

Offset Strategy

CLARKE CREEK WIND FARM OFFSET STRATEGY



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ACRONYMS AND ABBREVIATIONS

BBMP	Clarke Creek Wind Farm Bird and Bat Management Plan
Cwth	Commonwealth
DAWE	(Cwth) Department of Agriculture, Water and the Environment
DEHP	(Qld) Department of Environment and Heritage Protection (now DES)
DES	(Qld) Department of Environment and Science
DoEE	(Cwth) Department of the Environment and Energy (now DAWE)
DSEWPaC	(Cwth) Department of Science, Environment, Water, Populations and Communities (previously DoEE, now DAWE)
EOP	EPBC Act Environmental Offsets Policy (2012)
EMP	Environment Management Plan (refer to Condition 4 to7 of EPBC Approval)
EPBC	(Cwth) <i>Environment Protection and Biodiversity Conservation Act 1999</i>
GBO	General biosecurity obligation
ha	hectares
m	metres
MNES	matters of national environmental significance under the EPBC Act
OMP	Offset management plan
SEVT	Semi-evergreen Vine Thicket
sp/spp	species/multiple species
TEC	threatened ecological community (EPBC Act)
VM Act	(Qld) <i>Vegetation Management Act 1999</i>
WoNS	Weeds of national significance

DECLARATION OF ACCURACY

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed

Full name (please print)

Organisation (please print)

Date



JAMES TOWNSEND, DIRECTOR
CLARKE CREEK ENERGY PTY LTD
16/12/2020

1 BACKGROUND SUMMARY

The Clarke Creek Wind Farm project consists of 195 wind turbines and associated infrastructure to be developed over a project area of approximately 76,300 hectares, and over 11 private lots. The wind farm project area is situated within the locality of Clarke Creek, approximately 120 kilometres North-West of the city of Rockhampton in Central Queensland. The region is dominated by agricultural activities (primarily beef cattle production), and large areas of the landscape are extensively cleared, although areas of remnant and regrowth native vegetation are also present in the Clarke Creek area.

The Offset Strategy is a requirement of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) 2018/8141 approval for known and potential impact to Matters of National Environmental Significance (MNES).

Following the avoidance and mitigation measures proposed by Clark Creek Energy Pty. Ltd., it was determined that residual impacts would occur on four MNES - Koala habitat, Greater Glider habitat, Semi-evergreen Vine Thicket (SEVT) threatened ecological community (TEC) and EPBC listed threatened Birds and Bats. Direct environmental offsets (offsets) are proposed to compensate for these unavoidable impacts. Direct offsets are those actions that provide a measurable conservation gain for an impacted protected matter (e.g. through securing and managing another area of habitat for the same protected matter) and are an essential component of a suitable offset package.

Offsets for EPBC listed threatened birds and bats are incorporated in the direct offsets proposed for koala, greater glider and SVET as these species use all three habitat features. Actions to improve the ecological condition (Bio Condition) including weed control, active fire management, pest animal control and removal or reduced grazing pressure will be of direct benefit to EPBC listed threatened birds and bats. Table 1-1 below summarises the direct offsets and target condition score for the project.

Table 1-1: Summary of Biodiversity Offsets Proposed for the Clark Creek Wind Farm

Value	Impact Area (ha)#	Offset Area (ha)	Condition Score Start	Target Condition Score
Koala habitat	1,513	4,225	6	7
Greater Glider habitat	17.8	50	6	7
SEVT vegetation community	45.2	99	4	6
EPBC Listed Bird and Bat species	Refer to Section 2.11.1	Refer to Section 3.1.3	-	-

1.1 PURPOSE AND SCOPE OF THIS DOCUMENT

In 2018, Clarke Creek Energy Pty Ltd referred the project under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Minister's Delegate determined that the project is a 'controlled action', with the controlling provisions of Listed Threatened Species & Communities (Sections 18 & 18A) and Listed Migratory Species (Section 20 and 20A).

This document provides details of the project impacts and proposed offset strategies to compensate for the loss of habitat for the identified MNES, being the listed Threatened Species and Communities of Koala (*Phascolarctos cinereus*), Greater Glider (*Petauroides volans*), the SEVT TEC, in addition to direct or indirect impacts to EPBC listed threatened bird and bat species.

This Offset Strategy has been prepared to demonstrate compliance with Condition 14 of the EPBC approval (Department of the Environment and Energy [DoEE] reference EPBC 2018/8141). Note: DoEE changed name and some function to the Department of Agriculture, Water and the Environment (DAWE) on 1/02/2020:

If the Minister approves the Offset Strategy then the approved Offset Strategy must be implemented. The Offset Strategy must be prepared by a suitably qualified person in accordance with the EPBC Act Environmental Offsets Policy and Environmental Management Plan Guidelines. The offset strategy must:

- a. *propose an offset package, including potential offset sites, in accordance with the EPBC Act Environmental Offsets Policy, to compensate the loss of:*
 - i. *Koala habitat;*
 - ii. *Greater Glider habitat; and*
 - iii. *Semi-evergreen Vine Thicket.*
- b. *provide offset calculations, including all inputs to the calculations, used to prepare the offset package proposal;*
- c. *propose measures for the long-term protection and management of offset sites;*
- d. *proposed a timeline and legal mechanism for securing the offset sites to meet the offset requirement in Condition 15; and*
- e. *determine and justify trigger levels for the requirement to provide an offset for a significant residual impact on EPBC Act listed threatened bird and bat species.*

1.1.1 Suitably qualified persons

This offset strategy was prepared by the following suitably qualified persons.

Person	Organisation	Qualifications
Kelly Matthews	Green Tape Solutions	Certified Environmental Practitioner and Member of the Environmental Institute of Australia and New Zealand (EIANZ). Master in Environmental Management Master in Ecology Bachelor of Sciences 18 years on undertaking biodiversity surveys (fauna and flora) and reporting across QLD and NSW Ecological impact assessments of threatened species and endangered ecological communities and routinely assesses projects in response to state and Commonwealth threatened species legislation
Beth Kramer	NGH	Member of the Environmental Institute of Australia and New Zealand (EIANZ).

		Bachelor of Science (Zoology and Environmental Studies) Master of Environmental Management 15 years' experience on biodiversity studies, impact assessment, and preparing conservation management plans for threatened species in Queensland. Relevant projects include but are not limited to development of an offset policy & implementation framework for a local government and a landscape-scale Koala management plan.
Hanna Weiss	NGH	Member of the Environmental Institute of Australia and New Zealand (EIANZ). Bachelor of Arts (Environmental Science) Four years' experience in impact assessment and development of environmental management plans.
Brett Lane	Nature Advisory	Brett is an ecologist with over 40 years' experience as a recognised specialist in ecological research and management. Brett worked initially on threatened species conservation then for six years with the Royal Australasian Ornithologists' Union (now Birds Australia) on their migratory shorebird program and has held a position with Wetlands International – Asia Pacific, based in Kuala Lumpur. He started work as an ecological consultant to industry in 1980, initially part-time and has held senior and principal consulting positions with a number of companies in Brisbane and Melbourne.
Joseph Adair	Green Tape Solutions	Member of the Environmental Institute of Australia and New Zealand (EIANZ). Bachelor of Australian Environmental Science Graduate Certificate Public Sector Management Course Over 30 years' experience in natural resource management, planning, assessment, and decision making with Queensland Government, Private Sector and Not for Profit Sectors. Led and contributed to threatened species recovery projects for numerous fauna and flora in Queensland, NSW and WA. Managed and delivered Ecological impact assessments of threatened species and endangered ecological communities and routinely assesses projects in response to state and Commonwealth threatened species legislation.

1.1.2 Document framework

Condition 15 requires the preparation of an Offset Management Plan (OMP) within 12 months of commencement of the action and before commissioning of wind turbines. This Offset Strategy establishes the framework on which the OMP will operate.

The Offset Strategy proposes potential Direct Benefit offset areas within properties affected by the project footprint. Negotiations with landholders are ongoing and contingent on the approval of this Offset Strategy.

Table 1.2 shows how this Offset Strategy meets the requirements of Condition 14.

Table 1-2: EPBC 2018/8141 Condition 14 Approval Reference Table

Ref	Condition	Condition Requirement	Plan reference	How the plan addresses condition requirements and commitments made in the plan to address condition requirements.
1	14	To compensate for the impacts of clearing the approval holder must submit an Offset Strategy for the written approval of the Minister. The action must not commence until the Offset Strategy has been approved by the Minister. If the Minister approves the Offset Strategy, then the approved Offset Strategy must be implemented. The Offset Strategy must be prepared by a suitably qualified person in accordance with the EPBC Act Environmental Offsets Policy and Environmental Management Plan (EMP) Guidelines. The offset strategy must:	P ii Section 3	Cover page to includes the following: • EPBC number • project name • proponent /approval holder and ACN or ABN • the proposed/approved action • location of the action • date of preparation of the environmental management plan • person accepting responsibility for the EMP – signed declaration (see below). Document verification page and Declaration of Accuracy are provided in this document. Section 3 identifies the offset calculation using the EPBC Act Environmental Offsets Policy and EMP Guidelines.
2	14(a)	Propose an offset package, including potential offset sites, in accordance with the EPBC Act	Section 3	Section 3 identifies how offset sites will be selected and proposes offset sites where discussion with landholders have occurred. The offset sites have been calculated in accordance with the EPBC Act. Landowners within project site and offsite have also expressed interest in providing alternative offset sites as contingency sites.
3	14(b)	Environmental Offsets Policy, to compensate the loss of:	As below	
4	14(b)(i)	Koala habitat	Figure 3-1 Appendix A	These Sections provide the details of the specific locations and areas that are proposed to achieve the offset requirements for Koala.
5	14(b)(ii)	Greater Glider habitat	Figure 3-2 Appendix B	These Sections provide the details of the specific locations and areas that are proposed to achieve the offset requirements for Greater Glider.
6	14(b)(iii)	Semi-evergreen Vine Thicket	Figure 3-3 Appendix C	These Sections provide the details of the specific locations and areas that are proposed to achieve the offset requirements for SEVT
7	14(c)	Provide offset calculations, including all inputs to calculations, used to prepare the offset package proposal;	Attachments A – F Section 2.4	These Sections include the offset calculations, habitat quality assessments for proposed offset areas and management actions for each of these areas.

Ref	Condition	Condition Requirement	Plan reference	How the plan addresses condition requirements and commitments made in the plan to address condition requirements.
8	14(d)	Propose measures for the long-term protection and management of offset sites;	Section 2.9.1 and Section 4.1	These Sections include the details the mitigation measures and management actions for the project and offset sites to ensure long term protection of Koala, Greater Gliders, SEVT and EPBC listed Bird and Bat species.
9	14(e)	Proposed a timeline and legal mechanism for securing the offset sites to meet the offset requirement in Condition 15; and	Table 3-1 Section 3.2	These Sections included information relevant to the Voluntary Declaration (VDec) under the Queensland <i>Vegetation Management Act 1999</i> is proposed to secure Direct Benefit Offset sites. The VDec must be supported by a Management Plan which includes details about the management intent and management outcomes for the conservation of nature and prevention of land degradation.
10	14(f)	Determine and justify trigger levels for the requirement to provide an offset for a significant residual impact(s) on EPBC Act listed threatened bird and bat species.	Section 2.11.1	Impacts on birds and bats are monitored via the BBMP (Nature Advisory 2020), which also defines impact triggers that require investigation to determine mitigation measures, and, after implementation, whether residual significant impacts remain that require an offset. Section 2.11.1 of this strategy defines the trigger levels to provide an offset for a significant residual impact(s) on EPBC Act listed threatened bird and bat species.
EPBC - EMP Guideline Compliance				
	3.1	Cover and declaration of accuracy	Cover and Page iii	These Sections provide the relevant information.
	3.2	Document version control	Second page	This Section provides the relevant information.
	3.3	Table of Contents	Page i	This Section provides the relevant information.
	3.4	Executive summary / Introduction	Page 1	This Section provides the relevant information.
	3.5	Conditions of approval reference table	Page 3	Table 1-2
	3.6	Project Description	Page 1	This Section provides the relevant information.
	3.7	Objectives	Page 1	This Section provides the relevant information.
	3.9	Reporting	Page 42	Offset reporting will be detailed in the OMP and will be consistent with the <i>EPBC Annual Compliance Report Guidelines 2014</i> . An overview of how reporting will be provided is outlined in Section 6.
	3.10	Environmental training	N/A	To be described in OMP
	3.11	Emergency contacts and procedures	N/A	To be described in OMP
	3.12	Potential environmental impacts and risks	Section 2	This Section provides the details of the project impacts on the MNES.
	3.12.1	Threats to matters protected under the EPBC Act	Section 2	
	3.12.2	Potential impacts	Section 2	

Ref	Condition	Condition Requirement	Plan reference	How the plan addresses condition requirements and commitments made in the plan to address condition requirements.
	3.12.3	Risk assessment	Sections 2.4, 2.5, 2.6, 2.7 and 2.8	This Section provides the details of the risk assessment.
	3.13	Environmental management measures	Section 4.1	This Section provides the details of the management measures.
	3.13.1	Environmental management activities, controls, and performance targets	Section 4.1	This Section provides the details of the Environmental management activities, controls, and performance targets.
	3.13.2	Environmental management maps and diagrams	Figures 3.1, 3.2 and 3.3	The figures show identified potential offset sites for Koala, Greater Glider and Semi Evergreen Vine thicket. Final selection of the offset sites and areas is subject to landholder concurrence and suitability of the site to achieve the habitat enhancement criteria.
	3.13.3	Environmental monitoring	Section 5	Section 5 describes the monitoring framework to be developed in the OMP.
	3.13.4	Corrective actions / Non-conformance	Section 5	This section provides a brief description of the framework for identifying triggers to address non-conformances and corrective actions.
	3.14	Audit and review	Section 5	This section provides a brief description of the framework for audit and review.
	3.14.1	Environmental auditing	Section 5	This section provides a brief description of the framework for audit and review
	3.14.2	EMP review	Section 6	Ongoing review of the performance of the OMP and amendments to address new knowledge and emerging issues.
	3.15	Glossary	P iv	ACRONYMS AND ABBREVIATIONS
Compliance with EPBC Offset Policy			Page 12 - 13	Table 3-5 Consistency of proposed offset approach with the principles of the EPBC Act Environmental Offset Policy.

2 PROJECT IMPACTS

As per the EPBC approval, the total impact of the project provided for maximum clearing of:

- 1,513 ha of habitat suitable for the Koala
- 17.83ha of suitable habitat for the Greater Glider and Squatter Pigeon
- 45.22ha of SEVT TEC.

2.1 OVERVIEW OF PROJECT IMPACTS

The project infrastructure is comprised of linear, non-linear and temporary infrastructure. The overall footprint of the infrastructure shall be determined during the detailed design of the wind farm, including roads, cabling, overhead lines and other infrastructure.

In accordance with the *EPBC Act Environmental Offsets Policy* (EPBC EOP) (Department of Sustainability, Environment, Water, Populations & Communities [DSEWPaC], 2012), avoidance and mitigation measures are the primary strategies for managing any potential significant impact of a proposed action. An 'Avoid, Mitigate, Offset' framework has been applied to the wind farm design and development.

