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Appendix F

Offset Management Plan

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Offset Area Management Plan

Peak Downs Mine Power Line Realignment Project (EPBC 2024/09983)

Status: For Use

Version: 4 (4 March 2026)

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Terms, Abbreviations and Acronyms

Term	Definition
7N, 5N, 2N	7 North, 5 North, 2 North (existing mine pits)
BMA	BM Alliance Coal Operations Pty Ltd (the Proponent)
CVM HPE	Caval Ridge Mine Horse Pit Extension project
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DETSI	Department of Environment, Tourism, Science and Innovation
EMS	Environmental Management System
EOP	Environmental Offsets Policy October 2012 (Cth)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ha	Hectares
KPI	Key performance indicator
kV	Kilovolt
ML	Mining Lease
MNES	Matters of National Environmental Significance
OAG	Offsets Assessment Guide
Offset Area	The nominated 115.56 hectare area the subject of this OMP
OMF	Offset Management Framework
OMP	Offset Management Plan
OIA	Offset Investigation Area
PD	Preliminary Documentation
PDM	Peak Downs Mine
RE	Regional Ecosystem
RFI	Request for Information
VDec	Voluntary Declaration
VM Act	*Vegetation Management Act 1999* (Qld)
WoNS	Weeds of National Significance

1 Introduction

BM Alliance Coal Operations Pty Ltd (BMA, the Proponent) owns and operates Peak Downs Mine (PDM), an open cut coal mining operation near Moranbah, Queensland. The Proponent plans to progress mining at PDM within Mining Lease (ML) 1775 in an easterly direction in line with its current regulatory authorisations for mining. This has triggered the need to realign the existing 66 kilovolt (kV) power line (the Project) ahead of pit progression.

There are currently three existing mine pits at PDM, 7 North, 5 North and 2 North (7N, 5N and 2N, respectively), which are progressing to the east. The proposed realignment of the 7N/5N/2N power line for the Project is comprised of the following three components:

- 7N power line realignment – entirely outside of a mining lease
- 5N power line realignment – partly within ML 70411, partly outside a mining lease
- 2N power line realignment – entirely within ML 70411

The Project has been referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC 2024/09983).

The Project impacts have the potential to significantly impact two threatened species recognised as Matters of National Environmental Significance (MNES) under the EPBC Act, namely:

- Greater Glider (southern) (*Petauroides volans*)
- Koala (*Phascolarctos cinereus*)

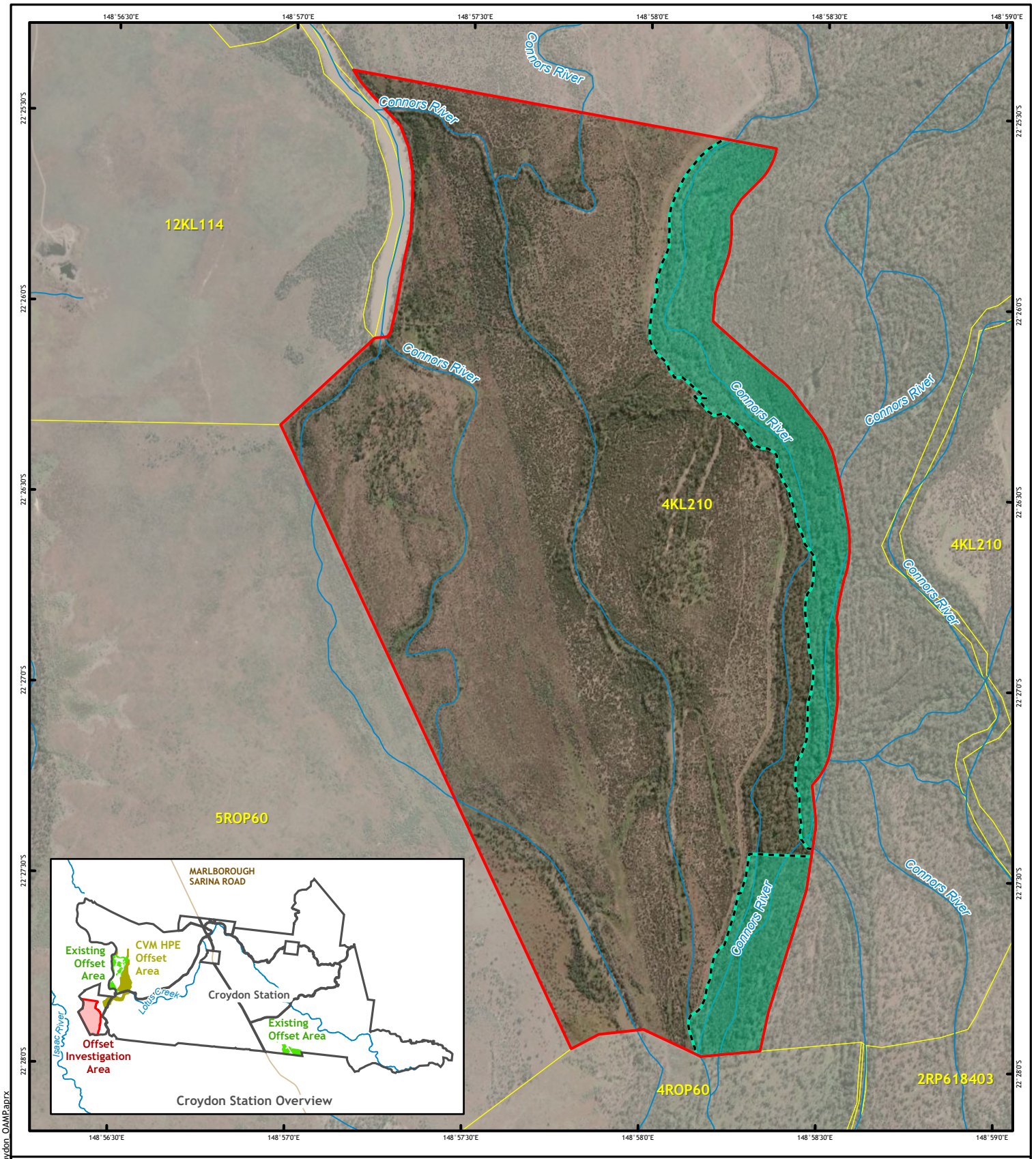
These impacts are likely to trigger the requirement for environmental offsets as per the Commonwealth's EPBC Act Environmental Offsets Policy (EOP) (DSEWPC 2012). This Offset Management Plan (OMP) has been developed to comply with the EOP and to compensate for the potential significant impacts assessed as resulting from the Project activities.

A portion of a property known as Croydon Station (formally Lot 4 on Plan KL210) has been surveyed and identified as suitable to provide environmental offsets for the Project (herein referred to as the Offset Investigation Area). Croydon Station occupies 58,669 hectares (ha) and is approximately 140 km south of Mackay and 77 km east of the Project, located in central Queensland. The Offset Investigation Area (OIA) associated with this OMP is located in the far west of Croydon Station and occupies approximately 845 ha, the Offset Area is a 115.56 ha area, within the OIA (***Figure 1***).

1.1 Scope and Purpose

This OMP provides details on the offsets that will be delivered to compensate the significant residual impacts of the Project. This includes (but is not restricted to) the following:

- Details of the residual impacts to MNES as a result of the Project including area and habitat quality
- Description of the Offset Area including survey data documenting the presence of the MNES within the Offset Area and surrounds
- Details demonstrating how the Offset Area compensates for the significant impacts on the relevant MNES including area and habitat quality and how the Offset Area provides connectivity with adjacent habitats and biodiversity corridors
- Specific, committal, and measurable environmental outcomes that detail the nature of the conservation gain to be achieved for each MNES including management measures and implementation timeframes
- Details of the nature, timing and frequency of monitoring to inform progress against 5-yearly interim milestones including associated reporting
- Details and execution timing of the mechanism to legally secure the Offset Area



Legend

- Watercourse
- Cadastre
- Offset Investigation Area
- Offset Area

N

Scale 1:25,000 (A4)

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Kilometres

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator

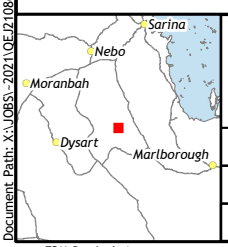

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FIGURE 1: OFFSET STUDY AREA - CROYDON STATION

Offset Area Management Plan
Peak Downs Mine Power Line Realignment Project
BM Alliance Coal Operations Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ21086	4

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1.2 Offset Conditions

This OMP has been prepared based on the impact assessment outcomes described in the *Revised MNES Significant Impact Assessment Report* (Epic 2025) compiled for the Project. The PD assessment process is ongoing and as such, environmental offset conditions are yet to be imposed on the Project by DCCEEW. This OMP has been developed with the expectation that conditions requiring environmental offsets will be imposed on the Project's approval.

Koala and Greater Glider were both recorded in close vicinity to the Project's disturbance footprint during ecology surveys (shown in Epic 2025). The results of the Project impact assessment identified a potential for a significant impact to occur on the following:

- Koala – 6.73 ha of preferred habitat and 0.45 ha of suitable habitat
- Greater Glider (southern) – 6.04 ha of preferred habitat and 0.38 ha of suitable habitat

The habitat quality condition of the Project impact site and offset site has been assessed for each species as per DCCEEW's modified habitat quality assessment methodology and the Queensland *Guide to determining terrestrial habitat quality* (version 1.2) (DEHP 2017). The Koala habitat impacted by the Project was found to have a baseline habitat quality score of 7 and Greater Glider habitat had a score of 6. Habitat quality data compiled for the Project is provided in ***Appendix B***.

The Offset Area has been subject to a detailed onsite habitat suitability assessment. Further details on the surveys undertaken within the Offset Area and OIA are provided in ***Section 2***. The assessment determined the habitat quality score for both species equating to a score of 7 (out of 10) within the Offset Area. Modelling of future habitat quality scoring was undertaken to assess potential habitat improvement and habitat quality scoring through the implementation of this OMP. It is anticipated that the Offset Area will result in a one-point improvement in habitat quality score (when rounded) for both the Koala and Greater Glider over a 20-year period (refer to ***Appendix C***). To further contribute towards a 'net gain' for both species, as detailed within the EPBC Act Offset Policy, the Offset Area now exceeds offset acquittal requirements as detailed within the Offset Assessment Guide (OAG) (i.e. >100%) (refer to ***Appendix C***). Suitable acquittal (i.e. 100%) of Project impacts to MNES in accordance with the OAG determined the extents required to offset impacts on Koala and Greater Glider habitat were 80 ha and 62 ha, respectively. The Offset Area comprises 115.56 ha of habitat suitable for Koala and Greater Glider, resulting in an overall acquittal percentage of 145% and 189%, respectively (***Table 1***).

Table 1 Summary table of Project and Offset Investigation Area habitat attributes for MNES

MNES	Project Area		Offset Area			
	Impact extent (ha)	Habitat quality score	Available habitat extent (ha)	Baseline habitat quality score	Future habitat quality score with offset	OAG acquittal
Koala	7.18	7	115.56	7	8	**144.9%**
Greater Glider	6.42	6	115.56	7	8	**189.1%**

1.3 Compliance with EOP

This OMP details the offsets proposed to comply with approval conditions anticipated to be imposed on the Project. Any proposed offsets must meet the key principles described in Section 7 of the EOP. An assessment of the proposed offset compliance with the EOP is provided in ***Table 2***.

