for the relevant sites to produce a pest fauna activity index for the site (observations per cameras per day). For example, Camera 1 had 9 overall detections of feral cat and was set for 10 trap nights, so $9 \text{ detections} / 10 \text{ trap nights} = 0.9$ feral cat activity index for Camera 1.
- To calculate total pest activity, the number of total observations of target pest fauna detected was divided by the total trap nights. For example, Camera 1 had 9 overall detections of feral cat and was set for 10 trap nights and Camera 2 had one overall detection of feral cat but was set for 8 nights. The total feral cat activity (for Aldoga North) is $(9 \text{ detections [Camera 1]} + 1 \text{ detection [Camera 2]}) / (10 \text{ trap nights [Camera 1]} + 8 \text{ trap nights [Camera 2]}) = 0.56$.

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Figure 9.2 Pest fauna activity surveys within the Aldoga North offset area

Pest Fauna Activity Baseline Results

Baseline pest fauna camera trapping within the offset identified four target pest fauna species and are listed in Table 9—4. Their status under the Biosecurity Act and GRC Biosecurity Plan and MNES that are impacted have also been provided.

Table 9—4 Pest fauna identified within the offset area

SPECIES	BIOSECURITY ACT STATUS	GRC BIOSECURITY PLAN STATUS	IMPACTED MNES
Feral cat (<i>Felis catus</i>)	Category 3, 4, 6	Containment Invasive Species	Greater glider and squatter pigeon
Feral pig (<i>Sus scrofa</i>)	Category 3, 4, 6	Containment Invasive Species	Squatter pigeon
Dingo (<i>Canis lupus dingo</i>) ⁴	Category 3, 4, 5, 6	-	Dingo is considered a threat to squatter pigeon whilst both are considered a threat to koala ⁵
Dog (<i>Canis lupus familiaris</i>) other than a domestic dog	Category 3, 4, 6	Containment Invasive Species	
European fox (<i>Vulpes vulpes</i>)	Category 3, 4, 5, 6	Containment Invasive Species	Squatter pigeon and greater glider

Baseline activity indices for each pest fauna species have been generated and provided below in Table 9—5.

Table 9—5 Baseline pest fauna activity index within the offset area

SPECIES	ACTIVITY INDEX
Feral cat	0.0038
Feral pig	0.1491
European fox	0.0229
Total	0.2083

Fire Fuel Load Assessment Methodology

A total of 7 fire fuel load assessment surveys were undertaken within the offset area between 2 and 5 December 2024 (Attexo 2024) as illustrated in Figure 9.3. Fire fuel load assessments were completed to provide an assessment of the vegetation and organic matter that increase the risk of bushfire, before and after control to inform fire management actions.

The number of baseline fire fuel load assessment survey sites completed within the Aldoga North offset is provided in Table 9—6.

⁴ As defined in Schedule 2 of the *Biosecurity Act 2014*

⁵ “Encounter mortality with vehicles and dogs” is listed as a threat to koala as per the conservation advice for the koala (DAWE, 2022). Dog is not defined to the species level and so has been inferred that all species of the genus *Canis* is a threat to koala. For the purposes of pest fauna management for the offset, canids recorded on camera trap images will be referred to as “wild dogs” and includes purebred dingoes, hybrids and dogs that are not owned by a person.

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Table 9—6 Baseline fire fuel load assessment surveys within Aldoga North offset area

ASSOCIATED ASSESSMENT UNIT AND REGIONAL ECOSYSTEM	AREA (HA)	NUMBER OF SITES	SITE ID
11.11.4	88.81	5	A03, A04, A05, A08, A09, A21
11.11.3 ⁶	69.95	-	-
11.8.4	6.4	1	A1
11.12.15 ⁷	16.85	-	-
11.3.4 ⁸	2	-	-

⁶ 70 ha of RE 11.11.3 is present within the offset area and will require the establishment of a fire fuel load assessment monitoring site. Given this community shares the same burn strategy as RE 11.11.4, the same fire fuel load assessment for 11.11.4 has been applied as a trigger.

⁷ Three areas of RE 11.12.15 are present within the Aldoga North offset area and are 2 ha, 3 ha and 10 ha in size. These areas are too small to actively manage with fire and therefore will not be managed. Furthermore, fire management of surrounding vegetation within the offset will be maintained.

⁸ Two areas of RE 11.3.4 are present within the Aldoga North offset area and are <1.5 ha in size. These areas are too small to actively manage with fire and therefore will not be managed. Furthermore, fire management of surrounding vegetation within the offset will be maintained.