The project design to date has considered the ecological values on site and avoided these where feasible. To accommodate on-site constraints, the wind turbines, as well as the required supporting infrastructure (roads, powerlines and underground cables), may be moved up to 100 metres (m) from their proposed location (known as micro-siting). Where impacts cannot be avoided, they will be managed and minimised through both construction and operation. Mitigation measures which will be implemented include:

- Clearly identifying 'no-go' areas with spatial data, maps, construction barriers and other physical means.
- Pre-clearance surveys to identify fauna breeding sites, threatened species, and weeds.
- Presence of fauna spotter-catchers during vegetation clearing work.
- Provision of suitable fauna management assets such as retention of large hollow-bearing trees and potential installation of nesting boxes to replace lost hollows with sign of Greater Glider use.
- Re-location of structural fauna habitat elements, such as hollow bearing logs to areas of vegetation which will be retained outside of the development footprint.
- Rehabilitation of cleared batters following construction, taking into consideration that roads are to be maintained and need to remain passable for large turbine loads in the event of a blade replacement during operation.
- Rehabilitation of riparian vegetation to prevent or minimise fragmentation of habitat.
- Weed management during the construction and operation phase of the development.

Following the avoidance and mitigation measures, it was determined that residual impacts would occur on MNES - Koala, Greater Glider and the SEVT threatened ecological community. Direct offsets are those actions that provide a measurable conservation gain for an impacted protected matter (e.g. through securing and managing another area of habitat for the same protected matter) and are an essential component of a suitable offset package. The approval also requires trigger levels to be established (Section 2.11.1) to provide offsets for any significant residual impacts on an EPBC Act listed threatened bird and bat species.

2.2 NATURE OF IMPACT

Descriptions and analysis of the project impacts are described in the following reports:

- “*Preliminary Documentation CLARKE CREEK WIND FARM PROJECT*” Project number 17-035. A report to DoEE as part of the “Controlled Action: Preliminary Documentation” determination for the Clarke Creek Wind Farm Project (The Project) made on the 16 March 2018 (EPBC Reference: 2018/8141) (Preliminary Documentation Request); and
- The “*Ecological Assessment Report – Clarke Creek Wind Farm Project*” (EAR) which supports the Development Application for the project.
- Draft “*Clarke Creek Windfarm Bird and Bat Management Plan*” (BBMP) which describes the potential occurrence, impact and preventative management measures of EPBC listed threatened birds and bats at the project site.

The items below summarise the project impacts and the information below is drawn from the EAR report.

2.3 SCALE AND SIZE OF IMPACT

The Project area covers approximately 76,300 hectares, consisting of eleven rural land tenures predominantly used for cattle grazing bordered by the Marlborough-Sarina Highway to the west.

2.3.1 Koala

Koalas were found to be present throughout the project site area with 17 recorded (heard or seen) during site surveys. There is currently 39,560 ha of vegetation suitable to koala within the project site. The habitat currently forms a contiguous landscape over the ridgelines with limits to connectivity in the flats through the agricultural lands.

The current project design requires the removal of 1,513 ha of koala habitat (about 3.8% of the habitat within the project site).

2.3.2 Greater Glider

A healthy population of greater gliders were found adjacent to and within the project site area. A total of 1,822 ha of riparian vegetation is available in the project site area and the project will require the clearing of 17.8 ha (about 1% of the total available area) of good quality greater glider habitat within the riparian vegetation community (e.g. RE11.3.25).

Male greater gliders are highly territorial, and their territories do not overlap (Smith et al., 2007). They only have small home ranges of 1-4 ha (Pope *et al.*, 2005), with other studies suggesting there is usually only a maximum of about 5 greater gliders per hectare (Maloney, 2007).

2.3.3 SEVT

The proposed action would result in the removal of up to 45.2 ha of mapped SEVT. A total of 3,719.3 ha of SEVT was mapped across the study site. About 1.21% of the total mapped extent of the community occurs across the subject site.

2.3.4 EPBC listed birds and bats

Habitat quality for birds and bats is poor in the largely cleared parts of the Project site, and fair to excellent in the areas of remnant native vegetation on the Project site (NGH Environmental 2017). Several field assessments were undertaken at the Project site, targeting birds and bats during flora and fauna investigations for the development application. These are outlined in detail in the Clarke Creek Wind Farm Ecological Assessment Report (2017) and summarised below.

One threatened species was potentially recorded during surveys, the South-eastern Long-eared Bat (*Nyctophilus corbeni*), which is listed as vulnerable under the *Nature Conservation Act 1992* (NC Act) and vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This species was recorded only as *Nyctophilus spp.* as the calls are difficult to distinguish accurately from other (least concern) *Nyctophilus* species. Two Least Concern *Nyctophilus spp.* (*N. geoffroyi* and *N. gouldi*) were confirmed (captured in harp trap) close to the echolocation records, which suggests that these species were the source of the calls. Nonetheless, *Nyctophilus corbeni* was included as a precautionary measure as it could not be entirely discounted.

Additionally, eight species of raptor were identified in the Project site. These include the Wedge-tailed Eagle, Grey Falcon, Little Eagle, Brown Falcon, Nankeen Kestrel, Peregrine Falcon, Black Kite and Whistling Kite. Raptors are often identified as species of concern at wind farms as they are prone to collision with turbines as they soar and hover at turbine rotor swept area (RSA) height. This can cause them to collide with turbine blades more frequently than other species.

An additional four bird and one bat threatened species were identified as potentially occurring within the Project site through database searches but were not observed throughout the surveys. These included:

Threatened bird species:

- Australasian Bittern (*Botaurus poiciloptilus*), NC Act: Endangered, EPBC Act: Endangered;
- Australian Painted Snipe (*Rostratula australis*) NC Act: Endangered, EPBC Act: Critically Endangered;
- Black-breasted Button-quail (*Turnix melanogaster*), NC Act: Vulnerable, EPBC Act: Vulnerable;
- Red Goshawk (*Erythrorhynchus radiatus*), NC Act: Endangered, EPBC Act: Vulnerable.

Threatened bat species:

- Grey-headed flying-fox (*Pteropus poliocephalus*), EPBC Act: Vulnerable.

The EPBC Act Project Matters Search Tool (PMST) identified six migratory species as potentially occurring within the Project site, including:

- Fork-tailed Swift (*Apus pacificus*);
- White-throated Needletail (*Hirundapus caudacutus*);
- Black-faced Monarch (*Monarcha melanopsis*);
- Spectacled Monarch (*Monarcha trivirgatus*);
- Satin Flycatcher (*Myiagra cynoleuca*);
- Rufous Fantail (*Rhipidura rufifrons*).

White-throated Needletail (*Hirundapus caudacutus*) (since listed as Vulnerable) was identified during surveys, at or above RSA height in the vicinity of proposed turbine locations. Satin Flycatcher (*Mviagra cyanoleuca*) and Rufous Fantail (*Rhipidura rufifrons*) were also identified during surveys. None of the other migratory species were identified during the field assessments.

Two other EPBC listed species potentially occurring but not recorded during surveys included the Rainbow Bee-eater (*Merops ornatus*) and the Red Goshawk (*Erythrotriorchis radiatus*).

2.4 RISKS TO OFFSET MANAGEMENT OBJECTIVES

Offsets for clearing habitat require long-term security of the outcome. Undertaking management actions and enabling long-term protection improves habitat quality and reduces the risk to the offset sites.

A risk assessment of potential impacts for the Project and associated offset delivery has been undertaken. A standard risk assessment matrix (Table 2-1) has been used for the purpose of assessing risks associated with management of the offset site. Table 2-2 provides an assessment of the likelihood and consequence of each potential risk and associated impact.

Table 2-1: Risk Assessment Matrix

		Consequence				
		1 - Minor	2 - Moderate	3 - High	4 - Major	5 - Critical
Likelihood	5 - Highly Likely	Medium	High	High	Severe	Severe
	4 - Likely	Low	Medium	High	High	Severe
	3 - Possible	Low	Medium	Medium	High	Severe
	2 - Unlikely	Low	Low	Medium	High	High
	1 - Rare	Low	Low	Low	Medium	High

Table 2-2: Likelihood and consequence

Qualitative measure of likelihood (how likely is it that this event/circumstances will occur after management actions have been put in place/are being implemented)	
Highly likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the project
Possible	Might occur during the life of the project
Unlikely	Could occur but considered unlikely or doubtful
Rare	May occur in exceptional circumstances
Qualitative measure of consequences (what will be the consequence/result if the issue does occur)	
Minor	Minor risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing low cost, well characterised corrective actions.
Moderate	Moderate risk of failure to achieve the plan's objectives. Results in short term delays to achieving plan objectives, implementing well characterised, high cost/effort corrective actions.
High	High risk of failure to achieve the plan's objectives. Results in medium-long term delays to achieving plan objectives, implementing uncertain, high cost/effort corrective actions.
Major	The plan's objectives are unable to be achieved, with significant legislative, technical, ecological and/or administrative barriers to attainment that have no evidenced mitigation strategies.
Critical	The plan's objectives are unable to be achieved, may include widespread and severe environmental harm, with no evidenced mitigation strategies.

Table 2-3: Risk Assessment for Offset Management Activities

Management objective/desired outcome	Event or circumstance	Likelihood consequence and risk level			Management actions/measures	Residual risk			Detection/monitoring activity/ies	Feasible/effective corrective actions
		L	C	RL		L	C	RL		
To achieve the plan's completion criteria within 20 years of approval of the Offset Management Plan.	Weed species establishment and invasion	3	2	MED	- Vehicle wash-down protocols will be implemented during construction; - Implement weed control and eradication measures, as per OMP.	2	2	LOW	- Quarterly monitoring of weed species. - Informal monthly monitoring.	- Increase weed control where necessary. - Alternative actions to manage weeds, including intensification.
	Pest animal establishment and invasion	3	2	MED	- Regular assessment of pest animal presence on offset sites. - Implement control and eradication measures, as per OMP.	2	2	LOW	- Quarterly monitoring of pest animals. Timeframes re-assessed, as required, to ensure objective met - Opportunistic monitoring, as needed.	- Increase pest animal control, where necessary. - Intensify pest animal control, if required, to reduce high numbers particularly impacting habitat and/or MNES.
	Unauthorised grazing as a result of fences being damaged	3	3	MED	Fences are maintained and grazing (if any) is controlled.	2	1	LOW	Quarterly monitoring of fences.	- Stock to be removed as soon as possible and fences to be repaired. - Monthly monitoring of fences, if quarterly is not sufficient.
	Lack of serviceable tracks for easy vehicular access	3	2	MED	Maintain roads / tracks to level where they can be easily traversed by 4x4 vehicles with trailers and Rural Fire Service	2	2	LOW	Quarterly monitoring. Timeframes re-assessed, as required, to ensure objectives met.	Tracks are to be repaired as soon as reasonably possible.

Management objective/desired outcome	Event or circumstance	Likelihood consequence and risk level			Management actions/measures	Residual risk			Detection/monitoring activity/ies	Feasible/effective corrective actions
		L	C	RL		L	C	RL		
					vehicles.				Degraded or inaccessible tracks to be reported to site supervisor.	
	Unplanned fire at offset(s) adversely impacts habitat quality	3	4	HIGH	- Biomass control through controlled grazing. - Biomass control and habitat quality improvements through controlled mosaic/cool burns.	2	3	MED	- Grazing rotations according to habitat types and season. - Controlled mosaic/cool burns.	Grazing rotations rearranged, if required, to focus on high biomass areas.
	Interim and/or final completion criteria not attained in set timeframes	3	4	HIGH	- Biocondition assessments to record habitat quality gains at set intervals, as per OMP. - Performance criteria in the OMP are enabled through on-ground management, in consultation with relevant stakeholders. - Assessment of the offset success will be undertaken by qualified ecologists, independent from the rehabilitation contractor.	2	3	MED	- Monitoring as per the OMP. - Ongoing communication between staff and management. - Interim criteria, management measures and timeframes re-assessed, as required, to ensure habitat quality scores are met.	- As outlined in the OMP. - Re-set timeframes and re-consider management measures at offset, for achieving criteria, as needed. - Revise and update OMP, to ensure criteria can be met. - Consider additional offset(s) to meet requirements, if criteria not able to be met.
Manage uncertainties	Key data / information used	2	2	LOW	Undertake BioCondition assessments as per	1	1	LOW	Monitoring as per the OMP.	Additional data will be collected if results are

Management objective/desired outcome	Event or circumstance	Likelihood consequence and risk level			Management actions/measures	Residual risk			Detection/monitoring activity/ies	Feasible/effective corrective actions
		L	C	RL		L	C	RL		
	to formulate the plan inadequate				approved Queensland methodology, at regular intervals (DEHP 2017). Data will be collected in a standard and repetitive manner to avoid or minimise errors.				Ongoing communication between staff and management.	not considered sufficient to assess the success of the offset. Revise and update OMP to reflect current/new information, including adding additional management measures and revising timeframes, if required.
	Extreme event, e.g. cyclone, uncontrolled bushfire, reduces habitat quality on the offset.	2	4	HIGH	Fast track biocondition assessment of offset(s) as soon as possible following extreme event, to record damage, habitat loss, impacts on threatened species and communities.	2	3	MED	Impacts of extreme event recorded in annual compliance reports and reporting on offset management.	- Determine if additional management measures required to improve habitat quality where damaged by extreme event. - Revise and update OMP to account for additional management measures and adjust timeframes for meeting criteria, as needed.

2.5 RISKS TO THE VIABILITY OF KOALA POPULATIONS

Koalas occurring in the Clarke Range are one of Queensland's most stable and intact populations. The population is generally healthy, and the habitat is largely contiguous and of enough size across the range affording this species sustainable environment and its security in the wild. The project will impact up to about 3.8% of the habitat. Risks to this population are:

- Reduced habitat for the species across contiguous landscape along ridgelines and adjacent areas.
- A degree of fragmentation to koala habitat currently occurs from agricultural practices within and about the project site area. While the project will result in some fragmentation through construction phase (low traffic during the construction of roads, turbines, lay down sites and power line corridors), none of these items present a permanent barrier to koala movement across the site.
- The inclusion of new access (roads and tracks) may provide new vectors for pest animals and weeds to encroach into existing koala habitat.
- Increased human activity across the project site may increase the stress levels in koalas, leading to potential increased susceptibility to Chlamydia and koala retro virus.
- Disrupted dispersal opportunities across the project site, particularly during construction, may influence reproductive success.

2.6 RISKS TO THE VIABILITY OF GREATER GLIDER POPULATIONS

Greater Gliders are generally healthy, and the habitat is largely contiguous and of enough size across the range affording this species sustainable environment and its security in the wild. The project will impact only a small portion (up to about 1%) of the habitat. Risks to this population are:

- Loss of habitat through the removal of hollow bearing trees in riparian vegetation present the primary risk to Greater Glider populations.
- Increased fragmentation of habitat including loss of gliding trees and opportunities, particularly during construction.
- The inclusion of new access (roads and tracks) may provide new vectors for pest animals and weeds to encroach into existing glider habitat.
- Increased human activity across the project site may increase the stress levels in gliders, leading to potential increased susceptibility to Chlamydia.
- Disrupted dispersal opportunities across the project site influencing reproductive success, particularly during construction activities.

2.7 RISKS TO THE VIABILITY OF SEVT TEC

The project has the potential to result in some fragmentation of this community as a result of clearing for linear infrastructure such as roads and underground and overhead powerlines. The constructed road corridor width is expected to be about on average 10 – 15 m, with adjacent disturbed areas rehabilitated with suitable species for this community. Overhead powerline clearing requirements will vary depending on voltage but will be up to a maximum of 45 m in width (for high voltage powerlines), in line with standard utility infrastructure management requirements, with areas beneath the powerlines to be regularly maintained (i.e. slashed).

A variety of invasive flora and fauna species have been recorded on site, including within the SEVT TEC. The project has potential for incursion of pest plant into SEVT vegetation communities.

2.8 RISKS TO THE VIABILITY OF EPBC ACT LISTED THREATENED BIRD AND BAT SPECIES

Wind farm impacts on birds and bats can arise from three potential pathways:

- Direct collision of birds and bats with towers or turbine blades at turbine rotor swept area (RSA) heights. Bats may also experience barotrauma (barometric pressure differentials created by operating turbines);
- Disturbance effects that exclude birds and bats from habitat; and
- Barrier effects that limit bird and bat movements between essential resources, such as foraging and roosting areas.