Table 2 Assessment of Project offset compliance with EOP

Offset policy requirements	Compliance assessments
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter	The conservation outcome for the MNES species (Koala and Greater Glider) will be achieved by improving the viability of the protected matters as compared to what is likely to have occurred under the status quo (that is if neither the action nor the offset had taken place). Legally securing the proposed offset, along with implementation of stated management actions within this OMP will ultimately result in an increase in habitat quality and thereby, an improvement in viability for both Koala and Greater Glider.
Suitable offsets must be built around direct offsets but may include other compensatory measures	The proposed offset for Koala and Greater Glider is entirely (100%) a direct offset approach located within the OIA on Croydon Station. This meets (and exceeds) the minimum requirement for a 90% direct offset.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter	The Offset Area acquits 145% of the expected offset liability for Koala and 189% for the Greater Glider. This has been calculated using the OAG which factors in the level of statutory protection for each matter. The OAG output data sheets are included in ***Appendix C*****.**
Suitable offsets must be of a size and scale proportionate to the impacts on the protected matter	The size and scale of the Offset Area has been determined using the OAG to ensure it is proportionate to (and exceeds) the significant impacts on Koala and Greater Glider that result from the Project. The OAG output data sheets are included in ***Appendix C*****.**
Suitable offsets must effectively account for and manage the risks of the offset not succeeding	Risks, including the risk of the offset not succeeding, have been assessed as part of this OMP, refer ***Section 3.5*** and ***Appendix E***. Additionally, completion criteria, review timeframes and corrective actions have been developed as part of proactive management and risk mitigation strategies. The OMP will be implemented using the PLAN – DO – CHECK – ACT Model used in the overarching BMA Environmental Management System which generates adaptive management to ensure success. Appropriate confidence levels, reflecting risk levels, have been applied within the OAGs.
Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs	Offsets must deliver a conservation gain for the impacted protected matters and that conservation gain must be new, or additional, to what is already required by a duty of care or to any environmental planning laws at any level of government. The requirement for offsets for the Project under State Government legislation have been assessed separately (refer to ***Section 3.2.1***). The proposed offset is additional to the outcomes of that assessment. The proposed offset will directly provide additional conservation benefits through a series of management actions (***Section 3***) that will enhance ecological conditions for both Koala and Greater Glider. The legal security of the Offset Area will be additional to the current protection afforded to present ecological values within Croydon Station. The management objectives of the OMP aim to achieve conservation benefits such as improving existing habitat within the Offset Area for Koala and Greater Glider so that in the long-term they provide more extensive and suitable habitat area, an equivalent area of habitat value to that of the Project impact site, more local habitat connectivity to more extensive vegetation tracts, and reducing threats to both species in the local area. Management actions are additional to those that are already required by law and/or planning regulations and to those occurring / or having the potential to occur in adjacent properties via external offset plans (including other offsets within Croydon Station).
Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable	As noted in the EOP, efficient and effective offsets are those that maintain or improve the viability of a protected matter through the sound allocation of resources. The EOP further notes that offsets must be timely and based on both scientifically robust and transparent information. Given direct offsets are widely accepted as robust and provide a high degree of confidence, the application of a 100% direct land-based offset in this instance is considered a sound approach. The proposed management actions are also known to be effective in improving ecological condition, ultimately leading to conservation gain. Ongoing management of the Offset Area will be undertaken in line with relevant conservation actions and advice for both Koala and Greater Glider.

Offset policy requirements	Compliance assessments
Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced	As the approval holder for the Project, BMA will have responsibility for securing and delivery of the offset. The OMP includes completion criteria, review timeframes and corrective actions as part of the proactive approach to ensuring outcomes are being achieved. Monitoring will be required over the life of the offset to measure the ongoing success of the management actions implemented under the OMP. Monitoring will provide a record of progress towards offset completion criteria and a mechanism for review of the OMP and development of alternative management action/s where performance targets are not being met. Compliance reports will also be submitted to DCCEEW as required.

2 Offset Area Description

The Offset Area (115.56 ha) is located within the OIA, situated on Croydon Station which is located approximately 100 km north of Marlborough in central Queensland. Croydon Station occurs within the Isaac Downs subregion which is part of the Brigalow Belt North Interim Biogeographic Regionalisation for Australia bioregion. The Offset Area is located approximately 80 km east-southeast of the Project impact area. The Project also occurs partially within the Isaac Downs subregion.

The OIA encompasses portions of the braided channel system associated with the Connors River, the main channel of which is a stream order 7 watercourse (***Figure 2***). Connors River flows in a roughly north to south direction through the OIA. The channels of the river are mapped as providing riparian biodiversity corridors considered to be of State significance for flora and fauna (SQ 2025). The OIA lies adjacent to a contiguous patch of remnant vegetation to the east associated with the river. The river maintains a contiguous linear vegetated connection to the north and south, where the width of the vegetation varies widely. Lotus Creek extends east from the Connors River and represents a riparian biodiversity corridor of regional significance.

The Croydon Station property supports existing offset areas to the northeast of the Offset Area associated with this OMP (***Figure 2***). Portions of the OIA are currently being considered as offset areas suitable for Ornamental Snake (*Denisonia maculata*) for a different project.

2.1 Ecological Surveys and Habitat Quality Assessments

A comprehensive desktop assessment and ecological field surveys of the OIA were undertaken by E2M in April 2022 and March and November 2025. The terrestrial ecological values of the OIA and suitability to support MNES, including the Koala and Greater Glider (central and southern), was evaluated through a desktop assessment and field assessments informed by the recommended guidelines prescribed by the Queensland and/or Commonwealth governments. The following section details the methods employed to conduct both the desktop and the field assessments to determine the offset suitability of the OIA and Offset Area.

2.1.1 Desktop Assessment

The desktop assessment consolidated information from relevant databases, mapping, aerial imagery, and published literature to produce an initial characterisation of the ecological values of the OIA (and to inform selection of an appropriate Offset Area within), including the Koala and Greater Glider (central and southern), and the surrounding landscape. The desktop assessment collected information for the OIA from the following sources:

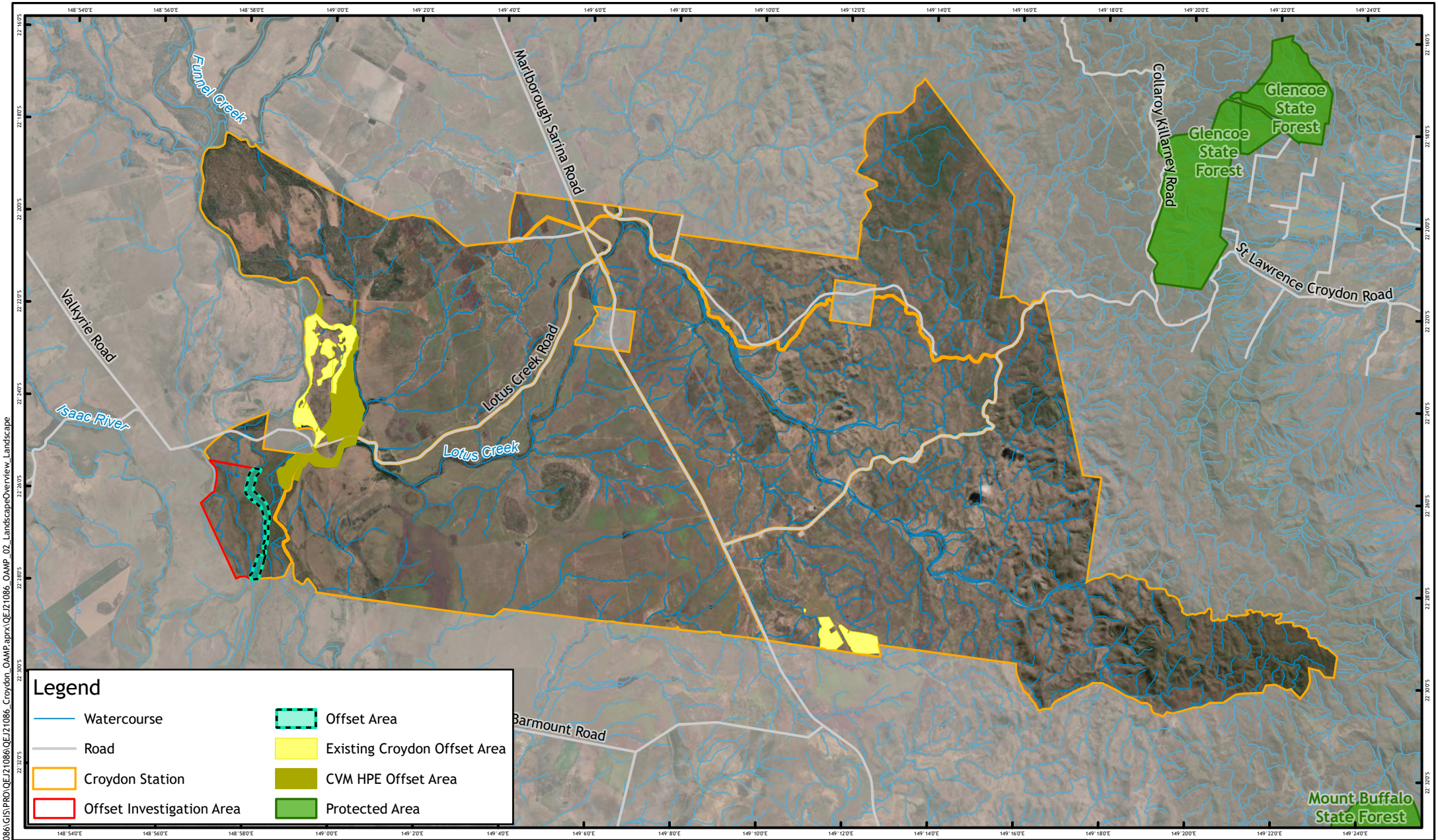
- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) EPBC Act Protected Matters Search Tool (PMST) Database (DCCEEW, 2025)
- DETSI Wildlife Online databases for the Koala and Greater Glider
- Atlas of Living Australia (ALA) records for the Koala and Greater Glider (Atlas of Living Australia (ALA) 2025)
- Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development (DNRMMRRD) Regulated Vegetation Management Map and supporting Regional Ecosystem (RE) and essential habitat (DNRMMRRD 2025b)
- Vegetation management watercourse and drainage feature mapping (1:100,000 and 1:250,000) for Queensland (DNRMMRRD, 2025)
- DNRMMRRD Detailed Surface Geology descriptions (DNRMMRRD 2025)

Historical and latest available aerial photography (Qld Government Q-Imagery database) (DETSI, 2025); and

Ecological assessment reports and threatened species surveys associated with the existing BMC and proposed BMA Offset Areas within Croydon Station. These included:

- BMC Dragline Move: Offset Delivery Plan for EPBC 2016/7788 (Earthtrade 2017); and
- Environmental Offsets Strategy: Horse Pit Extension Project – Caval Ridge Mine (E2M, 2022).

Where required for desktop databases searches, a search radius of 20 km was applied from the approximate centre point of the OIA.



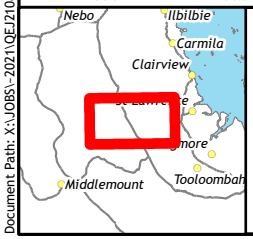


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FIGURE 2: OFFSET AREA - LANDSCAPE CONTEXT

Offset Area Management Plan
Peak Downs Mine Power Line Realignment Project
BM Alliance Coal Operations Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ21086	4

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2.1.2 Field Assessments

Three field surveys were carried out (e2m Pty Ltd, 2026) within the OIA (inclusive of the Offset Area), consisting of:

- Survey 1 (6 to 10 April 2022): Comprising RE verification, habitat assessments, targeted fauna surveys for the Koala and Greater Glider (central and southern)
- Survey 2 (17 to 22 March 2025): Including additional RE verification, habitat assessments and targeted fauna surveys; and
- Survey 3 (10 to 13 November 2025): Comprising Habitat Quality assessments, additional habitat assessments within the Offset Area.

The following sections detail methods utilised across these three survey events.

Ground-truthing and validation of RE mapping was conducted in accordance with the Queensland Government's Methodology for Surveying and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (Neldner, B.A. Wilson, Dillewaard, et al. 2023). Using this methodology, tertiary and quaternary vegetation surveys were carried out to classify REs occurring within the OIA. The location of tertiary and quaternary survey sites is provided in ***Appendix A***.

Ground-truthed vegetation was characterised as:

- Remnant vegetation - communities that conform with the definition under the *Vegetation Management Act 1999* (Qld) (VM Act) and referenced by Neldner B.A. Wilson, Dillewaard, et al., (2023). For woody vegetation, this comprises communities where 'the dominant stratum has greater than 70% of the height and greater than 50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy'.
- High-value regrowth (HVR) – vegetation communities that conform with the definition under the VM Act and referenced by Neldner B.A. Wilson, Dillewaard, et al., (2023). Specifically, this comprises native vegetation regrowth that is greater than 15 years old and meets the minimum cover requirements specified by Neldner B.A. Wilson, Dillewaard, et al., (2023).
- Non-remnant vegetation – all vegetation that is not mapped as remnant or HVR vegetation. This includes regrowth communities that have been historically cleared/disturbed or heavily modified (i.e. improved pastures, weed encroachment etc.) that failed to meet the structural and/or floristic characteristics of remnant vegetation.