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Figure 9.3 Fire fuel load assessment survey sites within the offset área

Fire fuel load assessments methodology was derived using a combined approach from Overall fuel hazard assessment guide (Hines et al. 2010) to assess the key structural layers of the fine fuel complex including bark, elevated, near-surface and surface-level fuels and data collated as part of the BioCondition surveys undertaken within the offset area.

The fire fuel load assessment was stratified into 4 fuel types with thresholds derived from Hines et al. (2010) and was conducted on a site-by-site basis. To accurately measure fire risk and inform effectiveness of bushfire management, the 4 parameters will be measured at each site and graded accordingly, per Management Unit. Definitions and fuel hazard ratings used to assess the fire fuel load is provided in Table 9—7. The overall fire fuel load for each Management Unit was calculated based on the overall rating of the 4 fuel types.

Table 9—7 Fine fuel definitions and fuel hazard rating

FUEL TYPE	DEFINITION	TYPES	FUEL HAZARD RATING
Bark	Bark fuel is the bark on tree trunks and branches. Bark lying on or near the ground or draped over understorey plants is considered to be surface, near-surface or elevated fuel. Measured visually across the 100 x 50 m plot.	No flammable bark (i.e. smooth, slab or small flake bark type)	Low
		Little bark to add to fire behaviour (i.e. bark is tightly held and hard to break off e.g. ironbark or platy bark type)	Moderate
		Loose fibrous bark present, fire will climb trees and spotting will occur (i.e. fibrous stringybark, paperbark, ribbon or candle bark type)	High
Elevated	Fuels are mainly upright in orientation usually associated with the shrub layer, generally most of the plant material is closer to the top of this layer. Sometimes contains suspended leaves, bark or twigs. Measured visually across the 100 x 50 m plot.	No to little elevated fuel. Easy to walk through in any direction but vegetation does brush legs occasionally.	Low
		Significant elevated fuel. Difficult to walk through. Need to carefully select path and step high. 0-1.5 m high and 0-30 % dead.	Moderate
		Taller, dense elevated fuel. Very difficult to see where you are going. Need to use arms to push through vegetation. >2 m high and 30-50% dead.	High
Near-surface	Fuel has horizontal orientation and bulk of fuel closer to the ground. Measured as the length of coarse woody debris (fallen logs or branches that are >0.5 m long and >10cm diameter at breast height (DBH) and more than 80 % touching the ground, as defined by the BioCondition Manual) in the 50 x 20 m subplot within the 100 x 50 m plot BioCondition plot (as per BioCondition Manual).	≥10 - <50 % of benchmark	Low
		≥50 - ≤200 % of benchmark	Moderate
		>200 % of benchmark	High
Surface-level		<60 % surface litter cover	Low

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FUEL TYPE	DEFINITION	TYPES	FUEL HAZARD RATING
	Surface litter cover such as leaves, twigs, bark and other fine fuel <10 cm DBH lying on the ground. Measured within 5 1x1 m plots and averaged to give a value for the site. Plots are alternately placed either side of the 100 m transect at the 25, 35, 45, 55 and 65 m within the 100 x 50 m plot, as per the BioCondition Manual.	60-80 % surface litter cover	Moderate
		>80 % surface litter cover	High
	Depth (mm) of fine fuel. Litter depth should be measured in areas where near-surface fuels do not obscure the litter. Also measured within the 5 1x1 m plots and averaged to give a value for the site.	<10 mm	Low
		10-30 mm	Moderate
		>30 mm	High
	The Hines et al. (2010) fuel hazard rating for surface litter was adapted to assign a rating of Low, Moderate and High for surface litter cover.		

Fire Fuel Load Assessment Baseline Results

Baseline fire fuel load assessments for each regional ecosystem were calculated and is provided below in Table 9—8. Where ratings were of equal value across the fire fuel load parameter (i.e. equal number of sites with Elevated fuel rating of Low and Moderate), a conservative approach was taken, and the more severe fire fuel ratings were used.

Table 9—8 Baseline fire fuel load within the Aldoga North offset area

ASSOCIATED ASSESSMENT UNIT AND REGIONAL ECOSYSTEM	FIRE FUEL LOAD PARAMETER				FINAL FUEL LOAD ASSESSMENT
	BARK	ELEVATED	NEAR-SURFACE	SURFACE-LEVEL	
11.11.4	Moderate	Low	Moderate	Moderate	Moderate
11.11.3					
11.8.4	Moderate	Low	High	Moderate	Moderate
11.12.15					
11.3.4					
Total					