The project assessment documentation (2018/8141) considered the potential risk of impacts to EPBC listed threatened bird and bat species.

The implementation of the project Threatened Bird and Bat Management Plan as per the requirements of EPBC Act approval condition 9-13 will ensure the protection of EPBC Act listed threatened bird and bat species.

The trigger levels for the requirement to provide an offset for a significant residual impact on EPBC Act listed threatened bird and bat species as per the requirements of EPBC Act approval condition 14(e) are provided in Section 2.11.1.

2.9 ARE IMPACTS TEMPORARY OR PERMANENT?

The project progresses through several phases each with a potential to impact fauna and flora populations. These are:

1. Pre-construction planning and design;
2. Construction. This phase includes the commencement of rehabilitation work as outlined in the OMP;
3. Operations and maintenance. This phase includes ongoing monitoring and reporting work as outlined in the OMP, and
4. Decommissioning. This phase includes rehabilitation of decommissioned areas.

Spatial impacts are described in Section 2.3; however, the scale of temporal impacts vary with each project phase. For example, vegetation impacts are highest during construction and decommissioning compared to operations.

The project will have an ongoing impact for its duration.

- Planning and design phase impacts are slight and result in some transient disturbance of individual koalas and greater gliders and no disturbance to SEVT. This phase is nearing completion with survey and design work to be finalised in 2020.
- Construction phase impacts are the largest for the project and will involve habitat clearing and disturbance while construction and commissioning activities proceed. Construction is expected to be completed in 30 months, i.e. by 2023, subject to staging of the project.

- Operations phase will present a large reduction in ground impacts from reduced activity on site, completion of vegetation clearing and construction, implementation of rehabilitation procedures and site operations. Much of the construction infrastructure (roads, hardstands, wind turbines, power lines etc.) will remain on site and be maintained for operational purposes during the 25-year life of the operations of the project. The operations phase presents increased risk to birds and bats which may fly within the RSA of operating wind turbines.
- The decommissioning phase will increase ground impacts temporarily as the wind farm is decommissioned. Additional traffic impacts will occur on site, but many areas will be rehabilitated.

Impacts to Koala, Greater Glider, SEVT and EPBC listed birds and bats from the project are expected to be temporary. However, the habitat will not return to pre-disturbance state due to the construction of access tracks, wind turbines and ongoing operational activities. Sections 2.10, 2.11, 2.12 and 3.0 describe the measures to ensure a net conservation benefit for these populations.

Ecological monitoring for the project will aim to quantify any change to onsite ecological values and the condition of the offset areas. Project ecological monitoring is outlined at Section 5.

2.10 MEASURES TO AVOID OR MINIMISE IMPACTS TO KOALA, GREATER GLIDER, SEVT AND EPBC LISTED BIRDS AND BATS

2.10.1 Planning and design phase

The planning and design phase presents opportunities to optimise the design and avoid or minimise environmental impacts. The following mitigation measures have been undertaken in the design of the project and are recommended for any further detailed design, including micro-siting of turbines, roads and other infrastructure, to further reduce ecological impacts:

- Micro-siting of turbines and access roads where possible/feasible to avoid or minimise impacts to the areas of the SEVT TEC.
- Reduce as much as possible the clearing of riparian vegetation community. This will limit potential impacts to water quality from sediment and erosion of waterways during construction but will also have the added benefit of reducing the potential for removal of large hollow-bearing trees present within this area.
- Final micro-siting of road alignments to be selected to reduce overall clearing footprint and minimise impacts on mapped Of Concern or Endangered REs to the greatest extent possible, whilst also reducing the overall loss of koala habitat.

2.10.2 Construction phase

A range of mitigation measures will be implemented to ensure that impacts on biodiversity during the construction phase are avoided where possible, and minimised where they cannot be avoided. The mitigation measures described in the EMP for the Project that will be applied during clearing and construction to reduce the impacts on susceptible flora and fauna include:

- Vegetation clearing and disturbance will be minimised to the extent required to complete the works. Wherever practicable, excavations and vehicle/machinery movements will occur outside the canopy dripline of large eucalypts and avoid impacts within the adjacent vegetation patches that are to be retained.
- Prior to the commencement of work, a physical vegetation clearing boundary at the approved clearing limit is to be clearly demarcated and implemented. The delineation of such a boundary may include the use of temporary fencing, flagging tape, para-webbing, survey pegs or similar. Areas outside the demarcated clearing boundaries will be 'no go' zones.
- Identify and translocate and/or propagate *Cycas megacarpa* and *Cycas ophiolitica* that cannot be avoided and would be impacted by the construction of the turbines and associated infrastructures. Translocation of the threatened Cycad species must be undertaken in accordance with the Cycad Translocation and Management Plan.
- Pre-clearance survey of vegetation including locating, recording and marking specific habitat features (e.g. hollows, hollow bearing trees (HBT), hollow-bearing limbs, complex rock fissures and boulder piles) is to be undertaken by a qualified and experienced ecologist within the clearing boundary. This should occur within one month of felling and should also include visual inspection where possible of habitat features shortly before clearance to identify resident fauna species that may require relocation.
- Installation of nest boxes (minimum of 4 for each removed HBT) where hollow-bearing trees used by greater gliders are being removed. Nest boxes include reusing natural hollows from cleared HBTs wherever possible, installation of manufactured boxes on trees where there are existing hollows and constructing hollows within existing trees with a chainsaw. Nest boxes have been observed to be an effective supplantation housing solution for Greater gliders in suitable habitats (WPSQ 2019). A nest box monitoring project run by Wildlife Queensland has observed nest box use by Greater Gliders, with an observed preference by this species for nest boxes positioned at 10 m, in trees with multiple nest boxes/existing hollows (WPSQ, 2019).
- Implementation of a 'sensitive clearing technique' where the removal of hollow bearing trees cannot be avoided. This would involve the hollow bearing trees to be "tapped" (gently bumped at least 3 times 30 seconds apart) by the machine to safely disturb resident fauna and encourage the animals to leave the tree of their own volition. Hollow bearing trees would then be gently lowered preventing them from falling under their own weight, prior to inspection of hollows by the fauna spotter.
- Presence of a fauna spotter during removal of habitat features including hollow-bearing trees and fallen hollow logs (rocky habitats have not been specified due to the absence of the recording of any threatened species that specifically occupy these sites), including development of appropriate capture and release methods (depending on observed fauna), and identification of appropriate release areas for the relocation of fauna species prior to clearing.
- Limit the use of barbed wire on exterior fencing where agreed with landholders.
- Cleared vegetation is to be stockpiled (not burned) or mulched (except for salvaged hollow limbs and trunks) for use in erosion and sediment control, and rehabilitation works. Bulk earthworks will be avoided during, and immediately following heavy rainfall events to protect soils and vegetation at the site.
- Installation and monitoring of site-specific sediment erosion controls in accordance with best practice guidelines.

- Any aquatic habitats to be removed (i.e. draining and in-filling of farm dams) will include a protocol for inspection of the dams by an ecologist as soon as possible after draining to capture and relocate any stranded aquatic fauna (such as frogs and turtles).
- Trenches will be backfilled as soon as possible to minimise the chance of fauna becoming trapped. Any trench sections left open for greater than a day would be inspected daily, early in the morning and any trapped fauna removed. The use of ramps or ladders to facilitate trapped fauna escape is recommended (dependent on the size of trench needed).
- Progressive rehabilitation during construction activities to re-establish stable ground surfaces, resistant to erosion and weed ingress, and to maximise the potential for colonisation by native ground cover
- Weed management throughout the project phases.
- Soil and water impacts during construction are to be managed in accordance with best practice guidelines and should include provisions to:
 - Minimise the works footprint to only that required for the works; clearly demarcating impact areas from 'no go' areas, that would be protected from impact.
 - At the commencement of the works, and progressively during construction, install the required erosion control and sediment capture measures.
 - Controls must be regularly inspected and maintained, particularly following rainfall.
 - Maintain a register of inspection and maintenance of erosion control and sediment capture measures.
 - In excavation activities, separate subsoils layers and topsoils layers and ensure that they are replaced in their natural configuration to assist revegetation.
 - Manage works in consideration of heavy rainfall events; if a heavy rainfall event is predicted, the site should be stabilised, and work ceased until the wet period had passed.
- Spill management and response measures are to be developed to prevent contaminants affecting surrounding environments.
- Vehicles will be speed limited onsite, to reduce risk of collision with fauna.

2.10.3 Operation phase

A range of mitigation measures will be implemented to ensure that impacts on biodiversity during the operation phase of the project are avoided where possible, and minimised where they cannot be avoided. The mitigation measures will be employed during the operation phase of the project to reduce the impacts on avifauna. These mitigation measures are set out in the BBMP, as per the requirements of EPBC Act approval condition 11e.

The Project is required (EPBC Act approval condition 14e) to determine and justify trigger levels which will require an offset for significant residual impacts on EPBC Act listed threatened bird and bat species. Trigger levels will differ depending on the species. Offsets will be proposed for those species that are considered to have a significant residual impact because of Project operation, as per the triggers set at section 2.11.1.

Any evaluation of impacts and decisions regarding mitigation measures, possible additional offsets and further investigations required will be undertaken in consultation with DES/DAWE (as required). Any required investigation, and recommended management and supplementary mitigation measures will be detailed in the annual reports of the BBMP and annual reporting under the project Approval. Offset measures required, including any additional offsets that may be required if triggers are met or exceeded, will be documented in the reporting required under this offset strategy and annual compliance reports.

2.11 RESIDUAL IMPACTS

The EAR details the assessment of the Significant Residual Impact (SRI) that has been undertaken in accordance with the *Queensland Environmental Offsets Policy: Significant Residual Impact Guideline* (DEHP, December 2014). The methods included in the guideline are designed to assist in deciding if a prescribed activity will or is likely to have a significant residual impact on a matter of state environmental significance (MSES).

Section 3 describes the assessed residual impacts to MNES and mechanisms for determining the quantum of offset requirements necessary to ensure a net conservation benefit to affected species. The assessment of the impact and offset applies a combination of the Queensland DES Habitat Condition Assessment methodology and the EPBC Offset Calculator.

The requirement to calculate the SRI applies to any activity prescribed in the *Environmental Offsets Regulation 2014* that requires an approval in relation to MSES, under any of the following:

- *Nature Conservation Act 1992*;
- *Marine Parks Act 2004*; or
- *Environment Protection Act 1994*.

The guideline outlines the criteria for identifying when an impact on prescribed environmental matters—matters of State environmental significance—may be significant. The significant impact criteria provide a trigger for consideration of offsets. Once this trigger has been met or exceeded, then the total of the impact is included for consideration—not just the component of impact exceeding the criteria.

2.11.1 Significant residual impacts on EPBC Act listed threatened bird and bat species

In accordance with condition 14(e) of the EPBC Approval, the offset strategy must:

...determine and justify trigger levels for the requirement to provide an offset for a significant residual impact on EPBC Act listed threatened bird and bat species.

Should monitored bird and bat impacts be found to be significantly affecting the population of an EPBC Act listed bird and bat species, an offset would be required. Triggers have been set for each listed species that may occur in the area. Other than migratory species, all of the relevant listed threatened species are vulnerable under the EPBC Act. Note, though, that Red Goshawks have low population numbers and long-generation time, and therefore, a low trigger level is more appropriate.

The significant residual impact level that would require an offset for each EPBC Act listed bird and bat species within a 12 month period is described below.

- White-throated Needletail (10 birds)
- Corben's Long-eared Bat (10 bats)
- Red Goshawk (1 bird).

Triggers can also be applied to migratory species based on the 0.1% population threshold for migratory species at a national level (DOE 2015; DOE 2016). Although these are different species, this guideline provides a potential benchmark for trigger thresholds, i.e. number of birds within a 12-month period before an offset would be required.

- Fork-tailed Swift – 100 birds
- Rufous Fantail – 1,500 birds (north eastern Australia)

- Satin Flycatcher – 1,700 birds

Note that the Rainbow Bee-eater was removed from the Japan Australia Migratory Birds Agreement (JAMBA) in 2015 and from the list of migratory species under the EPBC Act. However, as this species is included in the approval conditions, a trigger is included, based on the 0.1% population threshold for migratory species at a national level, as above.

- Rainbow Bee-eater – 1,000 birds

If the residual impact levels above for listed threatened and migratory species are never reached, no offset will be required. Annual reporting will include information on numbers of bird and bat strikes, and report on whether triggers have been reached.

2.11.2 Are offsets a suitable solution?

Assessment of the initial advice statement to the Australian Government and the approval of the project determined that offsets are a suitable solution. Conditions 13, 14 and 15 of the EPBC 2018/8141 approval determine the way offset solutions are to be provided. This document addresses the requirements of Condition 14.

3 PROPOSED ENVIRONMENTAL OFFSET

3.1 PROPOSED OFFSET SITES

For the purpose of this offset strategy, potential offset sites have been assessed for their suitability to meet the offsetting requirements and ranked according to priority. These sites occur across 11 lots. The preference is for the offset site(s) to occur on a minimum number of land holdings, to streamline protection and management. Following detailed project design, the offset sites(s) will be confirmed and presented in the OMP.

Information on the offset sites is based on the literature review and field surveys that support the original referral (survey effort and results are detailed in Preliminary Documentation: NGH Environmental and Green Tape Solutions 2018), as well as additional eight-day Greater Glider survey and offset potential assessment in November 2018. Aerial imagery interpretation and drone survey footage has been used in areas where access was limited.

Table 3-1 below provides an analysis of the offset opportunities across the project site area. Grazing values across the project site area improve from east to west with western project sites areas being the preferred grazing pastures by land holders, with some improved pasture, vegetation clearing and low diversity and habitat values. Conversely biodiversity condition improves from west to east, with the eastern areas showing higher biodiversity condition values.

Table 3-1 provides an analysis for selection of the offset site(s). This necessitates land with a moderate biodiversity condition (Score 4-6) and can be managed over the duration of the offset requirement to improve the biodiversity condition score. Option 3, the preferred option, provides the best combination of land use, landowner preference and potential to enhance habitat condition for the duration of the offset requirements.

Offset selection considerations:

1. Select an area that has the structural elements present of the species habitat requirements, and is in a condition whereby active management of deleterious impacts (e.g. control of weeds, unsuitable grazing regimes, unsuitable fire management for ecological benefit) will lead to enhanced habitat condition.
2. Landowner concurrence with the selection of the sites where high-quality grazing land (generally cleared of native forests and woodlands) are the least preferred options. Landowners preferred options are generally those areas where grazing forage production is low and woody vegetation is highest.

Table 3-1: Offset decision matrix

Option number	Habitat Quality Score ¹	Grazing potential	Landholder Concurrence	Timeframe to achieve outcome	Comment on area requirements
1	1-3 (Low)	High	Low	Very long (+100 years)	Very large factor of 10 times impact
2	3-4 (Low)	Moderate	Low	Very long (+100 years)	Large – factor 6-8 times impact

¹ Habitat Quality Score is a ranking system from zero (0) (lowest quality habitat) to ten (10) (best on offer habitat) for a particular regional ecosystem. The scoring system is based on the Queensland guide to determining terrestrial habitat quality under the Queensland Environmental Offsets Policy.