Information provided in the RE Technical Descriptions for the Brigalow Belt (DETSI, 2025b) and structural formations of vegetation as defined by Specht (1970) were used to assist in determining the undisturbed canopy, height and species with which to compare the field data and ascertain vegetation class.

Any heterogenous RE polygons mapped within the OIA by DNRMMRRD (2025b) were ground-truthed and separated into homogenous polygons.

The presence of introduced flora species identified under the Queensland *Biosecurity Act 2014* and Weeds of National Significance (WoNS) were recorded across the OIA. Incidental sightings of species, including native and environmental weed species, within the OIA were also recorded throughout the survey events.

Targeted fauna species surveys were undertaken in accordance with the methods described within the relevant survey guidelines including:

- Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (Eyre et al. 2018); and
- Survey Guidelines for Australia's Threatened Mammals (Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2011).

Survey methods relevant to target fauna species employed during the field survey included:

- Active, diurnal searches for Koala presence (i.e. scratches and scat).
- Nocturnal, spotlighting transects targeting Greater Glider and Koala. These surveys were conducted on foot using a hand-held and/or head torch to detect eye shine and investigate microhabitats (e.g. decorticating bark or coarse woody debris) within each habitat type.
- Slow drive spotlighting surveys targeting Greater Glider and Koala.
- Habitat assessments and opportunistic observations.

Habitat quality was assessed in accordance with the MHQA method, a variation of the *Guide to Determining Terrestrial Habitat Quality* (Version 1.2) (Department of Environment and Heritage Protection 2017), and utilised a combination of attributes and indicators that measure the overall condition of habitat values within the impact and potential offset areas and the capacity of those areas to support the relevant MNES. Habitat quality involved the collection of data relating to:

- Site Condition
- Site Context; and
- Species Stocking Rate.

A detailed overview of the MHQA scoring method, including attribute weightings, assessment criteria and associated scoring is provided in ***Appendix B***.

In determining habitat quality scores, the Offset Area was first delineated into assessment units. An assessment unit refers to an area or a group of areas within the matter area (i.e. the Offset Area) that is homogenous in vegetation community classification (i.e. RE) and broad condition state (i.e. remnant, regrowth, non-remnant). Each assessment unit reflects a particular community with similar structure, function and quality of habitat. Sampling sites were then selected for each assessment unit and attribute data was collected at each sampling site.

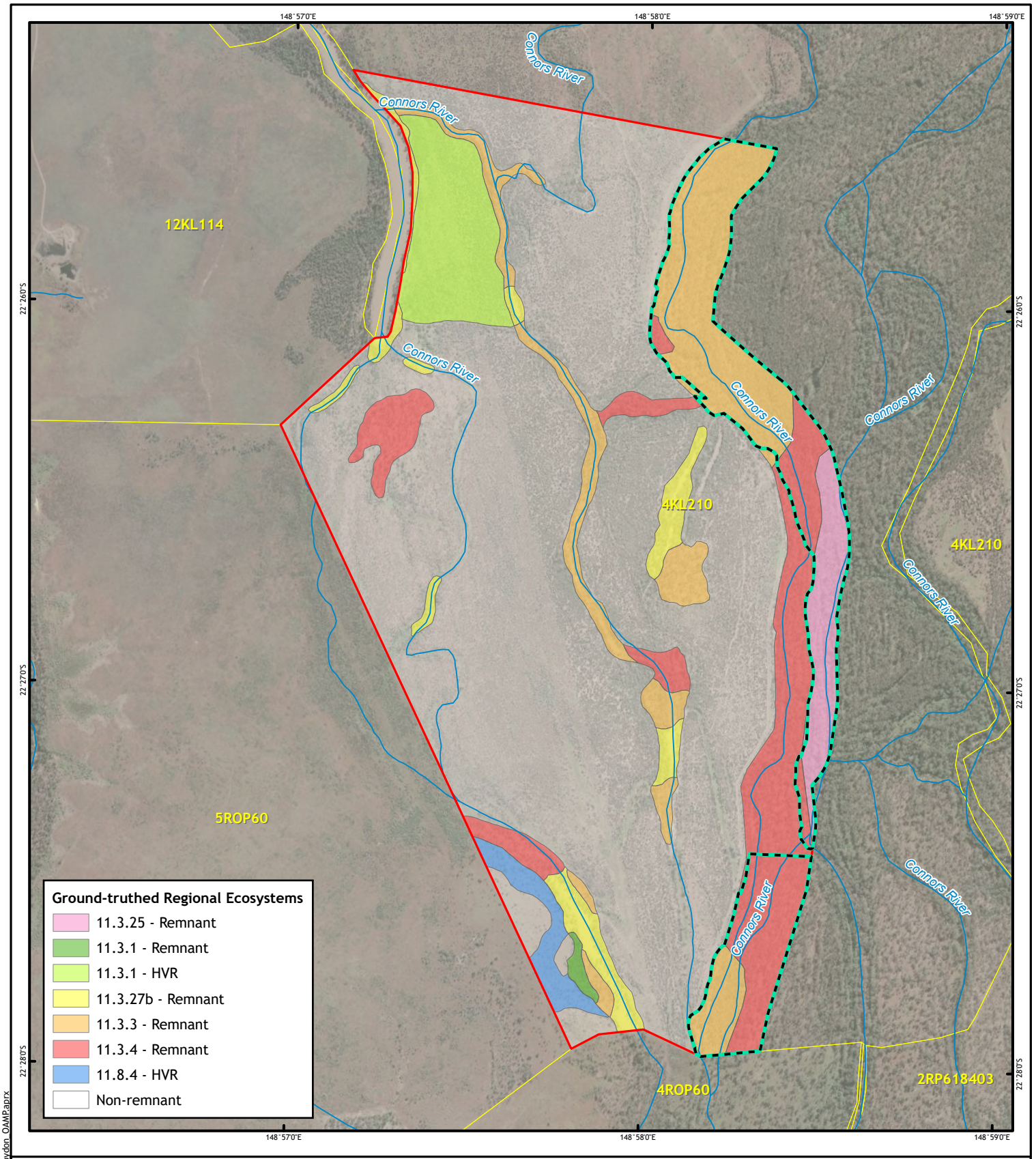
2.2 Vegetation Communities

2.2.1 Regional Ecosystems

The OIA has been subject to cattle grazing with extensive areas cleared of native vegetation since at least the 1970s. Remnant vegetation is largely restricted to riparian corridors in the east of the OIA. The ecological assessments identified six regional ecosystems (REs) as occurring within the OIA in a variable condition status. The extent of REs present within the OIA and the Offset Area are presented in ***Table 3*** and ***Figure 3***.

Table 3 Ground-truthed vegetation communities (REs) identified within the OIA and Offset Area

RE	Description (QH 2024)	Condition status	Extent within OIA (ha)	Extent within Offset Area (ha)
11.3.1	*Acacia harpophylla* open forest (particularly in southern parts), with or without scattered emergent *Eucalyptus coolabah* on alluvial plains	Remnant	1.95	-
		High-value regrowth	38.54	-
11.3.3	*Eucalyptus coolabah* woodland on alluvial plains	Remnant	93.28	58.73
11.3.4	*Eucalyptus tereticornis* woodland to open forest occurring with other eucalypts on alluvial plains	Remnant	89.50	35.09
11.3.25	*Eucalyptus tereticornis* open forest occurring with other eucalypts on levees and banks of rivers	Remnant	22.03	21.74
11.3.27b	Freshwater wetland (billabongs) fringed by *Eucalyptus tereticornis* and *E. coolabah*	Remnant	27.54	-
11.8.4	*Eucalyptus crebra* woodland with other eucalypt species on Cainozoic igneous rocks	High-value regrowth	10.99	-
Non-remnant	-	Non-remnant	561.01	-
		Total	844.82	**115.56**



Legend

- Watercourse
- Cadastre
- Offset Investigation Area
- Offset Area

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Scale 1:25,000 (A4)

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Kilometres

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Projection: Transverse Mercator

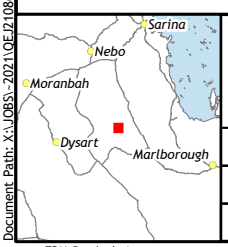

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FIGURE 3: GTRE WITHIN OIA AND OFFSET AREA

Offset Area Management Plan
Peak Downs Mine Power Line Realignment Project
BM Alliance Coal Operations Pty Ltd

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2.2.2 Introduced flora

Six restricted species listed under the Queensland *Biosecurity Act 2014*, also comprising five WoNS, were recorded within the OIA. This included two *Opuntia* species (*O. stricta* and *O. tomentosa*) and Harissa Cactus (*Harrisia martinii*) which were observed as scattered individuals throughout the OIA and Offset Area. Rubber Vine (*Cryptostegia grandiflora*) and Jerusalem Thorn (*Parkinsonia aculeata*) were also observed as scattered individuals and low-density clusters within the OIA, particularly within the Offset Area associated with the Connors River riparian corridor. Similarly, Parthenium (*Parthenium hysterophorus*) was recorded in low density clusters within riparian corridors and associated floodplains.

Other non-native flora species observed included pasture improvement species, such as Buffel Grass (*Cenchrus ciliaris*) and Stylo (*Stylosanthes scabra*) and environmental weeds, including Guinea grass (*Megathyrsus maximus*) and Mimosa Bush (*Vachellia farnesiana*). Biosecurity matters and other introduced flora species recorded in the OIA and Offset Area as part of the field surveys are summarised in ***Table 4***.

Table 4 Introduced flora species within the OIA and Offset Area

Species	Common name	Weed of National Significance	Biosecurity Act 2014 category	Occurrence within OIA
Argemone ochroleuca	Mexican Poppy	No	-	Scattered individuals to low density clusters
Cenchrus ciliaris	Buffel Grass	No	-	Low to high density clusters
Cryptostegia grandiflora	Rubber Vine	Yes	3	Scattered individuals to low density clusters
Harrisia martinii	Harrisia Cactus	No	3	Scattered individuals
Leucaena leucocephala	Leucaena	No	-	Scattered individuals to low density clusters
Megathyrsus maximus	Guinea Grass	No	-	Low to moderate density clusters
Opuntia stricta	Common Prickly Pear	Yes	3	Scattered individuals
Opuntia tomentosa	Velvety Tree Pear	Yes	3	Scattered individuals
Parkinsonia aculeata	Jerusalem Thorn	Yes	3	Scattered individuals to low density clusters
Parthenium hysterophorus	Parthenium	Yes	3	Low density clusters
Stylosanthes scabra	Stylo	No	-	Low density clusters
Urochloa mosambicensis	Sabi Grass	No	-	Low to moderate density clusters
Vachellia farnesiana	Mimosa Bush	No	-	Scattered individuals to low density clusters
Xanthium occidentale	Noogoora Burr	No	-	Scattered individuals to low density clusters

2.3 Threatened Species Presence and Habitat

Habitat suitability for the two threatened species was mapped as per the habitat definitions described in BMA's *Central Queensland threatened species habitat descriptions (Version 5)* (Kerswell et al. 2023).

The following summarises the survey results and habitat mapping with relevance to the species associated with this OMP.

2.3.1 Koala

A single Koala was observed in Queensland Blue Gum (*Eucalyptus tereticornis*) open forest habitat (RE 11.3.4). Additional evidence of activity was observed at locations throughout the OIA in RE 11.3.27b and 11.3.3 (***Figure 4***). Koala habitat within the OIA was categorised as follows:

- Preferred habitat (232.01 ha): includes remnant REs 11.3.3, 11.3.4, 11.3.25 and 11.3.27b, characterised as contiguous remnant eucalypt woodlands, dominated by locally important food tree species, associated with riparian corridors and floodplains.
- Suitable habitat (10.98 ha): high-value regrowth RE 11.8.4, where food trees are present but not dominant and/or areas of eucalypt dominated woodlands located away from permanent or ephemeral water.
- Marginal habitat (40.49 ha): remnant and high-value regrowth RE 11.3.1, only where Coolabah (*E. coolabah*) is an associated species. Also includes non-remnant RE 11.8.4. Considered marginal habitat due the low abundance of Koala food trees and historical disturbance.

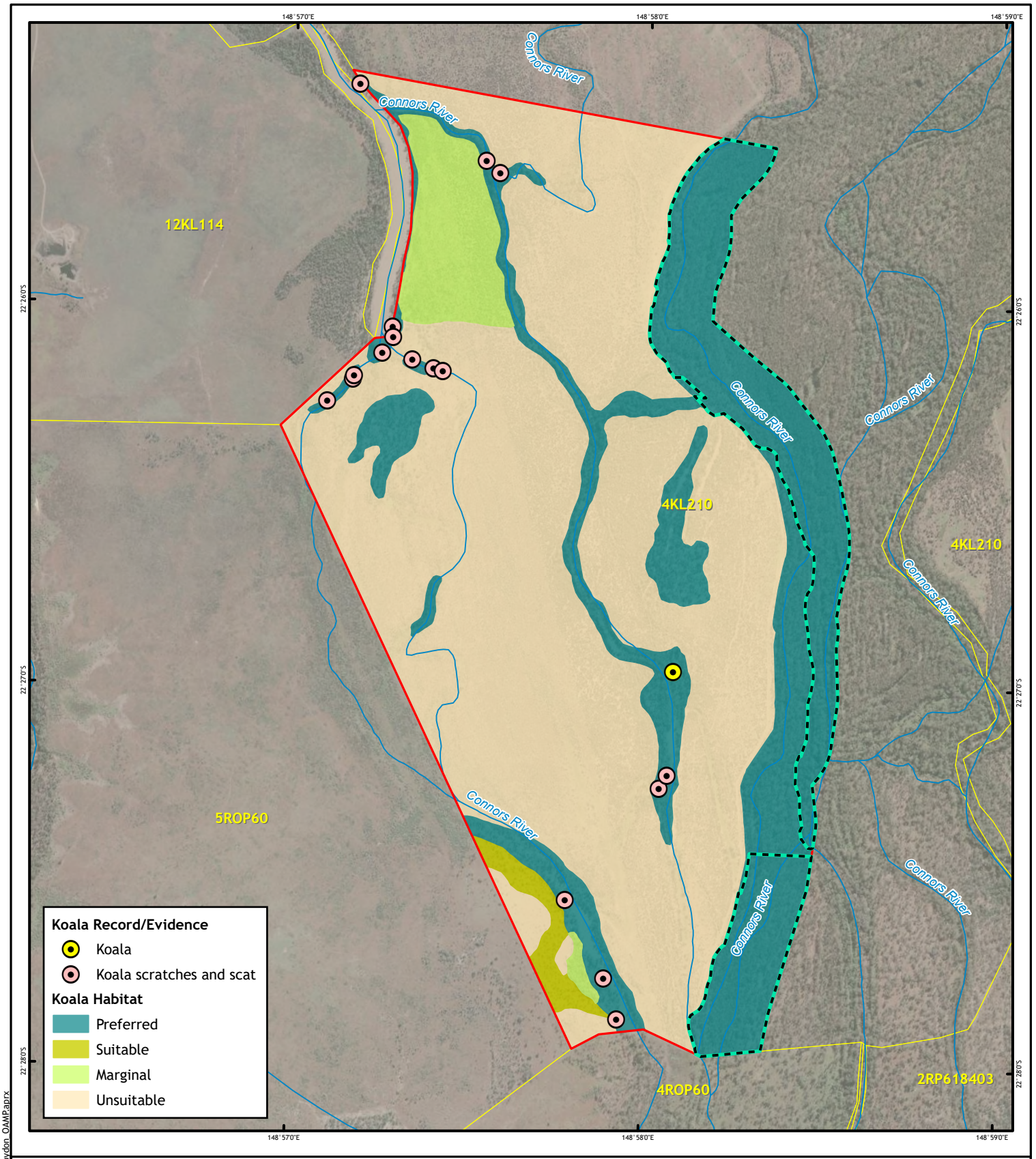
The Offset Area comprises entirely preferred habitat (***Figure 4***). Locally important food trees for the Brigalow Belt Bioregion recorded from the OIA and Offset Area include Queensland Blue Gum, Coolabah, and Narrow-leaved Ironbark (Youngentob et al. 2021).

2.3.2 Greater Glider

Greater Glider was recorded across both surveys during spotlighting at six locations within the Offset Area and wider OIA (***Figure 5***). The species was recorded in Queensland Blue Gum and Coolabah dominated habitat (RE 11.3.4 and 11.3.3). Greater Glider habitat was categorised as follows:

- Preferred habitat (181.76 ha): includes remnant REs 11.3.3, 11.3.4, 11.3.25 and 11.3.27b, characterised as contiguous remnant eucalypt woodlands, comprising suitable hollows and dominated by feed tree species (i.e. breeding/denning and foraging habitat), largely associated with riparian corridors and floodplains.
- Suitable habitat (24.12 ha): corridors of remnant REs 11.3.3 and 11.3.27b that may be utilised for foraging surrounded by non-remnant vegetation, where food trees are present but density of suitable hollows was low, and habitat restricted to a narrow corridor.
- Marginal habitat (12.97 ha): remnant REs 11.3.27b and 11.3.3 containing food trees and scattered hollows but isolated from larger areas of preferred or suitable habitat.

The Offset Area comprises entirely preferred habitat (***Figure 5***). Important trees used for foraging and/or denning by Greater Glider recorded from the OIA and Offset Area include Queensland Blue Gum, Moreton Bay Ash (*Corymbia tessellaris*) and Narrow-leaved Ironbark. Coolabah and Dallachy's Ghost Gum (*Corymbia dallachiana*) have also been previously recorded as a species utilised by the species however its associated use (i.e. foraging or denning) was unspecified (Eyre et al. 2022).



Legend

- Watercourse
- Cadastre
- Offset Investigation Area
- Offset Area

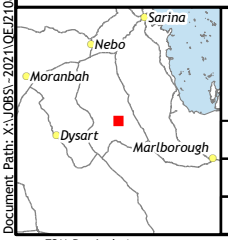
N

Scale 1:25,000 (A4)

0 0.5 1

Kilometres

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator



Notes:
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Cadastre: © DNRMMRRD 2025
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4	Issued for Use	GO	PW	03/03/2026

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FIGURE 4: KOALA HABITAT MAPPING ACROSS OIA AND OFFSET AREA

Offset Area Management Plan
Peak Downs Mine Power Line Realignment Project
BM Alliance Coal Operations Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ21086	4

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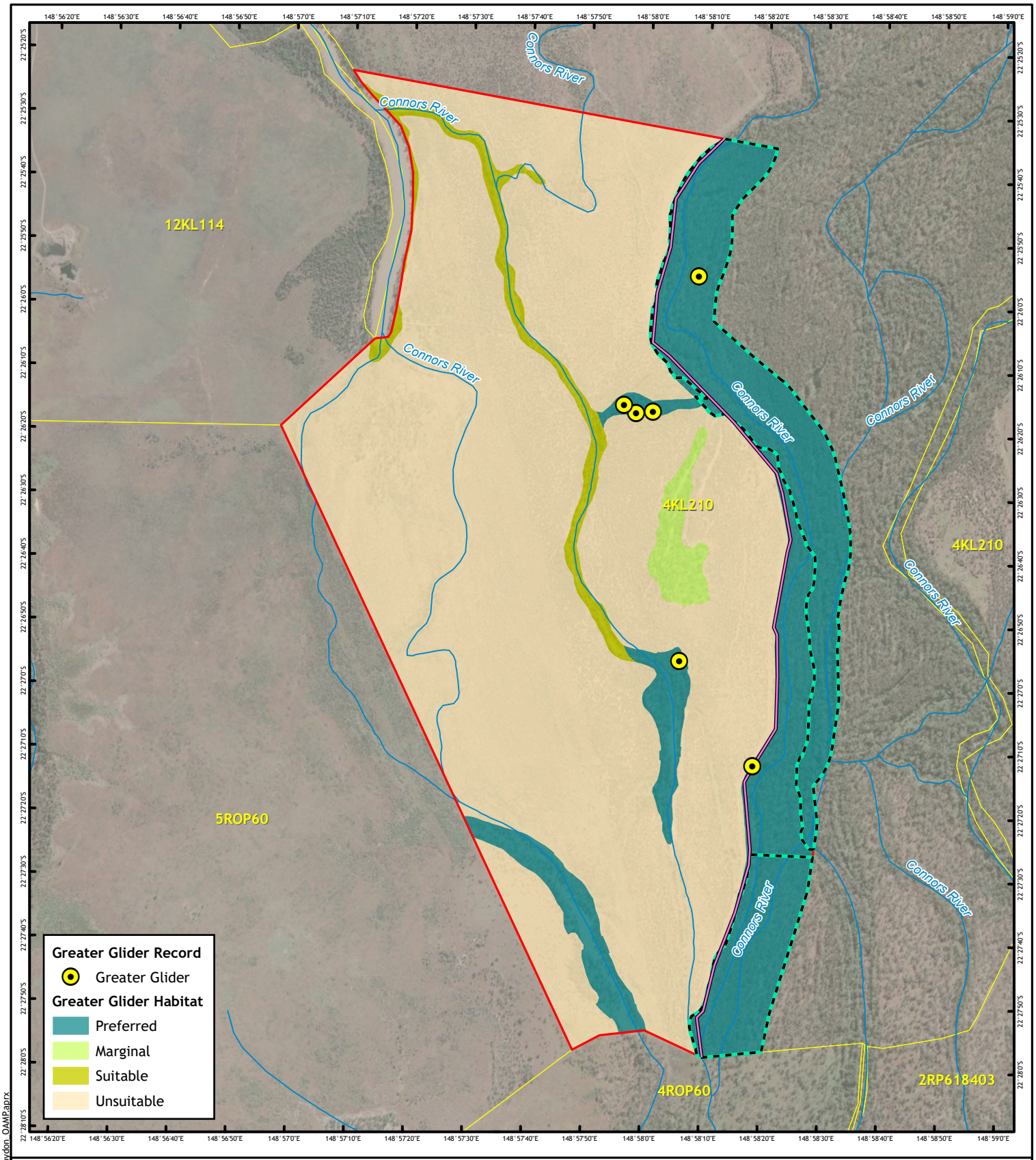

Legend

- Watercourse
- Fencing (Barb-wire Fence)
- Cadastre
- Offset Investigation Area
- Offset Area

N

Scale 1:25,000 (A4)

0 0.5 1

Kilometres

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator

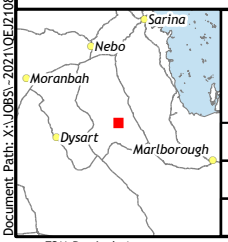

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FIGURE 5: GREATER GLIDER HABITAT MAPPING ACROSS OIA AND OFFSET AREA

Offset Area Management Plan
Peak Downs Mine Power Line Realignment Project
BM Alliance Coal Operations Pty Ltd

Map Number	Job Number	Rev
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2.4 Threats

Known or potential threats to the species have been identified in the *National recovery plan for the Koala* Phascolarctos cinereus (DAWE 2022) and the *Conservation advice for* Petauroides volans *(Greater Glider (southern and central))* (DCCEEW 2022). Threats known to be present in the Offset Area and wider OIA include the following:

- Habitat loss and degradation:
    - Relevant to both species. Habitat loss is considered a primary threat to Koala and a key threat to Greater Glider. Historical vegetation clearing has had a substantial impact on the OIA and surrounds. Much of the OIA has been cleared since at least the 1970s and has been subject to maintenance clearing of regrowth in the intervening years. Analysis of available aerial imagery indicates the Offset Area has been subject to some clearing activity (selective thinning) in the past but further clearing has not been carried out within at least the last 50 years. While Koala can forage on regrowth trees, clearing of old growth trees removes denning opportunities (i.e. large tree hollows) for Greater Glider. Past clearing has likely impacted the abundance of tree hollow availability within the Offset Area.
    - Although not identified for either species, it is likely that the continuation of livestock grazing in the remaining vegetation on the site has some negative impacts on the habitat. Degrading impacts from cattle grazing was observed onsite (e.g. soil compaction and trampling). The ground layer is often dominated by introduced pasture grass species such as Buffel Grass (*Cenchrus ciliaris*) and several woody weeds were observed throughout the OIA including Parkinsonia (*Parkinsonia aculeata*), Mimosa Bush (*Vachellia farnesiana*), Velvety Tree Pear (*Opuntia tomentosa*) and Harrisia Cactus (*Harrisia martinii*). Rubber Vine (*Cryptostegia grandiflora*) was also observed throughout the OIA and Offset Area and can form dense thickets and smother riparian vegetation, resulting in tree canopy death (Weeds Australia, 2025).
- Mortality from introduced predator attack:
    - Feral dog attack is noted as relevant to Koala (DAWE 2022). Evidence of feral dogs (tracks and a dead individual) were recorded within the OIA in proximity to water sources. Known database records from the wider area exist. Feral Cats (*Felis catus*) and Red Fox (*Vulpes vulpes*) are considered a threat to Greater Glider (DCCEEW 2022).
- Barbed wire fencing:
    - Only noted as relevant to Greater Glider. The species is known to become entangled in barbed wire fencing, particularly in areas of more open forest with a lower canopy. Barbed wire fencing was observed in the OIA and runs parallel to the Offset Area (***Figure 5***).
- Altered fire regimes:
    - Relevant to both species. Although no evidence of recent fire was observed within the OIA or surrounds during surveys, higher fuel loads were observed throughout remnant vegetation surrounding the Offset Area, potentially increasing the risk of high intensity fires.