Option number	Habitat Quality Score ¹	Grazing potential	Landholder Concurrence	Timeframe to achieve outcome	Comment on area requirements
3	4-6	Low	Moderate	Medium term 10 years to see results. 20 years completion	Moderate - about 4 to 5 times impact
4	6-8	Low	High	Short term – 5 years or less dependent on condition of land.	Small – good condition (about 2 to 3 times impact)
5	9-10	Low	High	Short term – little management required – Best on Offer Habitat Condition	Smallest

Table 3-2: Indicative land offset suitability analysis

Land Capacity Grazing	Land Capacity Ecological	Offset suitability	Location / RE	Notes
1. Cleared / semi cleared and managed for cattle production. Pasture grasses. Fences and water provided.	Low ecological values and condition score 1 - 3	Low - timeframe to achieve suitable sustainable habitat over 100 - 300 years for trees with hollows and supporting vegetation community	Western project site Suitable REs: 11.3.25 / 11.3.21 / 11.4.8 9 Koala only	Landowners least preferred option, smaller area needed - Very high cost to achieve offset outcome, land rehabilitation, planting and active restoration / revegetation.
2. Some clearing, understory management - Pasture and native grasses. Some fencing and water provided.	Ecological values and condition score 3- 4	Moderate - timeframe to achieve suitable sustainable habitat at least 20 plus years	Western project site Suitable REs: 11.3.25 / 11.11.10 / 11.3.27 Koala only	Not supported by landowner, high cost to achieve offset outcome - as above.
3. Minimal active management for stock – Mainly native grasses. Provision of water for stock.	Ecological values and condition score 4 --6	High - vegetation community has the basic structural elements to achieve sustainable ecological community during the life of the offset requirement.	Centre west project site Suitable REs: 11.3.27/ 11.9.1/ 11.9.5 / 11.8.3 / 11.4.8 / 11.3.4 / 11.12.6a / 11.12.1 Koala, Greater Glider, SEVT	Landowners preferred option - moderate cost to achieve ecological benefit (remove grazing, fire mgt, pest mgt.). More land needed for outcome to be achieved.
4. Grazing suitability for breeding cattle. Native grasses, natural water little fencing if any. Used for breeding cows and stores, low stocking rates.	Higher ecological values condition score 6 – 8. Note: BD condition of 8 or above in the project site is unlikely due to land use practices.	Low to moderate - larger land area required for offset requirement and marginal value due to lower potential for habitat enhancement due to initial good condition. Probably as good as this country will get.	Eastern project site Suitable REs: 8.12.23 / 8.12.22 / 11.12.1a / 11.12.6a	Landowners preferred option - lower cost to achieve ecological benefit (remove grazing, fire mgt, pest mgt.). Very large area of land needed to meet offset target for similar benefit to previous option.

3.1.1 Potential offset site(s) for Koala and Greater Glider

Figure 3-1 and Figure 3-2 respectively illustrate the proposed offset sites for Koala and Greater Gliders. The offset sites for Koala and Greater Glider have been proposed using the following criteria:

- Suitable sites that would support MNES and that would benefit from ecological restoration;
- Sites that can be retained long-term;
- Sites that will enhance linkages between areas of remnant vegetation, thereby providing an ecological corridor within the broader landscape;
- Sites that play an important role in maintaining ecosystem services and providing connectivity to existing high-quality habitat for Koala and/or Greater Glider; and,
- Identified areas supported by the existing landowners.

In March 2017, during the first seasonal survey for the project, 13 Greater Gliders were sighted in an area no larger than 3 ha along waterway corridors where large hollow-bearing trees occurred. The quality of habitat was in good condition during the March field survey with *Eucalyptus tereticornis* (diameter above 1,000 mm) present providing large amounts of nesting habitat for this species (Plate 1). In April 2017, Cyclone Debbie caused significant impact upon the waterway vegetation across the site and a large number of hollow bearing trees were levelled and washed away (Plate 2). Greater Gliders were still sighted in lower number along the waterway corridors during the September 2017 survey. The proposed offset sites along these waterway corridors will have significant beneficial impact on improving the Greater Glider's habitat that was lost as a result of the Cyclone. We understand that additional monitoring surveys will be required as part of the OMP to monitor the success of the offset in providing GG habitat. However, we know that Greater Gliders occur within the waterway corridor across the whole site and we are confident that the protection and the restoration of these corridors will increase the vegetation conditions and habitat suitability for this species.



Plate 1: Waterway before Cyclone Debbie



Plate 2: Waterway after Cyclone Debbie

3.1.2 Potential offset site(s) for SEVT

The potential offset sites were chosen on their ability to connect small remnant patches of SEVT that would otherwise not meet the MNES TEC criteria and that are at risk of being degraded through cattle grazing, trampling and vegetation clearing. Figure 3-3 illustrates the proposed offset sites for SEVT TEC.

The offset sites for SEVT have been proposed using the following criteria:

- Suitable sites that would contain REs included in the description of SEVT.
- Sites that have poor ecological conditions which can be restored through weed management, fire management, cattle grazing control. For instance, the removal of cattle from these areas will facilitate natural regeneration of the offset area and improve the low habitat condition of the existing sites;
- Sites that can be retained long-term;
- Sites that will enhance linkages between areas of remnant vegetation (SEVT patches), thereby providing an ecological corridor within the broader landscape; and,
- Identified area supported by the existing landowners.

3.1.3 Potential offset solution for EPBC Act listed threatened bird and bat species

Habitat quality for birds and bats is poor in the largely cleared parts of the Project site, and fair to excellent in the areas of remnant native vegetation on the Project site. Measures to enhance habitat condition through direct offsets for koala such as removal of grazing, tree planting, weed and pest control will also benefit EPBC listed threatened bat and bird species using these habitats.

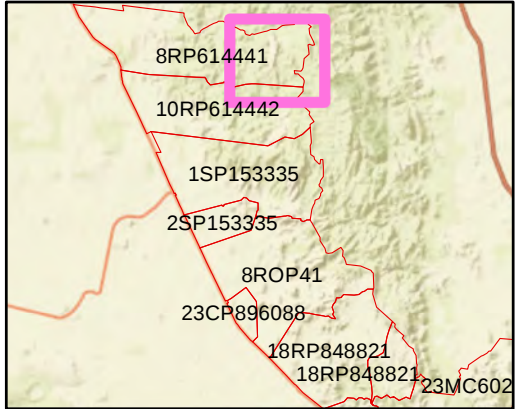
If significant residual impacts to EPBC Act-listed threatened bird and bat species occur (see section 2.11.1 for triggers) then a specific additional offset package would be developed in consultation with the DAWE and in accordance with the EPBC Act Environmental Offsets Policy (refer to Condition 13 of EPBC Approval). For EPBC Act listed threatened bird and bat species and migratory species that use terrestrial habitat in the area, additional land-based offset solutions may be developed. For the White-throated Needletail, such an approach may not be appropriate as the unique aerial habits of this species make direct offsets challenging to define and identify and a particular package of measures would need to be agreed for this eventuality.

Figure 3-1: Potential Koala offset sites

FIGURE 3-1a: Potential Koala Offset Sites

Project: Clarke Creek Creek Wind Farm

-  Cadastral
-  Project footprint
-  Site boundary
-  Bioconditions Assessment of Offset Sites
-  Biocondition Surveys of Impacted Area
-  Confirmed Koala Sightings
-  Potential Koala Offset Sites
-  Confirmed Koala Habitat



Notes:
-Flora and Fauna Survey by Green Tape Solutions and NGH Environmental 2019
-Site Infrastructure and Impact Areas from Client 2020
-Base map Copyright (c) Esri and its data suppliers.
-Regional Ecosystems and QTopo Base map Copyright (c) State of Queensland (DNRM)

0 350 700 Meters

Ref: Lotus Creek Wind Farm 2020
Author: JV



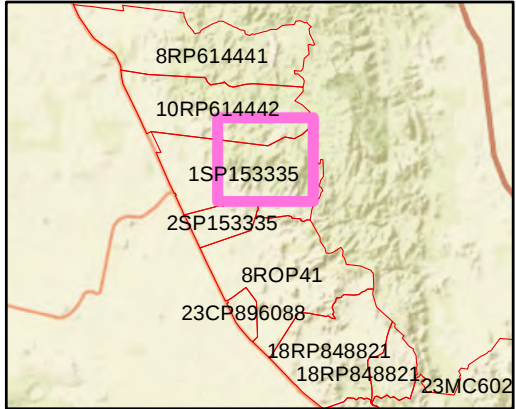
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FIGURE 3-1b: Potential Koala Offset Sites

Project: Clarke Creek Creek Wind Farm

- Cadastral
- Project footprint
- Site boundary
- Bioconditions Assessment of Offset Sites
- Biocondition Surveys of Impacted Area
- Confirmed Koala Sightings
- Potential Koala Offset Sites
- Confirmed Koala Habitat



Notes:
-Flora and Fauna Survey by Green Tape Solutions and NGH Environmental 2019
-Site Infrastructure and Impact Areas from Client 2020
-Base map Copyright (c) Esri and its data suppliers.
-Regional Ecosystems and QTopo Base map Copyright (c) State of Queensland (DNRM)

0 350 700 Meters

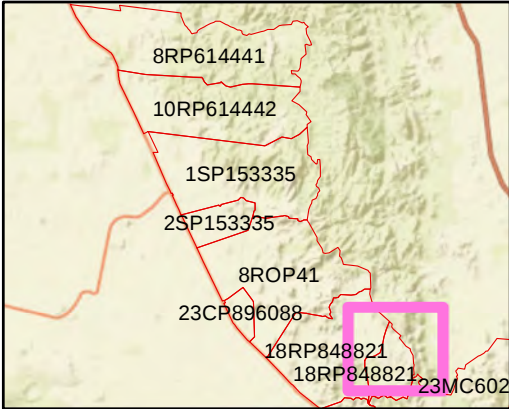
Ref: Lotus Creek Wind Farm 2020
Author: JV



FIGURE 3-1c: Potential Koala Offset Sites

Project: Clarke Creek Creek Wind Farm

- Cadastral
- Project footprint
- Site boundary
- Bioconditions Assessment of Offset Sites
- Biocondition Surveys of Impacted Area
- Confirmed Koala Sightings
- Potential Koala Offset Sites
- Confirmed Koala Habitat



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0 350 700 Meters

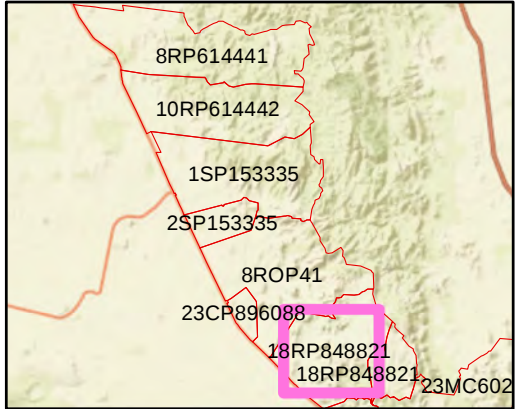
Ref: Lotus Creek Wind Farm 2020
Author: JV



FIGURE 3-1d: Potential Koala Offset Sites

Project: Clarke Creek Creek Wind Farm

- Cadastral
- Project footprint
- Site boundary
- Bioconditions Assessment of Offset Sites
- Biocondition Surveys of Impacted Area
- Confirmed Koala Sightings
- Potential Koala Offset Sites
- Confirmed Koala Habitat



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0 350 700 Meters

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Author: JV

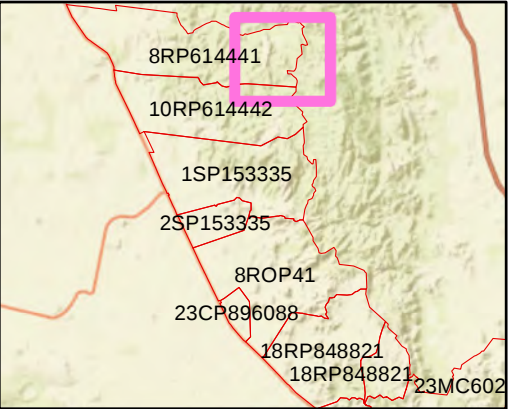


Figure 3-2: Potential Greater Glider offset sites

FIGURE 3-2a: Potential Greater Glider offset sites

Project: Clarke Creek Creek Wind Farm

-  Cadastral
-  Project footprint
-  Site boundary
-  Bioconditions Assessment of Offset Sites
-  Biocondition Surveys of Impacted Area
-  Confirmed Greater Glider Sightings
-  Potential Greater Glider Offset Sites
-  Confirmed Greater Glider Habitat



Notes:
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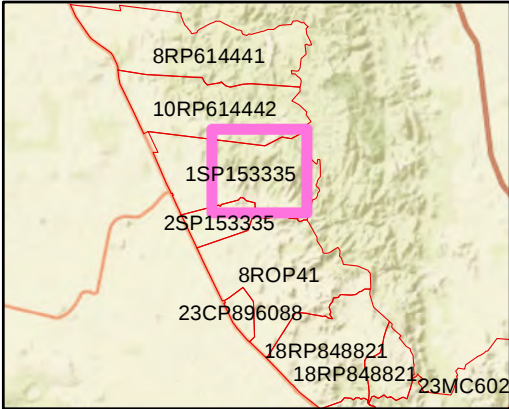
Ref: Lotus Creek Wind Farm 2020
Author: JV



FIGURE 3-2b: Potential Greater Glider offset sites

Project: Clarke Creek Creek Wind Farm

-  Cadastral
-  Project footprint
-  Site boundary
-  Bioconditions Assessment of Offset Sites
-  Biocondition Surveys of Impacted Area
-  Confirmed Greater Glider Sightings
-  Potential Greater Glider Offset Sites
-  Confirmed Greater Glider Habitat



Notes:
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0 350 700 Meters

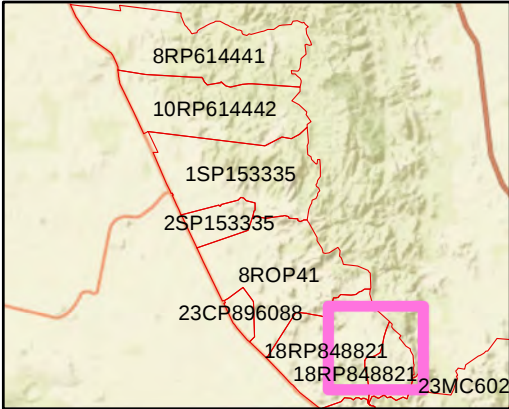
Ref: Lotus Creek Wind Farm 2020
Author: JV



FIGURE 3-2c: Potential Greater Glider offset sites

Project: Clarke Creek Creek Wind Farm

-  Cadastral
-  Project footprint
-  Site boundary
-  Bioconditions Assessment of Offset Sites
-  Biocondition Surveys of Impacted Area
-  Confirmed Greater Glider Sightings
-  Potential Greater Glider Offset Site
-  Confirmed Greater Glider Habitat



Notes:
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-Site Infrastructure and Impact Areas from Client 2020
-Base map Copyright (c) Esri and its data suppliers.
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0 350 700 Meters

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Author: JV

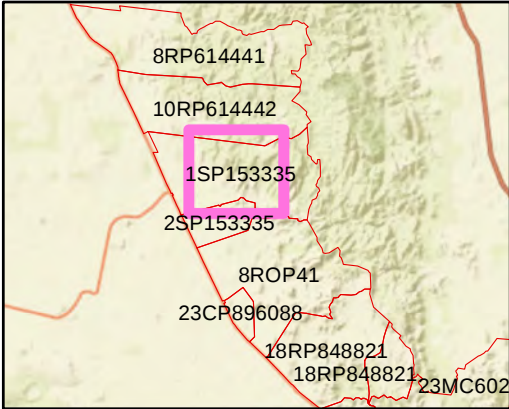


Figure 3-3: Potential SEVT offset sites

FIGURE 3-3a: Potential SEVT offset sites

Project: Clarke Creek Creek Wind Farm

-  Project footprint
-  Site boundary
-  Bioconditions Assessment of Offset Sites
-  Potential SEVT offset sites
-  Cadastral



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0 350 700 Meters

Ref: Lotus Creek Wind Farm 2020
Author: JV



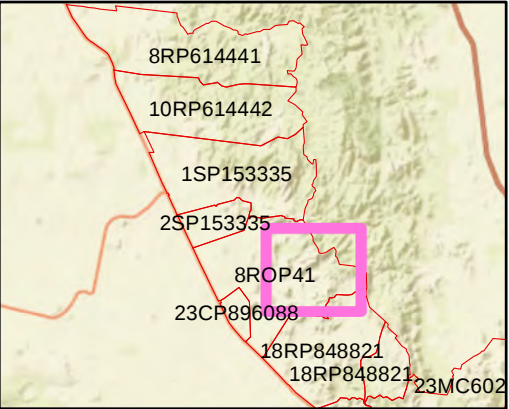
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FIGURE 3-3b: Potential SEVT offset sites

Project: Clarke Creek Creek Wind Farm

- Project footprint
- Site boundary
- Bioconditions Assessment of Offset Sites
- Potential SEVT offset sites
- Cadastral



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0 350 700 Meters

Ref: Lotus Creek Wind Farm 2020
Author: JV



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3.2 LEGALLY SECURED OFFSET MECHANISM

3.2.1 Legal Framework

The legal protection measure for the offset area is to apply and have the land declared as an offset area through the Queensland Voluntary Declaration (VDec) process, which is also facilitated and approved through the provisions of the *Vegetation Management Act 1999* (VMA). The VDec will prevent the clearing of vegetation for the life of the offset requirement, i.e. in perpetuity.