The Offset Area is currently owned and operated by a landowner that undertakes cattle grazing throughout the property. As such, key threatening processes on the Offset Area are weed incursion, fire risk, feral predator presence and intensive cattle grazing, which have the potential to further degrade the quality of existing habitat and potential for the habitat to support Koala and Greater Glider should the area not be secured in a legally binding manner.

2.5 Landscape Connectivity

The OIA and Offset Area occurs within a cleared and highly fragmented landscape due to historical and ongoing livestock grazing practices. As identified previously, channels associated with the Connors River are mapped as providing riparian biodiversity corridors considered to be of State significance. This includes State Riparian corridors located within and adjacent to the Offset Area (***Figure 6***). The Offset Area is connected to surrounding vegetation associated with the State significant riparian corridor system along the Connors River.

The Offset Area is also in proximity to an existing BMA and 'Third party offset area' and the Caval Ridge Mine Horse Pit Extension project (CVM HPE) offset area located to the northeast. The Proponent is also investigating opportunities to use the Brigalow (*Acacia harpophylla*) regrowth communities that lie adjacent to the Offset Area as environmental offsets for impacts on Ornamental Snake resulting from a separate project proposed by BMA.

Locating the current Offset Area close to nearby offset areas will allow for cumulative ecological benefits to accrue creating a larger tract of habitat that will increase landscape dispersal opportunities for the two species (particularly Greater Glider) and provide greater benefit to a range of fauna species utilising the area.

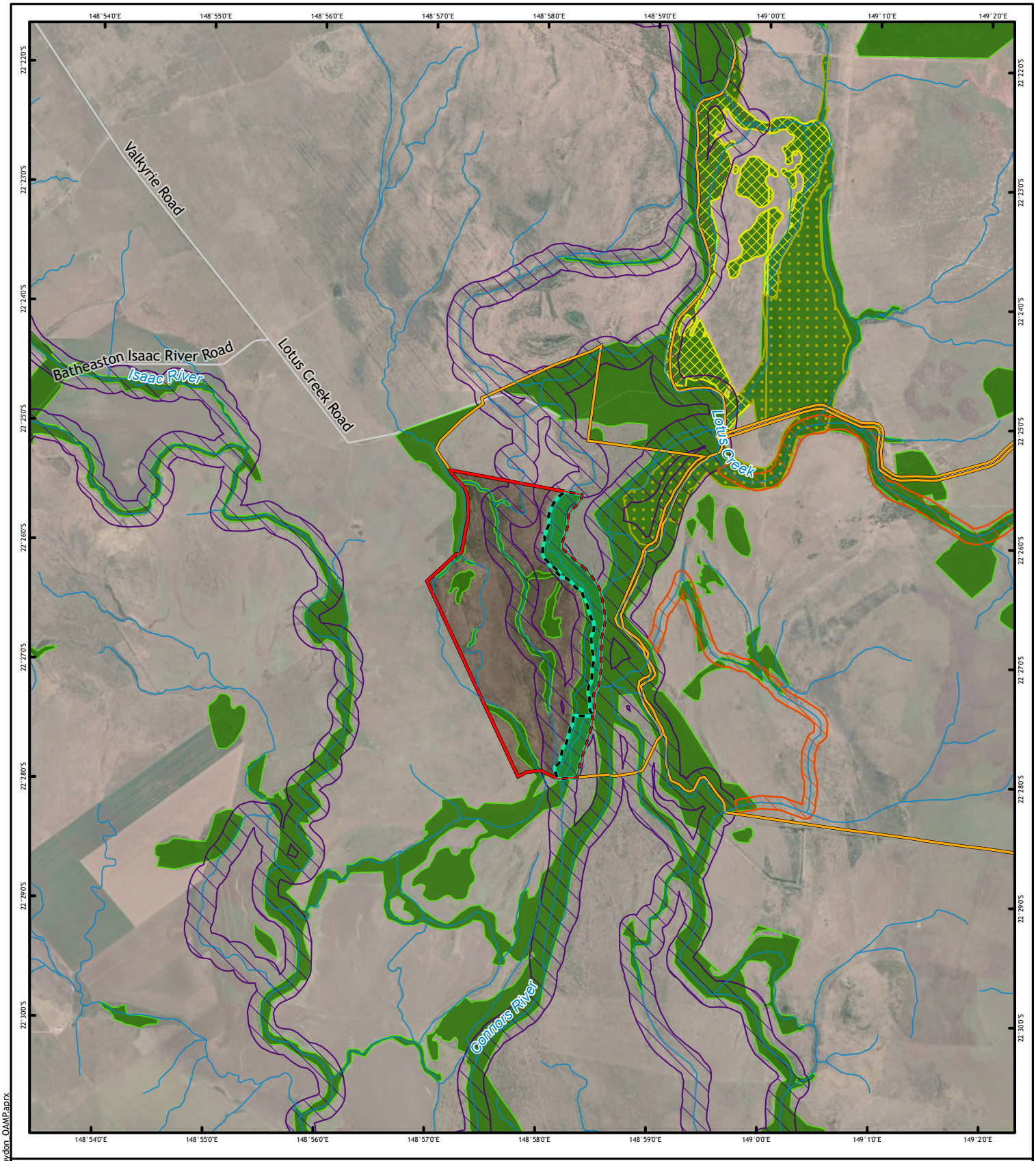
2.6 Habitat Quality

A total of ten habitat quality assessment sites were surveyed across the three assessment units within the Offset Area. This number of assessment sites exceeds the suggested amount as outlined in the MHQA. A summary of the assessment units, number of assessment habitat quality sites and associated baseline habitat quality scores for the Koala and Greater Glider are provided in ***Table 5***. An overview of the location of habitat quality sites within the Offset Area are depicted in ***Figure 7***.

Detailed Habitat Quality scores for each MNES, including Site Condition, Site Context and Species Stocking Rate scoring, are provided in ***Appendix B***.

Table 5 Summary of species habitat quality scores, assessment units and site replication within the Offset Area

MNES	Assessment units	Area (ha)	Number of site replicates within the Offset Area	Habitat quality score (/10)
Koala *Phascolarctos cinereus*	AU 1: Remnant RE 11.3.3	58.73	4	7.34 (**7**)
	AU 2: Remnant RE 11.3.4	35.09	3	
	AU 3: Remnant RE 11.3.25	21.74	3	
	Total	**115.56**	**10**	
Greater Glider *Petauroides volans*	AU 1: Remnant RE 11.3.3	58.73	4	7.12 (**7**)
	AU 2: Remnant RE 11.3.4	35.09	3	
	AU 3: Remnant RE 11.3.25	21.74	3	
	Total	**115.56**	**10**	



Legend

- Watercourse
- Road
- Croydon Station
- Offset Investigation Area
- Existing Croydon Offset Area
- Offset Area
- Remnant Vegetation
- CVM HPE Offset Area

State Mapped Biodiversity Corridors

- Regional - Riparian
- State - Riparian

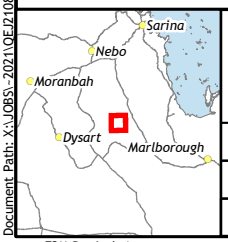
N

Scale 1:80,000 (A4)

0 1 2 3

Kilometres

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator



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4	Issued for Review	GO	PW	3/03/2026

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FIGURE 6: CORRIDORS AND CONNECTIVITY ASSOCIATED WITH THE OFFSET AREA

Offset Area Management Plan
Peak Downs Mine Power Line Realignment Project
BM Alliance Coal Operations Pty Ltd

Map Number	Job Number	Rev
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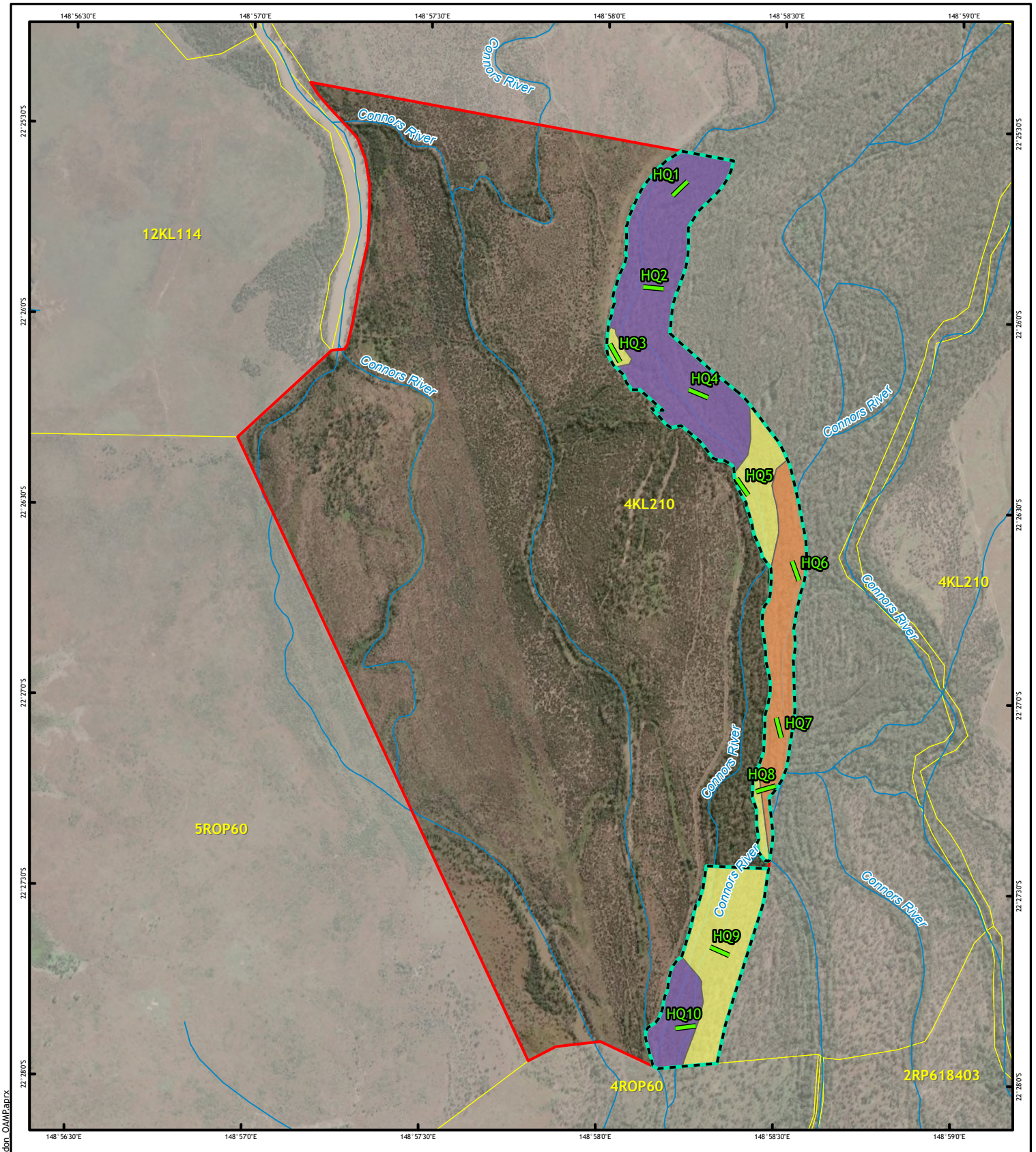

Legend

- Habitat Quality Site
- Watercourse
- Cadastre
- Offset Investigation Area
- Offset Area

Assessment Unit Area

- AU1 - Remnant RE 11.3.3
- AU2 - Remnant RE 11.3.4
- AU3 - Remnant RE 11.3.25

N

Scale 1:25,000 (A4)

0 0.5 1

Kilometres

Coordinate System: GDA2020 MGA Zone 55
Projection: Transverse Mercator

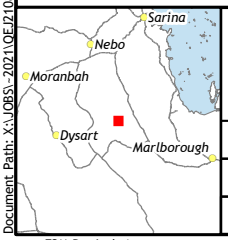

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FIGURE 7: ASSESSMENT UNITS AND HABITAT QUALITY SITES WITHIN THE OFFSET AREA

Offset Area Management Plan
Peak Downs Mine Power Line Realignment Project
BM Alliance Coal Operations Pty Ltd

Map Number	Job Number	Rev
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3 Offset Management

3.1 Offset Management Framework

The management of the offset commitment will be implemented in accordance with an Offset Management Framework (OMF) centred on an adaptive management cycle. The cycle is based on the **PLAN – DO – CHECK – ACT** Model used in the overarching BMA Environmental Management System (EMS) (refer ***Figure 8***). The accountability for implementation of the framework will lie with BMA. However, for some aspects (e.g. stock management, fence monitoring, habitat quality assessment) a suitably qualified person will be appointed and held accountable to BMA to deliver the necessary outcomes (e.g. maintenance of infrastructure and monitoring reports).

A key aspect of the framework is the feedback cycle facilitated by CHECKing:

- Outcomes of monitoring, investigating contributing factors to results not considered in line with milestones or key performance indicators (KPIs) (ACT)
- Adapting approaches to management (informed by experts where appropriate) with the aim of improving likelihood of success (ACT) and
- Circling back to updating documentation and work plans (PLAN) to ensure improved actions are then incorporated and implemented (DO) in future

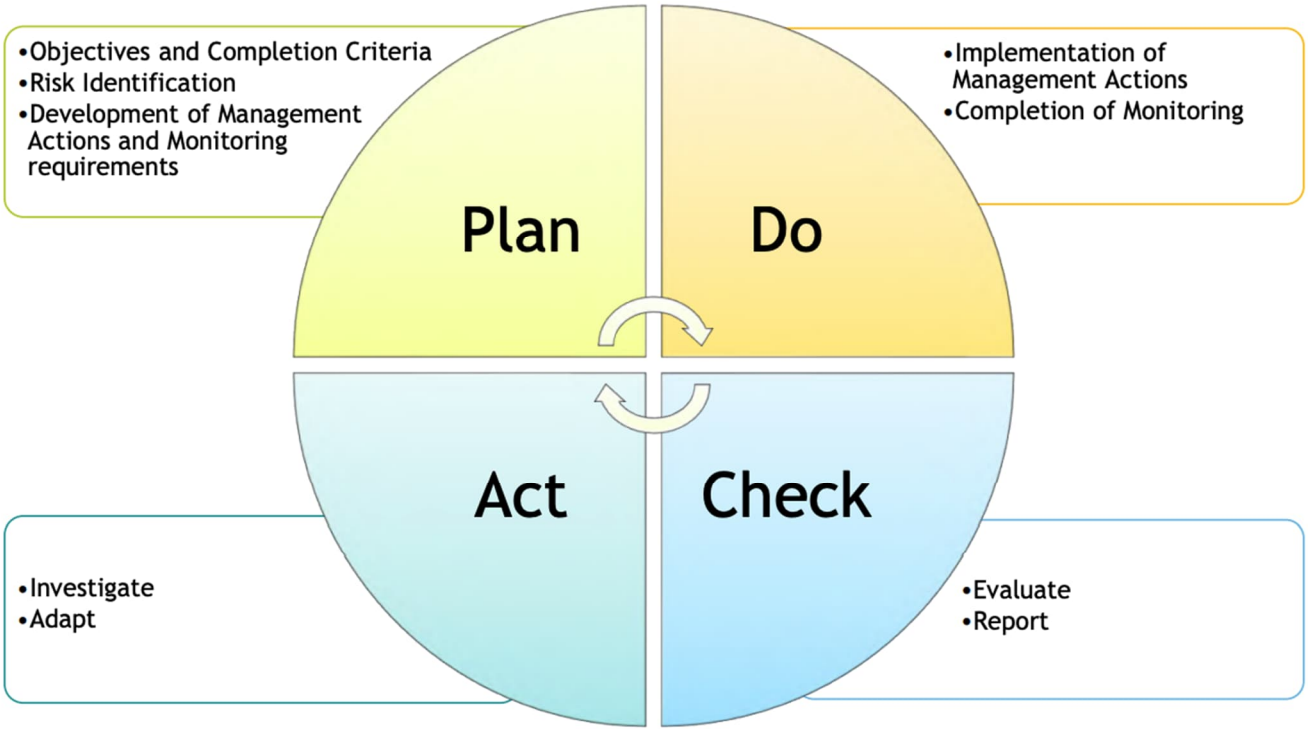

Figure 8 PLAN - DO - CHECK - ACT Model diagram

The OMF encompasses the following key components:

PLAN

- Offset Management Objectives – the understanding of the MNES values to be offset and threats to those values drives the management objectives for the site. The objectives are outlined in ***Section 3.2***.
- Completion Criteria – final completion criteria specific to the management objectives have been identified. Performance targets are defined to measure performance of the management actions during the offset management period and progress toward final completion criteria. Criteria are shown in ***Section 3.4***.
- Risk Planning – a risk assessment identifies threats to the management process whereby management actions and monitoring design can incorporate precautionary measures, or ensure monitoring parameters are appropriate for detection of negative results. The risk assessment is found in ***Appendix E***.

- Management Actions Definition – management actions have been designed specific to the desired conservation outcomes of the offset. Actions are documented in terms of method, location, timing for implementation and responsibility. In addition, action specific performance indicators have been defined for each management action and options for corrective actions identified. Management actions and schedule are documented in ***Section 3.3***.
- Monitoring Program – the monitoring requirements are documented in ***Section 4***. Firstly, baseline data will be collected to establish the benchmark for reporting against. Baseline data collection will be undertaken by a suitably qualified person depending on the nature of the parameter (e.g. ecologist will be required for measuring of habitat quality whereas the location and condition of fire breaks would be assessed by a land manager).
- Establish Process – obligations of approval and management/monitoring commitments will be recorded in the BMA Coal Legal Obligations Register (or comparable management systems of the time). A corresponding mechanism for assigning and tracking monitoring, management actions, reporting etc. will be implemented (e.g. the BMA Enterprise Work Management System (SAP) that is currently in place). Work orders are developed to provide a detailed breakdown of tasks to be completed. The SAP currently provides a mechanism for tracking activity completion and assigning work orders (among other things).

Outcomes of the **PLAN** component of the framework are documented in the sections below. The nature of the adaptive management cycle is such that the management actions and monitoring program will be updated and implemented where investigation outcomes identify a necessary amendment.

DO

- Implementation – management actions and the monitoring program will be implemented in accordance with the work orders as they are scheduled, currently provided within the SAP. Implementation will be undertaken by suitably qualified personnel depending on the nature of the task.
- Operation – the Offset Area will be operated in accordance with the management strategies defined within this OMP. This includes land use restrictions identified to ensure the delivery of an improved environmental outcome, and the legally binding mechanism under the Vegetation Management Act 1999 (VM Act) (Qld), by which the offset will be secured.

CHECK

- Evaluate – outcomes of the monitoring undertaken will be evaluated following each monitoring event. The method of evaluation will be dependent on the parameter measured and relevant target / KPI for comparison. The monitoring schedule is shown in ***Section 4***.
- Report – results of all monitoring will be captured, and data collected will be maintained in an appropriate data storage format. Maintaining a record of results throughout the life of the offset will allow for trends to be identified (if relevant to measuring success) and measurement against KPIs, performance targets and completion criteria.

ACT

- Record – non-conformances (i.e. if actions were not completed within schedule) will be recorded in the BMA Event Management System, triggering an investigation. Non-conformance investigation will be completed, and solutions identified and implemented.
- Investigate - in the event monitoring results identify performance targets or KPIs are not reached, or other aspects of monitoring indicate areas of concern, an investigation will be undertaken. The investigation will:
    - Identify key drivers / parameters that relate to the monitoring result not in line with milestones or KPIs.
    - Require development of suitable mitigation or corrective actions. Where items can be solved in the short term, work order notifications will be raised for implementation (e.g. minor fencing repair). For major actions or repair works, a plan for completion will be developed in consideration of budgeting cycle or if the work is considered urgent, escalated for prioritisation. Where actions are required for impacts other than maintenance or repair activities (i.e. a change in the approach to managing the property) a suitably trained ecologist will be consulted to inform the identification of appropriate corrective actions (specifically actions that are scientifically robust and targeted to the objectives of meeting completion criteria for Koala and Greater Glider conservation).
    - The investigation may require multiple stakeholders' input including:
        - BMA environment representative.

  - The suitably qualified persons (e.g. ecological consultants and/or experts in specialist disciplines, landholder, or land management specialists) depending on the complexity of the outcome.

- Adapt – where investigation outcomes require a long-term amendment to the OMP (i.e. for actions or monitoring changes to be permanently implemented rather than one-time-only repair actions) relevant documents will be updated and changes to scheduling, obligations or monitoring revised (i.e. cycle back to the PLAN component) to update work orders. These updates will enable implementation of revised management and monitoring through the DO component of the framework.

Management and monitoring will continue in accordance with **PLAN** documentation (and subsequent updates installed as a result of the investigation process), renewing the implementation of the **DO** component. The framework cycle will continue until final completion criteria are determined to be reached, or for the minimum 20-year term (whichever is longer).

The OMP will be formally reviewed every five years (at a minimum, and more frequently where monitoring outputs trigger adaptive management updates). The review will consider results of all monitoring including information gathered by the suitably qualified person/s, results of ecological condition scoring and pest animal monitoring. The formal review will be a further opportunity for effectiveness of management actions to be assessed, and amendments considered for implementation.

3.2 Management Objectives

The overall management objective of the OMP is to achieve a conservation gain for Koala and Greater Glider.

Section 4.2.1 of the EOP observes a conservation gain, *"is the benefit that a direct offset delivers to the protected matter, which maintains or increases its viability or reduces any threats of damage, destruction or extinction. A conservation gain may be achieved by:*

- *Improving existing habitat for the protected matter*
- *Creating new habitat for the protected matter*
- *Reducing threats to the protected matter*
- *Averting the loss of a protected matters or its habitat that is under threat"*

The management objectives of the OMP aim to achieve the following conservation benefits:

- To protect and improve existing habitat within the Offset Area for Koala and Greater Glider so in the long-term providing:
  - The equivalent area of habitat value (at a minimum) to that of the Project impact site; and
  - Greater conservation value than its current form.
- Reduce threats to Koala and Greater Glider in the local area associated with the Offset Area and surrounds.

It is important to note that the Offset Area currently comprises remnant vegetation that is associated with a large contiguous patch associated with the Connors River riparian corridor. As such, the current habitat quality for the Koala and Greater Glider are moderate to high (score of 7). To achieve an overall 'net gain' for both species in accordance with the EPBC Act Offset Policy, the Offset Area exceeds offset acquittal (i.e. >100%) as determined by the Offset Assessment Guide (refer to ***Section 1.2*** and ***Appendix C***).

3.2.1 Additionality

Under Section 7.6 of the EOP, "Offsets must deliver a conservation gain for the impacted protected matter, and that conservation gain must be new, or additional to what is already required by a duty of care or to any environmental planning laws at any level of government".