The respective landowners with offset sites on their land will need to agree for the area to be legally secured by a VDec under the VMA over the offset sites to enable the protection and management of the prescribed environmental matter. The completed VDec document will be provided with the detailed OMP.

Currently the offset land is mapped as Category X or non-remnant vegetation and therefore not protected by the strict provisions of the VM Act. This categorisation is despite the offset area already retaining native vegetation of a structure and maturity to provide functioning ecological values. The ultimate objective of nominating the land as an environmental offset area is to bring the existing values under the long-term protection of the VM Act, therefore restricting the capacity to clear vegetation in perpetuity. For the area to be protected by the VM Act, the vegetation on the land must achieve remnant status within the next 15 years and be mapped as regulated vegetation.

The offset area will be mapped as Category A vegetation or regulated vegetation under the VM Act. The completion criteria for the VDec, as set out in the relevant OMPs, will be framed so as to ensure that even once remnant status is achieved, the VDec will not be revoked for the life of the offset requirement. The VM Act provides that the land holder may, under certain circumstances, surrender a VDec. However, the status of the vegetation Category A and habitat values of the land for Koala, Greater Glider SEVT and terrestrial listed threatened and migratory bird and bat species will afford a higher degree of protection. The VDec completion criteria will be framed such that surrender is prevented for the life of the EPBC Act approval, i.e. to 2050. Additionally, this Strategy commits, and the subsequent OMP will recommit, to ensuring that:

- the VDec is not removed, revoked, or surrendered for the life of the approval; and
- the approval holder will require that, in signing the agreement for the identified sites to be used as offsets for this project, the land holder(s) must agree not to:
 - seek to remove the VDec at any point during the life of the EPBC Act approval; nor
 - consent to the removal of the VDec at any point during the life of the EPBC Act approval.

3.2.2 Timeframe for securing offset sites

Table 3-3 describes the stages, activities and estimated timeframe for identifying and securing offset sites for the project.

Table 3-3: Timeframe for securing offset sites

Stages	Descriptions	Estimated Timeframe
1	Finding suitable offset sites for each matter of national environmental significance	Offset sites have been mapped
2	Discussion/ negotiation with landowners and the wind farm developer	From June 2019 to July 2021

Stages	Descriptions	Estimated Timeframe
3	Undertake additional offset sites investigations and offset calculations if required.	From June 2019 to December 2021
4	Finalisation of offset strategy and submission to DAWE for approval Note: Negotiation with landowners will still occur in the background to refine the offset sites and offset management plan.	From September 2019~ 10 months
5	Commence Action only after approval of Offset Strategy obtained from delegate of the Australian Government Minister for the Environment	
6	Preparation of offset management plan and submission to a delegate of the Australian Government Minister for the Environment.	Within 12 months of commencement of the action – (Year 2021/22) including estimated 4-8 months for approval
7	Approval of the offset management plan by a delegate of the Australian Government Minister for the Environment.	
8	Secure land holder agreement to the approved offset management plan, including all restrictions and requirements imposed by the Minister's delegate for the VDec.	Concurrent with processes 6 & 7
9	Request for VDec (only after the offset management plan has been approved by the Minister's delegate) from the approval holder to the Queensland Department of Natural Resources, Mines and Energy	Concurrent with processes 6, 7 & 8, then consideration by DNRME 40 business days from submission. The offsets will be secured within 2 years of commencement of the action
10	Approval by the Queensland Department of Natural Resources, Mines and Energy	
11	Commencement of on-ground offset management works	Commencement approximately August 2021; interim completion criteria to be achieved by approximately 2032-5; final completion criteria to be achieved by 2048. Timeframe to be confirmed in the approved offset management plan.
12	Completion of the management works - achievement of the management outcomes	
13	Ending of the VDec – as per VDec and approved management plan arrangements.	Only at such time as all objectives of the offset management plan are complete, and in any case not before 1 December 2050.

3.3 OFFSET ASSESSMENT GUIDE AND OFFSET CALCULATIONS

As specified by the EPBC EOP, environmental offsets refer to measure that compensate for the residual adverse impacts of an action on the environment. Offsets provide environmental benefits to counterbalance the impacts that remain after avoidance and mitigation measures. These remaining, unavoidable impacts are termed 'residual impacts'. Offsets are not contemplated until all reasonable avoidance and mitigation measures have been considered, or acceptable reasons provided as to why avoidance or mitigation of impacts cannot be reasonably achieved.

The Offsets Assessment Guide (incorporating the EPBC Offset Calculator) has been used to determine the area of offset required to adequately compensate for the removal of Koala habitat, Greater Glider habitat

and SEVT TEC as a result of the wind farm. If significant residual impacts to an EPBC Act-listed species occur (see section 2.11.1 for levels) then a specific offset package would be developed in consultation with DAWE and in accordance with the EPBC Act Environmental Offsets Policy (refer to Condition 13 of EPBC Approval). All habitat quality scores have been calculated using the modified habitat quality assessment spreadsheets provided by the Australian Government Department of the Agriculture, Water and Environment, in accordance with the Guide to Determining Terrestrial Habitat Quality: A toolkit for assessing land based offsets under the Queensland Environmental Offsets Policy (Version 1.2, April 2017), using the Regional Ecosystem Benchmarks published by the Queensland Herbarium and available at <https://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks>.

Table 3-4: EPBC offsets calculator - definitions of each criteria and the values applied

Quality criteria	Definition	Koala	Greater Glider	Semi-evergreen Vine Thicket
Residual impacts		1,513 ha	17.83 ha	45.22 ha of SEVT.
Annual probability of extinction	The annual probability of extinction is an estimate of the average chance that a species or ecological community will be completely lost in the wild each year, given recent rates of decline (DSWEPaC, 2012). The annual probability of extinction is incorporated into the impact and offset calculation process as a discounting factor for aligning activities that occur at different points in time. This figure is derived from the International Union for the Conservation of Nature (IUCN) Red List for threatened species.	The Koala is listed as 'Vulnerable' under the EPBC Act, therefore the annual probability of extinction, based on IUCN category definitions, is 0.2%.	The Greater Glider is listed as 'Vulnerable' under the EPBC Act, therefore the annual probability of extinction, based on IUCN category definitions, is 0.2%.	The SEVT TEC is listed as 'Endangered' under the EPBC Act, therefore the annual probability of extinction, based on IUCN category definitions, is 1.2%.
Quality of critical habitat being removed	The quality score for <i>area of habitat</i> or <i>area of community</i> is a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability (DSEWPaC, 2012). There are three components that contribute to the calculation of habitat quality: site condition, site context, and species stocking rates (DSEWPaC, 2012). Each of these components has been considered to determine the quality of MNES	Four areas of Koala habitat (Figure 3-1) proposed to be impacted by the development were assessed to determine terrestrial habitat quality (DEHP, 2017). These guidelines have been developed by the Qld Department of Environment and Sciences (DES) to assist with measuring the habitat quality of a land-based offset. The location of the surveys is illustrated in Figures 3-1a, 3-1b, 3-1c and 3-1d. The scores are outlined in Appendix D.	As part of the ecological survey undertaken on site, four areas of Greater Glider habitat (Figures 3-2a, 3-2b and 3-2c) that are proposed to be impacted by the development, were assessed to determine terrestrial habitat quality in accordance with the QLD habitat quality scoring guidelines (DEHP, 2017). Each assessment scores are outlined in Appendix D.	As part of the ecological survey undertaken on site, one biocondition survey of SEVT (Figure 3-3a and 3-3b) was assessed using the Queensland biocondition Assessment which incorporates both site and landscape values (Eyre <i>et al.</i> , 2015). The biocondition score is outlined in Appendix D producing a final score of 4 (out of 10). Results = 3.65 (Rounded to 4 for the Offset area Calculations as only whole numbers can be used)

Quality criteria	Definition	Koala	Greater Glider	Semi-evergreen Vine Thicket
	habitat and TEC within the impact area and proposed offset area. We used the Modified Qld Habitat Quality MS Excel spreadsheet to calculate the scores.	Result = 6.34 (Rounded to 6 for the Offset area Calculations as only whole numbers can be used)	Result = 6.34 (Rounded to 6 for the Offset area Calculations as only whole numbers can be used)	
Start quality of offset sites	The quality score for area of habitat or area of community is a measure of how well a particular site supports a particular Koala, Greater Glider or SEVT community and contributes to its ongoing viability. There are three components that contribute to the calculation of habitat quality: site condition that is assessed using biocondition assessment (Eyre et al., 2015) and/or guide to determining terrestrial habitat quality (DEHP, 2017), site context, and species stocking rates (note, species stocking rate is applicable to species only).	Using biocondition assessment and the DEHP (2017) guide to determining terrestrial habitat quality, suitable areas were assessed to determine the quality of the proposed offset for Koala (Figures 3-1a, 3-1b, 3-1c and 3-1d.). Four BioCondition assessments were undertaken within the potential suitable offset areas, but not for every potential offset area. For the purpose of the offset strategy, we have estimated the offset areas are of similar habitat start quality to the BioCondition undertaken to date. The Habitat Quality Scoring for the impact site (Current status) is outlined in Appendix E. Quality gains and losses estimates will be confirmed and agreed in the OMP. The results are provided in Appendix D. Result = 5/10	Using biocondition assessment and the DEHP (2017) guide to determining terrestrial habitat quality, quality of the prospective offset for Greater Glider (Figures 3-2a, 3-2b and 3-2c)) are assessed in Appendix D. Three BioCondition assessments were undertaken within the potential suitable offset areas, but not for every potential offset area. For the purpose of the offset strategy, we have estimated the offset areas are of similar habitat start quality to the BioCondition undertaken to date. The Habitat Quality Scoring for the impact site (Current status) is outlined in Appendix E. Quality gains and losses estimates will be confirmed and agreed in the OMP. Result = 5/10	Using biocondition assessment (Figure 3-3a and 3-3b) and Appendix D), the prospective offset areas of SEVT TEC include suitable areas that will be rehabilitated between existing patches of SEVT. Note that not every potential offset area had a biocondition assessment. For the purpose of the offset strategy, we have estimated the quality of habitat is the same as the habitat being disturbed. The average quality of the SEVT TEC is 4/10. The Habitat Quality Scoring for the impact site (Current status) is outlined in Appendix E. Quality gains and losses estimates will be confirmed and agreed in the OMP. Result = 4/10
Future quality of offset sites		For the purpose of the calculation, future quality of the Koala offset sites without the offset has been calculated	Similarly, to the assessment for Koala, it is expected that if the status quo continues, the quality	Limited grazing occurs in the current SEVT TEC patches due to their location on steep slopes. However, the size of

Quality criteria	Definition	Koala	Greater Glider	Semi-evergreen Vine Thicket
without the offset		as the same as the current offset area being 5/10.	of Greater Glider habitat (waterway) will remain the same. For the purpose of the calculation, future quality of the Greater Glider offset sites without the offset has been calculated as being 5/10.	existing remnant patches has been reduced over time through Cyclone damage and fire. The site is still subject to clearing, weed incursion and fire which reduce the overall condition of the SEVT. Without a formal offset on site, the future quality of the SEVT TEC site is likely to remain similar or worse over time with the current rural practices. Future habitat quality for SEVT TEC is calculated as being 4/10.
Future quality of the offset sites with the offset		The management of offset sites for Koala would include weed management, fencing to control cattle intrusion, dog control and infill planting. Weed management will improve habitat quality. Suppression of grazing and reduction of predation by wild dog in the offset area will also likely increase the use by Koala and reduce mortality. The values that are estimated to increase the future quality habitat are highlighted in yellow in Appendix F. The future quality of the offset sites for Koala is estimated at 7/10.	The management of offset sites for Greater Gliders will include weed management, infill planting with Eucalyptus spp. (future hollow bearing trees), provision of nest boxes in accordance with the EMP to increase habitat and installation of fencing to control cattle intrusion (reduce grazing and maximise regrowth). The implementation of these management actions will ensure the ecological values site are improved and provide suitable conditions for the use by Greater Glider (currently not using the site). The values that are estimated to increase the future quality habitat are highlighted in yellow in Appendix F.	Weed management is proposed for the SEVT TEC offset sites. Limiting grazing and avoiding further clearing will also improve the quality of the SEVT patch. The SEVT offset will focus on improving and extending patches of SEVT vegetation that are currently too small to be mapped by the Department of Natural Resources, Mines and Energy (DNRME), with an emphasis on establishing connectivity between mapped patches, thereby increasing patch size and providing a structural linkage. The values that are estimated to increase the future quality habitat are highlighted in yellow in Appendix F. Future habitat quality under this scenario is calculated as being 6/10.

Quality criteria	Definition	Koala	Greater Glider	Semi-evergreen Vine Thicket
			Therefore, the quality of the site will likely increase. The future quality of the offset sites for Greater Glider is estimated at 7/10.	
Time over which loss is averted Or Risk related time horizon	The <i>time over which loss is averted</i> is the foreseeable timeframe (in years) over which changes in the level of risk to a proposed offset sites can be considered and quantified (see Section F of the Offset calculation guidelines). It is the time that any measures for securing a site for conservation purposes, such as conservation covenants on title, are intended to last. Longer time frames are valued more highly than shorter time frames (DSEWPac, 2012).	The proposed offset sites are strategically located and will play an important role in providing quality habitat for Koala, Greater Glider and SEVT within the broader landscape. Where the offset sites are secured via a Voluntary Declaration, the agreement will secure the site for the duration of the action. For the purpose of the calculation, the time over which loss is averted is 20 years.		
Time until ecological benefit	The <i>time until ecological benefit</i> is the estimated time (in years) that it will take for the required quality improvement of the proposed offset to be realised.	The proposed weed management and exclusion of cattle in the offset sites for Koala and Greater Glider will likely enhance existing ecological condition, improving the habitat of Koala and Greater Glider overall. If the offset sites are heavily weed infested, management actions will have immediate value from weeding/removal of cattle. The time until quantifiable ecological benefit (i.e. site used by Koala and Greater Glider) which equates to the time to which the HQAs metrics and their scores have improved as outlined in Appendix F, is estimated at 10 years for the Koala and Greater Glider.		Weed management will improve habitat quality in the short term (5 years), but the expansion of existing SEVT to link patches will take longer due to slow growth rates. This will occur through assisted regeneration and some revegetation. Quantifiable ecological benefits are anticipated in 10 years with the removal of stock grazing and active management of the sites to remove weed species.

Quality criteria	Definition	Koala	Greater Glider	Semi-evergreen Vine Thicket
Risk of loss (%) without offset	The risk of loss is a percentage figure that describes the chance that the habitat on the proposed offset sites will be completely lost (i.e. no longer hold any value for the protected matter) over the foreseeable future (either the life of the offset or 20 years, whichever is shorter).	The proposed Koala offset sites will enhance linkages between areas of remnant vegetation across the broader landscape. The current state and local governmental legislation do not fully protect the site against clearing activities. Estimates of Risk of Loss (RoL) from Isaacs Regional Council area suggests the risk of loss over 20 years is likely to be ~8.5 %. The risk of loss without an offset is estimated to be 9%.	The habitat for the Greater Glider is mainly located within riparian vegetation, which is currently being heavily degraded by cattle, erosion and flooding (i.e. suitable habitat was significantly impacted by Cyclone Debbie in 2017). The proposed offset sites include the restoration of riparian vegetation, connecting good quality habitat for the Greater Gliders away from the worst Cyclone-impacted areas. Estimates of Risk of Loss (RoL) from Isaacs Regional Council area suggests the risk of loss over 20 years is likely to be ~8.5 %. The risk of loss without an offset is estimated to be 9%.	The risk of loss of the SEVT TEC offset sites without an offset is minimal due to the TEC being located on steep hills. However, large patches of SEVT TEC occur in lower sections of the grazing area and are currently not mapped as remnant vegetation by DNRME (perhaps due to the patch size which may not have been captured by the DNRME GIS analysis) so may be cleared at any time to facilitate additional grazing land. Estimates of Risk of Loss (RoL) from Isaacs Regional Council area suggests the risk of loss over 20 years is likely to be ~8.5 %. The risk of loss of TEC offset sites is estimated at 9%.
Risk of loss (%) with offset		The offset sites will ensure that the vegetation is enhanced and protected through a Voluntary Declaration under the VM Act, which is a legally binding mechanism. By increasing the resilience of the ecosystem through weed, fire management, pest control and by protecting the site against disturbances from future rural activity, the risk of losing the habitat will decrease The protection through a Voluntary Declaration will reduce the risk of loss in comparison to not being an offset. Therefore, the risk of loss with an offset is 0%.		
Confidence in result (%)	The confidence in result is a percentage figure that describes the level of certainty about the success of the proposed offset.	Within the Offsets Assessment Guide, the confidence in results is determined to be 90% for the averted loss component, and 90% for the change in quality. This confidence level is based on the engagement of a qualified ecological consultancy to delivering on-ground management actions until ecological benefit is attained. It also considers the legislative requirement for the project to protect and manage the offset area in order to enhance the		

Quality criteria	Definition	Koala	Greater Glider	Semi-evergreen Vine Thicket
	Proposed offset actions that are designed to have a lower risk of failure should have a higher confidence in result score. For example, where birth rate has been selected as the protected matter attribute, confidence in result relates to the level of certainty about the proposed methods will be successful in improving the birth rate for the protected matter concerned.	quality of the habitat. It is however recognised that unforeseen events may occur outside of the proponent's control, such as damaging floods or bushfire. The confidence of the values is also based on the field assessment and knowledge of the vegetation community within the site. All biocondition assessments are provided in the Modified QLD habitat Quality Spreadsheet (Appendices A-C). Condition 16 requires that the OMP must be implemented. This will ensure maintenance is ongoing until the performance criteria defined in the OMP are achieved. There is 90% confidence in the quantified averted loss.		

3.3.1 Percentage of impact offset

The attached spreadsheets (Appendix A) provide the EPBC offset calculations for Koala, Greater Glider and SEVT TEC. The calculations determined that the following areas are required to compensate the loss of habitat for Koala, Greater Glider and SEVT.

Table 3-5: Offset Assessment Summary – interim and final completion criteria

Value	Impact Area (ha)	Calculated Offset Area (ha) ¹	Condition Score Start ²	Interim criteria (condition score) at 5 years	Interim criteria (condition score) at 10 years	Interim criteria (condition score) at 15 years	Target Condition Score ² (final completion criteria)
Koala habitat	1,513	4,225	5	5.5	6	6.5	7
Greater Glider habitat	17.8	50	5	5.5	6	6.5	7
SEVT vegetation community	45.2	99	4	4.5	5	5.5	6
EPBC Listed Bird and Bat species	Refer to Section 2.11.1	Refer to Section 3.1.3	-				-

¹ Offset area calculated using EPBC Offset Assessment Guide. Accessed EPBC 18/02/2020

² Condition score calculated using DES Habitat Quality Data Sheets – refer to Appendix D.

These offset areas are calculated on the proposed design at the time of writing and reflect the total approved clearing limits to the EPBC Act listed threatened species and communities. Should the project be staged or overall impacts reduced, the offset requirement would be adjusted down commensurately. The offset calculations will be reviewed once the detailed design for the wind farm is completed. Any changes to the offsets outlined in this document must be approved by the Delegate and will be provided for approval as part of the detailed offset management plan. To cater to that potential risk, the VDecs will not be placed over the site until such time as the Delegate has approved the detailed offset management plan.

3.4 COMPLIANCE WITH OFFSET PRINCIPLES

The EPBC Environmental Offsets Policy (DSEWPac, 2012) outlines a set of principles that a proposed offset must meet. An assessment of how the proposed offset sites are consistent with the EPBC EOP is provided in Table 3-6 below.

Table 3-6: Consistency of proposed offset approach with the principles of the EPBC Act Environmental Offset Policy

No	EPBC Act Offset Principles	Project Compliance
1	Must deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by	The project will result in a maximum loss of 1,513 ha of habitat for Koala, 17.83ha of Greater Glider habitat and 45.22ha of SEVT TEC. The selected offset sites have been chosen on their suitability to protect land which currently contains suitable habitat for Koala, Greater Glider and SEVT TEC, and which is not specifically protected under local government or State legislation.

No	EPBC Act Offset Principles	Project Compliance
	the proposed action.	Overall conservation outcomes for Koala, Greater Glider and SEVT TEC are expected to be improved based on the enhancement of proposed offset sites through an Offset Management Plan (OMP), which shall include measures such as stock, pest animal and weed management. If project operations result in a residual significant impact on EPBC Act listed threatened bird and bat species, i.e. triggers are met or exceeded (see section 2.11.1), a package of appropriate additional offsets will be determined, as required, in consultation with DAWE (see section 3.1.3). Offsets are likely to be deemed suitable based upon how best to deliver a conservation outcome for the impacted species.
2	Must be built around direct offsets but may include other compensatory measures.	Koala, Greater Glider and SEVT offsets will be achieved through direct offsets. The offset sites will be secured by a legally binding mechanism. Management of the offset sites values will consider key points for protection and management of the Koala, Greater Glider and SEVT. If project operations result in residual significant impacts on EPBC Act listed threatened bird and bat species, i.e. triggers are met or exceeded (see section 2.11.1), additional offsets will be required. These offsets will be based upon how to best provide a conservation benefit for the impacted species and may include some compensatory measures to achieve this.
3	Must be in proportion to the level of statutory protection that applies to the protected matter.	Once the project's OMP has been approved by the Minister, the landowner and approval holder will enter into an on-title agreement (for example, a Voluntary Declaration under the Qld <i>Vegetation Management Act 1999</i> [VM Act]) which will secure the site. The OMP will detail the management and monitoring actions that must be implemented in order to maintain and improve the habitat values of the offset sites. Adaptive management will identify the procedures to be followed if the objectives have not been met. The project's ecological consultant will report against any specific monitoring and auditing obligations established under the EPBC Act approval conditions, including those within the approved Offset Strategy, OMP and BBMP. It is noted that the SEVT TEC is an endangered community, and will require particular management to ensure patches are improved and ideally expanded so as to add new areas to the TEC. All other species impacted by the project are listed as vulnerable and/or migratory under the EPBC Act.
4	Must be of a size and scale proportionate to the residual impacts on the protected matter.	The loss of 1,513 ha of Koala habitat, 17.83ha of Greater Glider habitat and 45.22ha of SEVT has been processed through the Offset Assessment Guide (refer to Section 3.1). The proposed offsets are in proportion to the level of statutory protection that applies to the species and TEC. Using the Offset Assessment Guide, it was determined that 4,225 ha shall be required to offsetting the project's impacts on Koala and 50 ha to offset the impact on Greater Glider. Providing this offset and the long-term rehabilitation and protection of 99 ha for SEVT will provide a conservation gain of greater than 100% of that required to be proportionate to the impact. Consequently, the

No	EPBC Act Offset Principles	Project Compliance
		offset sites will exceed the EPBC Act offset requirement for the project. If project operations result in residual significant impacts on EPBC Act listed threatened bird and bat species, i.e. triggers are met or exceeded (see section 2.11.1), an appropriate offset package will be determined in consultation with DAWE. The offsets will be in proportion to the level of impact to the specific species.
5	Must effectively account for and manage the risks of the offset not succeeding.	Offset sites will be protected through a Voluntary Declaration which is a legally binding mechanism (Section 3.2.1). Once the OMP has been approved by the Minister, the Voluntary Declaration will be approved under the VM Act and will secure the offset sites. An OMP will be developed in accordance with condition 15 of the EPBC approval. The OMP will provide details of management and monitoring actions that must be implemented in order to maintain and improve the site. Adaptive management will identify the procedures to be followed if the objectives have not been met. The project's ecological consultant will report against any specific monitoring and auditing obligations established under the EPBC Act approval conditions, including those within the Offset Strategy, OMP and BBMP. If project operations result in residual significant impacts on EPBC Act listed threatened bird and bat species, i.e. triggers are met or exceeded (see section 2.11.1), an appropriate offset package will be determined, in consultation with DAWE. This will include a risk assessment to consider how best to implement those offsets to provide a conservation benefit to the impacted species.
6	Must be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action, see section 7.6).	The proposed offset sites are mapped under the VM Act as supporting non-remnant vegetation or Least Concern Vegetation and are currently subject to grazing with minimal management and/or protection of the vegetation on site. Without proper management, the vegetation would be continually degraded over time, and restoration of these communities would become more difficult. Moreover, under the State legislation, this vegetation can be legally cleared for rural purposes. Therefore, there is currently limited protection of the vegetation on site proposed to be offset. The assumed area proposed for offsets are not already in use as offset sites for any other parties or under any other statutory instruments, nor have they already been set aside for any other conservation program. As such, the proposed offsets are additional to what is required under the planning regulations or determined by law. If required, any offsets provided for residual significant impacts to EPBC Act listed threatened bird and bat species will be additional to the offsets proposed here for Koala, Greater Glider and the SEVT TEC. Any land-based offsets would be sourced from areas not already protected under legislation or conservation programs.
7	Must be efficient, effective, timely, transparent, scientifically robust and reasonable,	The direct protection and management of Koala habitat, Greater Glider habitat and SEVT TEC on site is the most effective and efficient means of achieving offsets for these species and community.

No	EPBC Act Offset Principles	Project Compliance
		This Offset Strategy, and the following OMP, will be implemented once approved by the Minister and the areas secured through voluntary agreement. If required, an offset package for residual significant impacts to EPBC Act listed bird and bat species, in consultation with DAWE, would be designed to take into account relevant scientific information so as to provide the best conservation outcome for the impacted species, whilst being practical to implement in a timely manner.
8	Must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced	The OMP will set out clear objectives, measurable performance indicators, monitoring and reporting requirements. In addition, the ecological consultant will report against any specific monitoring and auditing obligations established under the EPBC Act approval conditions, noting that the approval holder is responsible for ensuring compliance.

4 MANAGEMENT ACTIONS

An OMP will be developed following approval of this offset strategy and within 12 months (including estimated 4-8 months for approval) of commencement of the action. The objectives of the OMP will be:

- To protect, manage, rehabilitate and improve Koala and Greater Glider habitat and SEVT throughout the offset site; and
- To comply with the requirements of conditions 15-17 of the EPBC Approval (EPBC 2018/8141).

The following sections provide an overview of management actions that will be used to achieve the OMP performance and completion criteria. Further details will be provided in the OMP.

4.1 MANAGEMENT ACTIONS FOR EACH MNES OFFSET SITE

4.1.1 Stock exclusion (relevant to Koala, Greater Glider and SEVT offset sites)

As the offset sites are currently grazed by domestic stock, stock removal and exclusion will reduce the impact of grazing and support native vegetation regeneration within the site. This will allow for the colonisation of native grasses and forbs, assist in weed control and promote successful regeneration of canopy and understorey species utilised by Koalas and Greater Gliders as habitat and foraging resources.

Stock exclusion will be achieved by installing a fence along the offset sites boundary; however, provision will be made for stock access to waterways. The fence will generally have the following criteria:

- a. No barbed wire will be used for installed fencing.
- b. The bottom wire will be set a minimum of 500 mm from the ground (greater if possible) to allow for unrestricted movement of Koalas and other wildlife. Strands above the bottom wire strand should be spaced at intervals of no less than 300 mm.
- c. Fencing will be no higher than 1.2 m. Line posts will be set 7-10 m apart with a box strainer assembly (or similar) at corners.
- d. Electric fences are to be 2-strand with the bottom wire set at 500 mm above the ground. Electric fences will be solar powered and not require mechanical vegetation clearing of a fence-line.

In the event of unintended stock access, a contingency response will be implemented, which will consist of identifying where the stock accessed the offset area, repairing damage to fencing and removing the stock as soon as reasonably possible.

4.1.2 Feral predator control (relevant to Koala and Greater Glider offset sites)

The current known feral predators occurring on site are wild pigs, foxes, wild dogs and feral cats. Dog attack has been identified as one of the main causes of death and injury to Koalas. A strategy incorporating the control of feral species has been recommended in the comprehensive study carried out by Lunney *et al.* (2007). This study identified removal of predatory feral species (e.g. wild dogs) as the leading way to increase the Koala population in an area. Although dogs are the main threat to Koalas, cats also prey on young Koalas. Cats carry the parasite toxoplasmosis that is fatal if transferred to Koalas (Hartley *et al.*, 1990).

Steps will be taken to minimise the introduction of pest animals and control populations of current identified pest animals within the management area in accordance with the *Biosecurity Act 2014* (Department of Agriculture and Fisheries, 2014). These steps include predator exclusion fencing and predator baiting programs. Further details on the pest control will be provided in the OMP.

4.1.3 Habitat rehabilitation (relevant to Koala and Greater Glider offset sites)

Rehabilitation of the offset sites will include weed management and infill planting within existing cleared areas in order to increase the extent of suitable habitat for Koalas and Greater Gliders. Planting of Koala and Greater Glider food species and future hollow bearing tree species will improve quality habitat. Species associated with SEVT will be planted to create linkages between existing SEVT patches. Further details concerning specific rehabilitation measures will be provided in the OMP.

Weed management

The *Biosecurity Act 2014* (Qld) imposes a 'general biosecurity obligation' (GBO), which imparts a responsibility on all individuals or organisations to manage biosecurity risks that are under their control and that they know about or should reasonably be expected to know about. Under the GBO, individuals and organisations whose activities present a biosecurity risk must take all reasonable and practical steps to prevent or minimise their activities from causing a biosecurity event. This includes implementing appropriate land use practices to prevent or minimise the spread of invasive animals and plants.

Weed species such as Lantana (*Lantana camera*) infest habitat areas to the extent that Koalas may have physical difficulty moving through the area on the ground. These weeds, and other exotic flora species, smother and compete with seedling Koala food and habitat canopy trees, causing them to die or grow at a slower rate. Invasive grass species infestations also have the potential to increase the fuel load of the habitat, causing more intense fires that would impact Koalas negatively (Lunney et al. 2007).