The management actions and the resulting offset outcomes are being provided to compensate the action impacts. The management actions and associated conservation gains outlined in the following section are targeted to the Koala and Greater Glider, and additional to any existing land management occurring in the OIA and are additional to the obligations prescribed by relevant legislative requirements, guidance material, schemes or programs. The *Biosecurity Act 2014* places obligations relating to the spread of biosecurity risks on landholders in Queensland. This obligation includes an array of management techniques including control, restrictions on the movement of people, vehicle, machinery and materials between properties, and reporting of biosecurity risks (Queensland

Government, 2023). The regulation "takes a risk-based approach to biosecurity threats and is less prescriptive than previous legislation. This allows greater flexibility and more responsive approaches to manage each specific circumstance" (Queensland Government, 2023). Further, this risk-based approach factors in feasibility and expense (e.g. is the cost proportionate to the risk to human health, social amenity, the economy or the environment) (Queensland Government, 2023). Considering this, seldom are private landholders voluntarily investing in large scale, long-term weed management unless it is causing drastic land degradation and/or income impacts, or by way of regulatory action. As such, the active and targeted management of weeds within the Offset Area as part of the commitments in this OMP is additional to any existing requirement and practices.

3.2.2 Offset Area Protection Mechanism

The Offset Area is a private property and is not mapped as a protected area, in that it is not a national park, nature refuge, wildlife reserve, state forest, council reserve and there is no current conservation covenant on the land. The legal security that will be provided as part of the offset is additional by way of a formal legal protection mechanism.

In summary, the proposed management measures (refer to ***Section 3.3***) are above any current obligation present on the land, and will result in:

- Improvement in MNES species habitat through:
    - active weed management
    - natural regeneration of habitats via control of livestock grazing
    - pest and fire management as well as removal of barbed-wire fences (top strand), reducing current threatening processes; and
    - installation of nest boxes to improve availability of denning habitat for the Greater Glider.
- Securement of the Offset Area as Category A area using a Voluntary Declaration (VDec) under the provisions of the VM Act, as well as via a covenant pursuant to the *Land Act 1994*, will provide a level of security above what is already in place within the Offset Area. Specifically, securement of the Offset Area will protect the Offset Area from:
    - future changes in legislation which could result in reduced protection; and
    - future clearing, including clearing of the currently-mapped Category B regulated vegetation that could potentially be undertaken as Exempt Clearing Work or under future approval.

3.3 Management Actions

A range of management actions have been developed under the OMP in order to achieve the proposed management objectives. The management actions have also been developed to be consistent with the S.M.A.R.T. principle: Specific, Measurable, Achievable, Relevant and Time-bound.

The management actions have been designed to result in net gain for the species through:

- Improve the general condition of habitat areas for Koala and Greater Glider.
- Reduce / remove degrading processes and key threats across the Offset Area.
- Improve den site opportunities for Greater Glider across the Offset Area.

The management actions have been developed with respect to the conservation and management priorities identified in the following Commonwealth documents:

- National recovery plan for the Koala *Phascolarctos cinereus* (DAWE 2022).
- Conservation advice for *Petauroides volans* (Greater Glider (southern and central)) (DCCEEW 2022).
- Threat abatement plan for predation by feral cats 2024 – considered relevant to both species (DCCEEW 2025).

The proposed management actions to be implemented under the OMP fall under the following management categories:

1. Securing the Offset Area
2. Habitat improvement
    i. Natural regeneration of habitat

   ii. Reduction of barbed-wire entanglement (Greater Glider)
   iii. Installation of suitable nesting boxes (Greater Glider)
3. Land use management
   i. Controlled livestock grazing
   ii. Vegetation clearing restrictions
4. Weed and pest management
   i. Control and monitoring of weeds
   ii. Control/reduction of wild dog and other pests
5. Other management
   i. Fire management
   ii. Infrastructure maintenance

The management actions are summarised in ***Table 6*** and discussed in detail where required in the subsequent sections (***Sections 3.3.1*** to ***3.3.4***).

Table 6 OMP Management Actions and corresponding Corrective Actions

Management Category	Methods	Location	Responsibility	Timing
Secure the Offset Area				
Legally secure the land	Offset Area initially secured via VDec over the site as of 'high conservation value' under the VM Act in the short term. Offset Area subsequently secured via nature covenant under the Queensland *Land Act 1994*.	Offset Area	BMA Land Tenure Team	VDec established within 12 months of commencement of the Action. Nature Covenant application commenced within 12 months of commencement of the Action. VDec to be removed following finalisation of Nature Covenant.
Restrict Access	Signage to be erected at Offset Area major access points that identifies access restrictions and instructions such as weed hygiene protocols and contact details.	Offset Area	Landowner or suitably qualified professional	Signage to be in place within 12 months of securing the Offset Area. Signage to remain in place for the duration of the Offset.
Habitat Improvement				
Habitat regeneration	Natural, or passive, regeneration will be allowed to occur by the application of the formal management arrangement for the Offset Area. Incidental clearing, changes in land use or other disturbance to habitat will not be undertaken unless required for the purposes of managing the land (i.e., for fire breaks, fencing, etc).	Offset Area	Suitably qualified professional	Restrictions will apply upon securement of the VDec.
Reduce glider entanglement risk	The top strand of any barbed wire fencing within 100 m of Greater Glider habitat within the Offset Area will be either replaced by plain wire or covered with poly pipe or similar to reduce the risk of entanglement by Greater Gliders. Any new internal fencing installed to control cattle access to the Offset Area will have a top strand of plain wire to remove the risk of entanglement by Greater Gliders.	Offset Area	Landowner or suitably qualified professional	Fences will be modified within 12 months of securing the VDec for the Offset Area. Fences to be maintained consistent with this requirement for the duration of the Offset.
Installation of suitable nest boxes for Greater Glider	Species-specific nest boxes will be installed within the Offset Area. The density and placement of the boxes will be assessed and determined by a suitably qualified person whereby hollow density assessments will be undertaken through each assessment unit in the Offset Area to identify priority areas for nest boxes to be installed and associated numbers.	Offset Area	Suitably qualified professional	Assessment of suitable locations/assessment units to install nest boxes as part of baseline assessments (Year 0), with boxes installed prior to the start of Year 1. Boxes will be monitored Years 1, 2 and 5, and then every 5 years over the life of the Offset. Maintenance/replacement

Management Category	Methods	Location	Responsibility	Timing
	Installed nest boxes will be monitored for evidence of utilisation by Greater Gliders over the duration of the offset and maintained/replaced where required.			will occur within 6 months of identification of disrepair of boxes.
Land Use Management				
Controlled grazing regime	Controlled grazing will be implemented according to the following guidance: a) During the wet season (December to March) grazing in the Offset Area will be excluded, where the presence of cattle presents a greater risk of trampling and soil compaction. Stocking rates will aim to maintain a minimum native perennial grass cover threshold of 60% cover, or as per relevant Queensland Government requirements such as the *Agricultural ERA standard for beef cattle grazing in the Great Barrier Reef catchment*. b) Outside of the wet season, grazing will occur provided BioCondition benchmarks for native perennial grass cover are achieved / maintained in grazed REs per the below (*Queensland Herbarium, 2025*): i. RE 11.3.3 – 45% ii. RE 11.3.4 – 55%; and iii. RE 11.3.25 – 35%. c) For fuel reduction purposes. d) To control exotic pasture grasses. The grazing regime must be timed such that native grasses are allowed to flower and set seed.	Offset Area	Landowner or suitably qualified professional	Controlled grazing will commence as soon as appropriate fencing is installed for the Offset Area and no later than the end of Year 1. The controlled grazing stocking density to be applied will be informed by 6-monthly native perennial grass cover monitoring (***Table 9***) and adjusted in accordance with seasonal requirements and outcomes of monitoring. Controlled grazing may occur for the life of the Offset depending on outcomes of the condition monitoring.
Restrict vegetation clearing	Vegetation clearing in the Offset Area is restricted to: • That necessary for the control of non-native plants or declared pests. • Establishing and maintaining fence, firebreak, road or vehicular track and the clearing cannot reasonably be avoided or minimised. • Ensure public safety. • Where vegetation clearing is sought for any other purpose, the landowner or other person proposing to undertake the clearing must contact the relevant department administering the VM Act and the Proponent.	Offset Area	Landowner or suitably qualified professional	Vegetation clearing restrictions will apply from securement of the VDec for the duration of the Offset.
Weed and Pest Management				

Management Category	Methods	Location	Responsibility	Timing
Weed monitoring and control	All vehicles new to the Offset Area must follow best practice weed hygiene practices, including ensuring vehicle and machinery is clean, weed and seed free before entering the Offset Area.	Offset Area	Landowner or suitably qualified professional	Weed hygiene practices will be implemented in accordance with best-practice weed hygiene measures stipulated under the Queensland Biosecurity Act 2014 and relevant Queensland Department of Agriculture and Fisheries (DAF) weed hygiene guidance, commencing from the securement of the VDec and applied for the duration of the Offset.
	Control infestations of restricted invasive plants under the Queensland *Biosecurity Act 2014* using recommended species-specific control methods. *Note: Buffel grass and other non-native pasture grasses are not referred to as a weed as they are not declared or restrictive invasive plants under the Biosecurity Act 2014. Control of introduced grasses will be managed through dry season grazing to reduce fire fuel loads and allowing canopy cover to increase.*	Offset Area	Landowner or suitably qualified professional	If detected during monitoring events (see ***Table 9***) corrective actions will be implemented within 12 months of identification.
Control of wild dogs and other pest fauna	Co-ordinated annual baiting as part of the wider Croydon Station feral animal management. Poision baits, using sodium monofluroacetate (1080) carry a high risk of poisoning non-target species. A such, consideration to the timing, size of bait and amount of bait deployed must be considered to mitigate impacts to non-target species.	Offset Area	Landowner or suitably qualified professional	Annual baiting events undertaken by Landowner or suitably qualified professional. If results of monitoring events (see ***Table 9***) indicate significant[2] increase in presence, annual aerial shooting events will be introduced as a corrective action and will be implemented within 12 months of the monitoring results, during appropriate seasonal conditions.

Management Category	Methods	Location	Responsibility	Timing
Other Management				
Fire management	Firebreaks will be maintained to minimise the potential of high-intensity uncontrolled fire events. New firebreaks will be co-located with access tracks and fence lines on the outside of the Offset boundary. Access tracks will be maintained to allow fire fighting vehicles to effectively access the Offset Area. Low-intensity 'cool burn' fire management to be implemented in areas as identified and directed by a suitably qualified person.	Offset Area	Landowner or suitably qualified professional	Fire management, including new firebreaks will be installed within 12 months of securing the Offset Area. Firebreaks and access tracks will be maintained for the duration of the Offset.
Infrastructure Maintenance	Following an extreme weather event (fire, flood or cyclone) the Offset is to be inspected to investigate if repair / restoration / revegetation is required to maintain the offsets progress toward completion criteria.	Offset Area	Landowner or suitably qualified professional	Inspection to occur 6 monthly, and within 2 weeks following an extreme weather event, where it is safe to do so.

3.3.1 Offset Securement

There are a number of mechanisms under Queensland legislation for legally securing lands for the purposes of providing environmental offsets. The Offset Area will be secured through a VDec of the site as of 'high nature conservation value' under the VM Act. Legal securement of the Offset Area via this mechanism will occur within 12 months of commencement of the action. During this time, a nature covenant under the Queensland *Land Act 1994* will also be progressed to bind current/future landowners to the offset's conservation objectives to ensure its enforceability and longevity. The OMP will be attached to the legal mechanism used to legally secure the Offset Area.

3.3.2 Habitat Improvement

Habitat regeneration

Natural regeneration is most suitable in areas containing mature vegetation, as natural recruitment suggests the presence of a viable seed bank. Provided that the vegetation contains species from each stratum, this method is best for restoring an area to its undisturbed state. Natural, or passive regeneration, in conjunction with other management measures (i.e. weed management, fire management and fencing etc.), will utilise existing vegetation and soil seed bank to promote rehabilitation through natural processes. Over the duration of the offset the existing native vegetation will assist in the re-introduction of native species to areas previously occupied by environmental weeds.

Where natural regeneration is not reaching OMP interim targets, corrective actions will be determined first through an investigation to identify potential drivers. A suitably qualified ecologist will be consulted to inform the development of scientifically robust management actions and possible corrective actions (i.e. revegetation planting) in order to achieve proposed performance criteria and associated interim performance targets / completion criteria.

Reduction of barbed-wire entanglement risk (Greater Glider)

Barbed-wire fences are a major threat to the Greater Glider, leading to entanglement and death (DCCEEW, 2022). Initial assessment of the current extent of barbed-wire fencing within the Offset Area identified approximately 5 km as having a top strand of barbed wire (***Figure 5***). These will be modified as per ***Table 6*** to reduce the threat of entanglement to Greater Glider.