Weed management will be an ongoing issue for the offset site, with several species listed as weeds of national significance (WoNS) or as restricted invasive plants under the Biosecurity Act. These species include Balloon cotton (*Gomphocarpus fruticosus*), Lantana (*Lantana camara*), Prickly pear (*Opuntia stricta*), Velvety Tree Pear (*Opuntia tomentosa*) and Parthenium (*Parthenium hysterophorus*). Environmental weeds include Blue Billy Goat Weed (*Ageratum houstonianum*), Buffel grass (*Cenchrus ciliaris*), Glycine (*Neonotonia wightii*) and Flannel weed (*Sida cordifolia*).

The objective of weed management will be to avoid weed seed/propagule set and dispersal, and to continuously reduce and minimise the extent and occurrence of WoNS and species listed as restricted invasive plants under the Biosecurity Act within the offset site. Of the listed weed species present, dense and extensive infestations of Lantana present the greatest threat to vegetation structure, condition and habitat quality within the offset area.

Weed management shall be undertaken within the management zones that will be delineated within the OMP. Weed management shall consist of targeted weed control with regular monitoring to evaluate the success of weed control actions. In order to achieve the stated targets, a comprehensive weed survey shall be undertaken prior to commencement of weed treatment to provide a baseline assessment of the location, extent and densities of WoNS and restricted invasive plant infestations. The weed survey results will be used to map significant weed infestations, directly informing weed control priorities and actions.

The risk of transporting weed material and propagules from the offset sites to other areas, both inside and outside of the offset and development area, shall be mitigated by ensuring that all vehicles entering and

exiting the site are washed down. Vehicle wash-downs shall be undertaken in accordance with clean-down procedures, guidelines and checklist detailed by Biosecurity Queensland, in particular the *Vehicle and Machinery Checklists Clean-down procedures 2014* (Biosecurity Queensland, 2014).

Annual monitoring of weed infestations will be undertaken to detect and map new infestations and measure any reduction in the presence of weeds. This information will inform the following year's treatments and control program.

Revegetation

Revegetation shall consist of infill planting in existing vegetated areas and revegetation in cleared areas within the offset area. Details of revegetation areas will be provided in the OMP. These rehabilitation areas will be identified to maximise opportunities to expand existing patches of vegetation within the offset area, revegetate cleared and disturbed areas and improve connectivity and habitat quality.

The aim of revegetation within the offset area is to restore cleared and degraded areas within the offset area to pre-disturbance condition, using the vegetation communities on site as a guide to selecting species and determining planting ratios. Revegetation will increase the number of food trees for Koala and Greater Glider within the respective offset sites.

4.1.4 Fire management (relevant to Koala, Greater Glider and SEVT offset sites)

Fire (cool burns) within relevant parts of the offset area may be implemented for the duration of the project approval to allow regeneration of the shrub layer, increase native perennial and tussock grasses and encourage the retention of hollow bearing trees and woody debris. Intensive management includes monitoring of fuel loads, ongoing review of existing fire regimes, review of climatic conditions, implementation of cool trickle burns in a mosaic pattern every 5-7 years (seasonally dependent).

The strategy includes the following elements:

- Maintenance of existing firebreaks around the offset site.
- Minimising fuel hazard within the offset area using cool burns, controlled grazing, mosaic burns and aligning fire breaks with the offset area boundary wherever the management area interfaces with pasture, specifically at the base of hills and ranges where fires may enter.
- Inclusion of a fuel reduction zone (FRZ) outside of the management area boundary through fuel reduction burning conducted between July and September, when fuel loads are likely to exceed 10 tonnes per ha within the FRZ.
- Fire breaks will be inspected on a minimum annual basis and following significant rainfall events where fire breaks and/or existing roads become heavily rutted or expose large rocks. Inspections will include all existing tracks over whole of property and along fence-lines.
- As per the QLD Herbarium's recommendation for burning SEVT, the following approach will be implemented (seasonally dependent):
 - Fire management undertaken during summer to winter at intervals, including spot ignition in cooler or moister periods to encourage mosaics. Burning should aim to produce fine scale mosaics of unburnt areas.

The approach may change during the term of the OMP to reflect updated recommendations published by the QLD Herbarium.

4.2 SUMMARY OF MANAGEMENT OBJECTIVES AND ACTIONS

Table 4-1 provides a summary of the management objectives and actions to implement within the offset site.

Table 4-1: Summary of proposed management objectives, actions and timeframes (to be confirmed in OMP)

Management Objective	Management Actions	Monitoring Activities
To reduce weeds in offset sites to improve quality of habitat for the used by Koala, Greater Glider and ecological values of the SEVT.	<u>Weed control</u> : manage all species listed as WoNS or as restricted invasive plants under the <i>Biosecurity Act 2014</i> (Qld) Lantana control will focus on treating infestations within revegetation areas, along the offset sites' boundary and within the existing electricity easement, and other observed dense infestations.	Bio condition assessment to be undertaken every year for 5 years then every 5 years until 2050.
	<u>Weed control</u> : all vehicles entering and exiting the site are washed down in accordance with Vehicle and Machinery Checklists – Clean-down procedures.	All wash down certificates to be collected by the approval holder for the first 5 years of monitoring.
	<u>Revegetation</u> : Revegetation of the offset area in particular the areas that have been historically grazed.	Bio condition assessment to be undertaken every year for 5 years then every 5 years until 2050.
Ensure risks are reduced to maintain the integrity of the offset sites	<u>Fire Management</u> : Maintenance, establishment of fire breaks where appropriate	Check firebreak and fuel load yearly. Bio condition assessment to be undertaken every November for the first 5 years and then every 5 years until 2050.
	<u>Stock exclusion</u> : Installation/maintenance of stock exclusion fencing along the offset area boundary. Removal of stock as soon as practicable following detection within the offset area.	Fence condition is monitored on a quarterly basis (this can include opportunistic fence inspections by contractors and staff accessing the site throughout the year).
To avoid or minimise feral animal predation on Koala	<u>Feral animal control</u> : Best practice management will be implemented, and details will be provided in the offset management plan.	Camera trapping and opportunistic sightings of feral species.
To prevent unauthorised access to the offset area	<u>Access control</u> : Installation of fence, locked gates and signage around the offset site.	Fence and gate condition will be monitored on a quarterly basis (this can include opportunistic fence inspections by contractors and staff accessing the site throughout the year).
	<u>Access control</u> : Persons entering the management area are required to hold a current weed hygiene certificate for all vehicles and equipment	

5 MONITORING

Monitoring methodologies will be developed to evaluate the success of achieving the offset area habitat condition targets for Koalas, Greater Gliders, and SEVT. Monitoring will also be used to track actions to avoid, minimise and mitigate negative impacts to these values. The approval holder may contract part or all monitoring responsibilities as required. Performance of the monitoring program shall be assessed by an audit program described in the OMP.

Table 5-1 summarises the OMP monitoring requirements identified within this strategy. Monitoring shall be conducted to achieve the performance criteria described in Table 3-5 and further detailed in the OMP.

The OMP will detail the following elements:

- Monitoring activities to measure the success or otherwise of management measures implemented to improve habitat quality for threatened species affected by the project;
- Intervention triggers for non-conformance and corrective actions;
- Specific roles and responsibilities;
- Performance criteria;
- Audit criteria.

Table 5-1: Summary of proposed monitoring for the Offset Management Plan

Value / item	Monitoring activity	Frequency	Performance indicator
Habitat condition of offset areas	Weed infestation – monitoring of weed species and density.	Six monthly during first 2 years then annually. Washdown certificates collected for first 5 years (Table 4-1)	90% WONS weeds controlled within offset sites. To implement weed control activities throughout the offset area, during the period of project approval. To reduce the extent of all weed infestations by 75% within the first 5 years of management. To reduce the extent of all weed infestations including Lantana sp. by 90% and maintain this weed infestation target during the period of project approval.
	Grazing impact – monitoring of fences and stocking rates.	Quarterly	Stock are excluded from the offset site, except where authorised by an ecologist and/or discussed with the landowner for fuel/fire hazard management. Boundary fencing is established and maintained to exclude/manage stock. Maintain good condition of the fence. Damaged boundary fencing is repaired as soon as practicable following detection of unauthorised stock access and/or damaged fencing; To ensure groundcover remains greater than 70% on average across the offset area, tussock grass height remains above 750 mm, natural regeneration is occurring and the shrub layer averages 10% foliage

Value / item	Monitoring activity	Frequency	Performance indicator
			projection cover for the duration of the approval.
	BioCondition Assessment	BioCondition Annually first 5 years. Each 5 years thereafter to 2050.	Measurable habitat improvement e.g. species richness, composition, and structure.
	BioCondition Assessment – Transects to determine rehabilitation progress	Quarterly, 2 years, Biannually 2 years, Annually thereafter	All rehabilitation areas are monitored to ensure rehabilitation success.
Fire management	Fuel load monitoring – planned burning program. Firebreak / access roads	Annual – at key sites.	Monitoring completed in accordance with OMP schedule. Maintenance of fire breaks is achieved for the duration of the project's approval. Reduce intensity and frequency of fire to improve remnant status of the vegetation for the duration of the approval.
Feral animal control	Camera trapping, scat searches, sand traps	Annual concurrent with population monitoring of Koala and Greater Gliders.	No net increase of feral predators. Net reduction of feral predators within offset sites.
SEVT Habitat	Grazing impact – monitoring of fences and stocking rates. Weed infestation – monitoring of weed species and density. BioCondition Assessment	Fences quarterly Weeds six monthly for first 2 years, then annually BioCondition Annually first 5 years. Each 5 years thereafter to 2050.	Weeds low & controlled – see performance indicator for weed infestation, above. No grazing impacts. No fire impacts Measurable habitat improvement and extent, so as to meet condition thresholds for the SEVT TEC, e.g. species richness, composition, and structure.
Access tracks / roads	Condition of tracks and erosion control monitoring	Annually	Access tracks have no significant erosion. Drainage features are stable and functioning.
Threatened species populations	Koala Greater glider Population status during the project	Establish base level before project commencement Annually throughout project phases	No reduction of population distribution, density, breeding success / recruitment.
		Mortality monitoring Koalas and Greater Gliders	No net increase in mortality detection for each species of concern.
	Bird and Bat – as described in the BBMP (Nature Advisory 2020)	As per BBMP	No residual significant impact as defined in Section 2.11.1.

6 REPORTING

A report on the performance and compliance the EPBC approval shall be prepared each year (12 months) from the date of commencement of the action. The report will be in accordance with the *EPBC Annual Compliance Report Guideline 2014*

In summary the contents of the report shall include (but not be limited by) the following matters:

- Description of the activities to implement the OMP, including tracking against interim and final habitat quality score criteria (see Table 3-5).
- How these activities address the approval conditions, and requirements described in the OMP.
- An EPBC Compliance Table describing the condition and project performance indicators, including records of any EPBC Act listed threatened bird and bat species mortalities associated with project operation, and whether any triggers for offsets for these species have been met or exceeded.
- Designations to record findings – e.g. Compliant, Non-compliant, Not applicable.
- Any actions taken to address and correct any non-conformances
- New identified environmental risks and opportunities
- Other information as relevant to the delivery of the OMP including periodic review of the OMP to include new knowledge and address emerging issues over the life of the project.

A detailed reporting structure describing the commitments and performance standards will be included in the OMP.

7 CONCLUSION AND SUMMARY

The ecological assessment of the proposed Clarke Creek Wind Farm identified that the project has the potential to result in a significant impact to three MNES, being the Koala, Greater Glider and the SEVT TEC. Specifically, the assessment noted that the proposed action would result in the unavoidable removal of up to 1,513 ha of Koala habitat, 17.83ha of Greater Glider habitat and up to 45.22ha of SEVT TEC. Therefore, an environmental offset is required for these impacts. An environmental offset for significant residual impacts on EPBC Act listed threatened birds and bats will only be required if the triggers are met or exceeded (refer to Section 2.11.1).

The project site (as defined by the lot boundaries of the involved landholders) contains a variety of habitat that would be suitable to offset the impact of the project on the MNES. Using the prescribed criteria for determining the offset requirements, offset site(s) are proposed to meet the offset requirement for the entire project development:

- Site 1 – 4,225 ha is required to offset impacts on Koala
- Site 2 – 50 ha is required to offset impacts on Greater Glider
- Site 3 – 99 ha is required to offset impacts on SEVT.

The project may be staged and/or the impacts to MNES may be reduced through design optimisation, leading to a commensurate reduction in the area of offset required. If this is the case, the approval holder (Clarke Creek Wind Farm Pty Ltd) may revise the approved offset strategy (i.e. action management plan), in accordance with conditions 31 to 33 of the EPBC 2018/8141 approval.

It is expected that with the cooperation of the involved landholders, these sites will be legally secured within 2 years of the action commencing. Negotiations with landholders will be finalised as the project design is progressed, and the OMP will be developed and approved within 12 months of the action commencing. This plan shall confirm the offset sites features, land management actions, means to legally secure the land as an offset site, a program for monitoring and reporting, and contingency or adaptive management measures required to address identified non-conformance with the OMP objectives and EPBC Conditions. Additional management actions may be developed and implemented for identified emerging matters that will or may detract from effective delivery of the offset requirement and threaten the security of native species and habitats because of the project.

8 REFERENCES

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APPENDIX A OFFSET ASSESSMENT GUIDE FOR KOALA

Offsets Assessment Guide

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

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Koala habitat
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Impact calculator						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		Area			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		Area	1513	Hectares	Condition Assessment - Field Studies 2019 - Clarke Creek Ecological Assessment
			Quality	6	Scale 0-10	
			Total quantum of impact	907.80	Adjusted hectares	
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g. Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator																					
Offset calculator	Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source	
	Ecological Communities																				
	Area of community	No				Risk-related time horizon (max. 20 years)		Start area (hectares)		Risk of loss (%) without offset		Risk of loss (%) with offset									
								Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0										
						Time until ecological benefit		Start quality (scale of 0-10)		Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)									
	Threatened species habitat																				
	Area of habitat	Yes	907.80	Adjusted hectares	4225	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	4225	Risk of loss (%) without offset	9%	Risk of loss (%) with offset	0%		90%	342.23	328.82				
								Future area without offset (adjusted hectares)	3844.8	Future area with offset (adjusted hectares)	4225.0		380.25								
						Time until ecological benefit	10	Start quality (scale of 0-10)	5	Future quality without offset (scale of 0-10)	5	Future quality with offset (scale of 0-10)	7	2.00	90%	1.80	1.76				
	Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start value		Future value without offset		Future value with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source	
Number of features e.g. Nest hollows, habitat trees	No																				
Condition of habitat Change in habitat condition, but no change in extent	No																				
Threatened species																					
Birth rate e.g. Change in nest success	No																				
Mortality rate e.g. Change in number of road kills per year	No																				
Number of individuals e.g. Individual plants/animals	No																				

Summary								
Summary	Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)		
						Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
	Birth rate	0				\$0.00		\$0.00
	Mortality rate	0				\$0.00		\$0.00
	Number of individuals	0				\$0.00		\$0.00
	Number of features	0				\$0.00		\$0.00
	Condition of habitat	0				\$0.00		\$0.00
	Area of habitat	907.8	908.54	100.08%	Yes	\$0.00	N/A	\$0.00
	Area of community	0				\$0.00		\$0.00
							\$0.00	\$0.00

APPENDIX B OFFSET ASSESSMENT GUIDE FOR GREATER GLIDER

Offsets Assessment Guide

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

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Greater Glider
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	0.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator							
Impact calculator	Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
	Ecological communities						
	Area of community	No		Area			
				Quality			
				Total quantum of impact	0.00		
	Threatened species habitat						
	Area of habitat	Yes	Greater Glider Habitat	Area	17.8	Hectares	Condition Assessment - Field Studies 2019 - Clarke Creek Ecological Assessment
				Quality	6	Scale 0-10	
				Total quantum of impact	10.68	Adjusted hectares	
	Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
	Number of features e.g. Nest hollows, habitat trees	No					
	Condition of habitat Change in habitat condition, but no change in extent	No					
	Threatened species						
	Birth rate e.g. Change in nest success	No					
	Mortality rate e.g. Change in number of road kills per year	No					
	Number of individuals e.g. Individual plants/animals	No					

Offset calculator																							
Offset calculator	Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)		% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source	
	Ecological Communities																						
	Area of community	No				Risk-related time horizon (max. 20 years)			Start area (hectares)			Risk of loss (%) without offset			Risk of loss (%) with offset								
									Future area without offset (adjusted hectares)		0.0	Future area with offset (adjusted hectares)		0.0									
						Time until ecological benefit			Start quality (scale of 0-10)			Future quality without offset (scale of 0-10)			Future quality with offset (scale of 0-10)								
	Threatened species habitat																						
	Area of habitat	Yes	10.68	Adjusted hectares	50	Time over which loss is averted (max. 20 years)		20	Start area (hectares)		50	Risk of loss (%) without offset		9%	Risk of loss (%) with offset		0%						
									Future area without offset (adjusted hectares)		45.5	Future area with offset (adjusted hectares)		50.0	4.50	90%	4.05						3.89
						Time until ecological benefit		10	Start quality (scale of 0-10)		5	Future quality without offset (scale of 0-10)		5	Future quality with offset (scale of 0-10)		7						2.00
	Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start value		Future value without offset		Future value with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value		% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source	
	Number of features e.g. Nest hollows, habitat trees	No																					
	Condition of habitat Change in habitat condition, but no change in extent	No																					
	Threatened species																						
	Birth rate e.g. Change in nest success	No																					
	Mortality rate e.g Change in number of road kills per year	No																					
	Number of individuals e.g. Individual plants/animals	No																					

Summary							
Summary	Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)	
						Direct offset (\$)	Other compensatory measures (\$)
	Birth rate	0				\$0.00	\$0.00
	Mortality rate	0				\$0.00	\$0.00
	Number of individuals	0				\$0.00	\$0.00
	Number of features	0				\$0.00	\$0.00
	Condition of habitat	0				\$0.00	\$0.00
	Area of habitat	10.68	10.75	100.67%	Yes	\$0.00	N/A
	Area of community	0				\$0.00	\$0.00
						\$0.00	\$0.00

APPENDIX C OFFSET ASSESSMENT GUIDE FOR SEVT

Offsets Assessment Guide

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

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	SEVT
EPBC Act status	Endangered
Annual probability of extinction Based on IUCN category definitions	1.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator							
Impact calculator	Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
	Ecological communities						
	Area of community	Yes	SEVT	Area	45.2	Hectares	Condition Assessment - Field Studies 2019 - Clarke Creek Ecological Assessment
				Quality	4	Scale 0-10	
				Total quantum of impact	18.08	Adjusted hectares	
	Threatened species habitat						
	Area of habitat	No		Area			
				Quality			
				Total quantum of impact	0.00		
	Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
	Number of features e.g. Nest hollows, habitat trees	No					
	Condition of habitat Change in habitat condition, but no change in extent	No					
	Threatened species						
	Birth rate e.g. Change in nest success	No					
	Mortality rate e.g. Change in number of road kills per year	No					
	Number of individuals e.g. Individual plants/animals	No					

Offset calculator																						
Offset calculator	Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)		% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source
	Ecological Communities																					
	Area of community	Yes	18.08	Adjusted hectares	99	Risk-related time horizon (max. 20 years)	20	Start area (hectares)	99	Risk of loss (%) without offset	9%	Risk of loss (%) with offset	0%	8.91	90%	8.02	6.32	18.18	100.57%	Yes		
						Future area without offset (adjusted hectares)	90.1	Future area with offset (adjusted hectares)	99.0													
						Time until ecological benefit	10	Start quality (scale of 0-10)	4	Future quality without offset (scale of 0-10)	4	Future quality with offset (scale of 0-10)	6									
	Threatened species habitat																					
	Area of habitat	No				Time over which loss is averted (max. 20 years)		Start area (hectares)		Risk of loss (%) without offset		Risk of loss (%) with offset										
						Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0													
						Time until ecological benefit		Start quality (scale of 0-10)		Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)										
	Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start value		Future value without offset		Future value with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value		% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source
	Number of features e.g. Nest hollows, habitat trees	No																				
	Condition of habitat Change in habitat condition, but no change in extent	No																				
	Threatened species																					
	Birth rate e.g. Change in nest success	No																				
	Mortality rate e.g. Change in number of road kills per year	No																				
	Number of individuals e.g. Individual plants/animals	No																				

Summary							
Summary	Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)	
						Direct offset (\$)	Other compensatory measures (\$)
	Birth rate	0				\$0.00	
	Mortality rate	0				\$0.00	
	Number of individuals	0				\$0.00	
	Number of features	0				\$0.00	
	Condition of habitat	0				\$0.00	
	Area of habitat	0				\$0.00	
	Area of community	18.08	18.18	100.57%	Yes	\$0.00	N/A
						\$0.00	\$0.00
						\$0.00	\$0.00

APPENDIX D MODIFIED HABITAT QUALITY SCORING SUMMARY SCORES – IMPACT SITES

Site Condition				
Assessment Unit - Regional Ecosystem	11.12.1	11.3.25	11.3.25	11.4.1 (TEC)
Site Reference	Unit 1	Unit 2	Unit 3	Unit 1 Note: only one unit was surveyed undertaking biocondition assessment. However, quaternary survey indicated that most of the units located across the project area were or similar condition so we have assumed the same data would be provided as assessment unit 2 and unit 3). Additional survey will be provided on impacted area once the micrositeing is undertaken.
Status	Remnant	Remnant	Remnant	Remnant
Recruitment of woody perennial species in EDL	0	3	0	3
Native plant species richness - trees	4	3	5	3
Native plant species richness - shrubs	3	5	5	3
Native plant species richness - grasses	2.75	3	3	5
Native plant species richness - forbes	3	3	3	2.5
Tree canopy height (average of emergent, canopy, sub-canopy)	5	5	5	5
Tree canopy cover (average of emergent, canopy, sub-canopy)	5	5	5	2
Shrub canopy cover	5	3	3	5
Native grass cover	1	5	5	1
Organic litter	5	5	5	3
Large trees (euc plus non-euc)	5	5	5	5
Coarse woody debris	5	0	0	2
Non-native plant cover	5	3	5	5
Quality and availability of food and foraging habitat	5	5	5	NA
Quality and availability of shelter	5	5	5	NA
Site Condition Score	58.75	58	59	44.5
MAX Site Condition Score	100	100	100	80

Site Condition Score (out of 3 or out of 7 for TEC)	1.76	1.77	1.74	3.89
Site Context	11.12.1	11.3.25	11.3.25	11.4.1
	Unit 1	Unit 2	Unit 3	Unit 1 TEC
Size of patch	10	0	10	2
Connectedness	5	4	5	0
Context	4	4	4	2
Ecological Corridors	6	4	6	2
Role of site location to species / TEC overall population in the state (score per DEHP Guide)	1	1	1	0
Threats to the species (score per DEHP Guide)	15	7	15	0
Species mobility capacity (score per DEHP Guide)	10	10	10	NA
Site Context Score	51	30	51	6
<i>MAX Site Context Score</i>	56	56	56	46
Site Context Score (out of 3)	2.73	1.61	2.73	0.39

Species Stocking Rate (SSR)	Koala (11.12.1)	Greater Gliders (11.3.25)	TEC (11.4.1)
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10	10	NA
Species usage of the site (habitat type & evidenced usage)	15	15	NA
Approximate density (per ha)	10	10	NA
Role/importance of species population on site*	10	10	NA
Total SRR score (out of 70)	45.00	45.00	0.00
<i>MAX Site Context Score</i>	70.00	70.00	NA
SRR Score (out of 4)	2.57	2.57	0.00

Final habitat quality score (weighted)	11.12.1	11.3.25	11.3.25	11.4.1 (TEC)
Site Condition score (out of 3)	1.76	1.77	1.74	3.89
Site Context Score (out of 3)	2.41	1.98	1.98	0.39
Species Stocking Rate Score (out of 4)	2.57	2.57	2.57	NA
Habitat Quality score (out of 10)	6.74	6.32	6.29	4.29
Assessment Unit area (ha) in disturbance footprint	5	5	40	5
Total impact area (ha) for this MNES	50	50	50	15
Weighted Assessment unit quality score (score per DEHP Guide)	0.67	0.63	5.03	1.43

Final habitat quality score (weighted)	Koala (11.12.1)	Greater Gliders (11.3.25)	TEC (11.4.1)
Weighted Assessment unit habitat quality score (score per DEHP Guide)	6.34	6.34	4.29
Habitat score (rounded)	6	6	4

APPENDIX E MODIFIED HABITAT QUALITY SCORING SUMMARY SCORES – OFFSET SITES (CURRENT)

Site Condition			
Assessment Unit – Regional Ecosystem	11.12.1	11.3.25	11.4.1 (TEC)
Site Reference	Unit 1 Note: this offset area is near the impacted area so we took the same impact area values for the purpose of this assessment	Unit 2	Unit 1 Note: only one unit was surveyed undertaking bio condition assessment. However, quaternary survey indicated that most of the units located across the project area were or similar condition as we have assumed the same data would be provided as assessment unit 2 and unit 3). Additional survey will be provided on impacted area once the micro siting is undertaken.
Status	Remnant	Remnant	Remnant
Recruitment of woody perennial species in EDL	0	0	3
Native plant species richness – trees	4	2.5	3
Native plant species richness – shrubs	3	2.5	3
Native plant species richness – grasses	2.75	1.5	5
Native plant species richness – forbes	3	1.5	2.5
Tree canopy height (average of emergent, canopy, sub-canopy)	5	0	5
Tree canopy cover (average of emergent, canopy, sub-canopy)	5	0	2
Shrub canopy cover	5	0	5
Native grass cover	1	2.5	1
Organic litter	5	2.5	3
Large trees (euc plus non-euc)	5	0	5
Coarse woody debris	5	0	2
Non-native plant cover	5	2.5	5
Quality and availability of food and foraging habitat	5	2.5	NA
Quality and availability of shelter	5	2.5	NA
Site Condition Score	58.75	20.5	44.5
MAX Site Condition Score	100	100	80

Site Condition Score (out of 3)	1.76	0.62	3.89
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Site Context	11.12.1	11.3.25	11.4.1
	Unit 1	Unit 2	Unit 1 TEC
Size of patch	10	10	2
Connectedness	5	5	0
Context	4	4	2
Ecological Corridors	6	6	2
Role of site location to species overall population in the state (score per DEHP Guide)	1	1	0
Threats to the species (score per DEHP Guide)	15	15	0
Species mobility capacity (score per DEHP Guide)	10	10	NA
Site Context Score	51	51	6
<i>MAX Site Context Score</i>	56	56	46
Site Context Score (out of 3)	2.73	2.73	0.39

Species Stocking Rate (SSR)	Koala (11.12.1)	Greater Gliders (11.3.25)	TEC (11.4.1)
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10	10	NA
Species usage of the site (habitat type & evidenced usage)	15	15	NA
Approximate density (per ha)	10	10	NA
Role/importance of species population on site*	10	10	NA
Total SRR score (out of 70)	45.00	45.00	0.00
<i>MAX Site Context Score</i>	70.00	70.00	NA
SRR Score (out of 4)	2.57	2.57	0.00

Final habitat quality score (weighted)	11.12.1	11.3.25	11.3.25	11.4.1
Site Condition score (out of 3)	1.76	0.62	0.78	3.89
Site Context Score (out of 3)	2.73	2.73	1.61	0.39
Species Stocking Rate Score (out of 4)	2.57	2.57	2.57	N/A
Habitat Quality score (out of 10)	7.07	5.92	4.96	4.29
Assessment Unit area (ha) in disturbance footprint	5	5	40	5
Total impact area (ha) for this MNES	50	50	50	15
Weighted Assessment unit quality score (score per DEHP Guide)	0.71	0.59	3.97	1.43

Final habitat quality score (weighted)	Koala (11.12.1)	Greater Gliders (11.3.25)	TEC (11.4.1)
Weighted Assessment unit habitat quality score (score per DEHP Guide)	5.27	5.27	4.29
Habitat score (rounded)	5	5	4

APPENDIX F MODIFIED HABITAT QUALITY SCORING SUMMARY SCORES – OFFSET SITES (FUTURE / ESTIMATED)

Cells highlighted in yellow are estimated to be improved through on-ground management

Site Condition			
Assessment Unit - Regional Ecosystem	11.12.1	11.3.25	11.4.1. (TEC)
Site Reference	Unit 1	Unit 2	Unit 1. Note: only one unit was surveyed undertaking bio condition assessment. However, quaternary survey indicated that most of the units located across the project area were or similar condition as we have assumed the same data would be provided as assessment unit 2 and unit 3). Additional survey will be provided on impacted area once the micro siting is undertaken.
Status	Remnant	Remnant	Remnant
Recruitment of woody perennial species in EDL	3	3	5
Native plant species richness - trees	5	5	5
Native plant species richness - shrubs	5	5	5
Native plant species richness - grasses	5	5	5
Native plant species richness - forbes	5	5	0
Tree canopy height (average of emergent, canopy, sub-canopy)	5	5	5
Tree canopy cover (average of emergent, canopy, sub-canopy)	5	5	5
Shrub canopy cover	5	4	5
Native grass cover	5	5	3
Organic litter	5	4	5
Large trees (euc plus non-euc)	5	5	5
Coarse woody debris	5	0	5
Non-native plant cover	5	5	10
Quality and availability of food and foraging habitat	5	4	NA
Quality and availability of shelter	5	4	NA
Site Condition Score	73	64	63
MAX Site Condition Score	100	100	80

Site Condition Score (out of 3)	2.19	1.92	5.51
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Site Context	11.12.1	11.3.25	11.4.1
	Unit 1	Unit 2	Unit 1 TEC
Size of patch	10	10	2
Connectedness	5	5	0
Context	4	4	2
Ecological Corridors	6	6	2
Role of site location to species overall population in the state (score per DEHP Guide)	1	1	0
Threats to the species (score per DEHP Guide)	15	15	0
Species mobility capacity (score per DEHP Guide)	10	10	NA
Site Context Score	51	51	6
<i>MAX Site Context Score</i>	56	56	46
Site Context Score (out of 3)	2.73	2.73	0.39

Species Stocking Rate (SSR)	Koala (11.12.1)	Greater Gliders (11.3.25)	TEC (11.4.1)
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	10	10	NA
Species usage of the site (habitat type & evidenced usage)	15	15	NA
Approximate density (per ha)	10	10	NA
Role/importance of species population on site*	10	10	NA
Total SRR score (out of 70)	45.00	45.00	0.00
<i>MAX Site Context Score</i>	70.00	70.00	NA
SRR Score (out of 4)	2.57	2.57	0.00

Final habitat quality score (weighted)	11.12.1	11.3.25	11.4.2	11.8.3 (TEC - same as impact area)
Site Condition score (out of 3)	2.19	1.92	2.01	5.51
Site Context Score (out of 3)	2.73	2.73	1.93	0.39
Species Stocking Rate Score (out of 4)	2.57	2.57	2.57	Na
Habitat Quality score (out of 10)	7.49	7.22	6.51	5.9
Assessment Unit area (ha) in disturbance footprint	5	5	40	5
Total impact area (ha) for this MNES	50	50	50	15
Weighted Assessment unit quality score (score per DEHP Guide)	0.75	0.72	5.21	1.97

Final habitat quality score (weighted)	Koala (11.12.1)	Greater Gliders (11.3.25)	TEC (11.4.1)
Weighted Assessment unit habitat quality score (score per DEHP Guide)	6.68	6.68	5.9
Habitat score (rounded)	7	7	6