Installation of suitable nesting boxes (Greater Glider)

Ecological survey data of the Offset Area identified areas containing a lower relative density of natural hollows, potentially resulting from previous disturbance (storm damage and historical disturbance). Hollows are anticipated to increase naturally over time; however, due to the long timeframes required for hollow development, suitable denning habitat through nesting boxes will be installed in the Offset Area for the Greater Glider. Availability of suitable hollows for these hollow-dependent species is a known limiting factor of their presence and use of habitat. Nest boxes will increase the density of suitable denning, refugia trees and the quality of suitable habitat available for the MNES. Installation location, height, orientation and attachment methods will be determined at the time of installation and undertaken in accordance with recognised best-practice guidelines for artificial hollows (e.g. (Biodiversity Conservation Trust, 2020)

3.3.3 Land Use Management

Controlled livestock grazing

Grazing pressure by livestock can reduce habitat condition by slowing and preventing the recruitment and growth of grasses and understorey shrubs, as well as the amount of litter and fallen timber, resulting from trampling and grazing selection (Butler 2008). Cattle often use patches of wooded areas for shade; therefore, tending to selectively graze palatable plant species, facilitate the spread of introduced weeds and increase soil compaction (Tasker & Bradstock 2006).

At the time of surveys, cattle grazing was evident throughout the Offset Area and surrounds, however, impacts from cattle (i.e. overgrazing and/or soil compaction) were minimal. Changes to livestock densities may be considered following significant rainfall events to minimise compaction and disturbance of soil cracks and allow native grass to seed.

Grazing practices will be adjusted from the existing regime as detailed in ***Table 6*** with the objective of allowing progress of recruitment and growth processes.

3.3.4 Weed and Pest Management

Weed monitoring and control

Weeds have the ability to alter the floristic composition and structure of vegetation communities. This occurs because many weed species can rapidly colonise disturbed areas following both natural and anthropogenic disturbance events (e.g. fire and land clearing). Once established, weeds may dominate the biomass within a community, restrict the growth and recruitment of native plant species, and alter overall community composition.

In addition, some weed species can significantly influence ecological processes and successional trajectories, for example by increasing fuel loads and altering fire regimes. These changes may result in more frequent or higher-intensity fires, which can adversely affect native plant species assemblages and inhibit natural recovery processes.

Not all weed species have the capacity to detrimentally alter vegetation communities at a landscape scale. Accordingly, monitoring activities will prioritise the identification and mapping of weed species listed under the *Queensland Biosecurity Act 2014* and Weeds of National Significance (WoNS). However, other non-listed weed species may also negatively affect native vegetation communities and should therefore be recorded during baseline ecological surveys where present.

Control of wild dogs and other pests

The abundance and density of feral pests can fluctuate over time depending on the climatic conditions and availability food resources. Pest species impact native species, including target MNES, directly through predation and indirectly through destruction of habitat. Although impacts to wildlife by wild dogs (*Canis lupus*) are not fully understood (Department of Agriculture and Fisheries, 2024), studies indicate a direct link between wild dogs and koala mortality (Beyer et al., 2018; Gentle et al., 2019). Pest species have also caused a widespread habitat decline, such as feral pigs (*Sus scrofa*) which degrade habitat quality through the destruction of plants, soil erosion, reductions in water quality and spread of weeds (Department of the Environment and Heritage, 2005).

Current control methods for feral pests within Croydon Station and the existing offset areas consist of periodic baiting.

3.4 Offset Completion Criteria

The intent of this OMP is to achieve the forecasted habitat quality improvements within the shortest allowable timeframe possible. To demonstrate a conservation gain has been achieved for each MNES, interim targets and completion criteria have been identified based on the baseline habitat quality (refer to ***Section 2.6***) and proposed modelled improvements in key habitat quality attributes detailed within ***Appendix D***. The modelled habitat quality improvements are based on the targeted management measures detailed within this OMP and resulting increases to attributes scored within the Offset Area and the estimated time for improvement to occur. For example, the removal of threats (e.g. barbed-wire top strand fences, weeds, pest animals) and installation of nest boxes is expected to have influence on the habitat quality within a shorter timeframe; while improvements associated with non-native cover, native perennial grass cover, recruitment and species richness will be recognised over a longer timeframe.

Indicative interim performance targets to assess the effectiveness of management measures in improving overall habitat quality over the duration of the offset, and to ensure final completion criteria are achieved for the Koala and Greater Glider, are provided in ***Table 7***. Key habitat quality attributes/criteria in the improvement over the duration of the offset have also been summarised. Additional interim performance targets and completion criteria regarding species occurrence/density and nest box utilisation have also been incorporated into the performance criteria.

It is noted that the same methodology was applied to assess habitat quality within the Project impact site, in order to appropriately identify the requisite completion criteria. Habitat quality scores were calculated using site condition, site context and species stocking rate (refer to ***Appendix A***). The interim and final habitat quality scores will be measured and calculated using the same method.

Should the completion criteria not be achieved within 20 years, the frequency of ongoing management will be determined by a suitably qualified ecologist.

Table 7 Proposed interim targets and completion criteria for Offset Area

Criteria	Baseline (Year 0)	Interim Performance Targets			Completion criteria (Year 20)
		Year 5	Year 10	Year 15	
Koala					
Presence and relative density	Relative density to be determined as part of baseline surveys	Koala presence detected in Offset Area and relative density comparable to baseline.			
Habitat quality score	7.34 (7)	7.38-7.42 (7)	7.43-7.47 (7)	7.48-7.52 (7-8)	7.56-7.63 (8)
Key drivers in change	NA	BioCondition Threats (wild dog control, weed cover)	BioCondition (perennial grass cover and species richness)	BioCondition (perennial grass cover, species richness, recruitment)	BioCondition (perennial grass cover, species richness, recruitment, shrub cover)
Greater Glider					
Greater Glider occurrence	Relative density to be determined as part of baseline surveys	Greater Glider presence detected in Offset Area and relative density comparable to baseline.			
Habitat quality score – Greater Glider	7.12 (7)	7.23-7.27 (7)	7.32-7.37 (7)	7.41-7.46 (7)	7.50-7.54 (8)
Key drivers in change	NA	BioCondition (non-native cover) Quality and Availability of shelter (nest boxes) Threats (barbed-wire top strand removal)	BioCondition (perennial grass cover and grass species richness	BioCondition (perennial grass cover, species richness, recruitment)	BioCondition (perennial grass cover, species richness, recruitment, shrub cover)
Nest boxes – Greater Glider	Nest boxes installed	Evidence of use observed	Continued evidence of use		

3.5 Risk Assessment

A risk assessment has been completed (refer to ***Appendix E***) to assess known and potential risk events which may impact the OMP's KPIs and ability to meet completion criteria. The risk assessment details the initial (inherent) risk rating with no mitigation measures in place and then applies mitigation measures, providing a final (mitigated) risk rating.

A summary of the risk assessment outcomes has been provided in ***Table 8***. Refer to ***Appendix E*** for the complete risk assessment and detailed methodology.

Table 8 Summary of risk assessment

Impact type and risk	Final (mitigated) risk rating
Vegetation clearing – habitat loss and hinderance to regeneration of vegetation	Medium
Fragmentation, connectivity and edge effects – reduction in ability for species to disperse to adjacent habitat and move through the Offset Area	Low
Grazing – loss/degradation of canopy species seedlings and immature trees impacting future quality of Offset Area	Low
Feral animal species proliferation – feral predators (such as wild dogs) may result in loss of individuals to predation, particularly Koala	Medium
Introduction / spread of weeds – increased abundance and spread of existing weeds impacting habitat quality scores over time. Introduction of new weeds could also impact habitat quality scores over time	Low
Fence failure – unauthorised access to Offset Area (people, vehicles, livestock) resulting in habitat quality (or loss) impacts	Medium
Drought – decreased groundcover and vegetation dieback. Decrease in habitat quality over time and failure to meet completion criteria	High
Bushfire – impacts to regeneration of vegetation may occur as a result of bushfire (incl. lightning strike), resulting in habitat loss	Medium
Severe storm event – flooding of Offset Area and subsequent impacts to habitat areas and denning trees	High

4 Offset Monitoring

Monitoring will be required for the duration of the offset to measure the success of the management actions implemented under the OMP. Monitoring will provide a record of progress towards offset completion criteria and a mechanism for review of the OMP and development of alternative management (corrective) action/s where performance targets are not being met.

Offset monitoring activities will comprise the following:

- Baseline assessments, including:
    - Targeted species presence - Koala and Greater Glider surveys to determine current presence and abundance
    - Biocondition assessments to determine habitat quality
    - Weed and pest surveys; and
    - Hollow density assessments.
- Ongoing monitoring, comprising:
    - Koala and Greater Glider presence and abundance monitoring
    - Habitat quality monitoring for assessment of progress toward completion criteria
    - Nest box monitoring and maintenance
    - Feral predator presence monitoring
    - Weed presence, abundance and distribution monitoring; and
    - Inspection of infrastructure associated with the offset

Further detail regarding the baseline and ongoing monitoring actions is provided in ***Table 9*** and described in the following sections. The summary describes timing of each baseline and monitoring activity and key performance indicators (KPIs) associated with the management actions. The KPIs stipulate a target against which to measure the success of the offset management actions, thereby providing a positive conservation benefit to the two target species in the long-term.

Monitoring will be carried out over the duration of the offset to ensure that offset completion criteria (described in ***Table 7***) is achieved and maintained (should the criteria be attained ahead of time).

Table 9 OMP monitoring activities

Aspect	Method	Monitoring timing / frequency	Site monitoring attributes	Key performance indicators	Corrective actions
Species presence – Koala and Greater Glider	In the absence of Commonwealth or Queensland targeted survey guidelines for Koala and Greater Glider, best practice and accepted methods will be utilised (e.g., Eyre *et al.*, 2018). Surveys will include the following: • Indirect detection: Active diurnal searches for Koala presence (i.e. scratches and scat searches) • SAT searches in accordance with Phillips & Callaghan (2011). It is recommended a minimum of one SAT survey per 5 ha of habitat, distributed across the Offset Area. Direct detection: Spotlighting transects conducted on foot and/or or from a slow-driving vehicle targeting Koala and Greater Glider (carried out across minimum three consecutive nights) • Remote detection: eco-acoustic monitoring during Koala breeding season (spring-early summer) Baseline assessment will establish permanent survey transects (1km in length per assessment unit) and seasonal acoustic monitoring points within the Offset Area in suitable locations for the target species to be repeated at subsequent monitoring events. Monitoring surveys will record the following results (at a minimum): • Date, time, and location of sighting/evidence of presence	Baseline assessment conducted at Year 0. Subsequent surveys to be conducted at Years 1, 2, 5, 10, 15 and 20.	Presence of Koala and Greater Glider within the Offset Area	Koala and Greater Glider presence/activity does not significantly[1] decline between monitoring events.	The OMF CHECK-ACT process will be implemented to determine likely drivers of the observed decline. BMA will seek advice from a suitably qualified ecologist (SQE). The SQE will determine whether there is evidence the Offset Area management actions have contributed to the observed decline in species presence. Where results are attributed to inappropriate or ineffective management actions corrective actions will be identified and implemented within 12 months of the monitoring result. Corrective actions and associated monitoring actions will be documented and compiled in a revised OMP (ACT-PLAN). The corrective actions will be implemented under the DO component of the OMF. Corrective actions will be specific to the species and anticipated cause of the decline. This will require further investigation via on-ground survey or consultation with experts to design site- and species-specific actions based on contemporary knowledge regarding offset and land management. Corrective actions planning will consider: • Additional/alternative survey methods (e.g. thermal drone) • Available alternative management approaches (e.g. revised gazing regime/timing/intensity, supplementary infrastructure, additional pest control events/activities) guided by expert input

[1] The level of significance will be determined using an appropriate statistical test

Aspect	Method	Monitoring timing / frequency	Site monitoring attributes	Key performance indicators	Corrective actions
	• Identify tree species used as den site (Greater Glider only) and/or for foraging/shelter • Age, sex and condition of individual where possible • Other relevant attributes (e.g. presence of young) • Relative abundance indices for Koala and Greater Glider will be undertaken to determine relative density of each species in order to identify changes in species populations utilising the Offset Area				• Timing and responsibility for implementation • Budget allocation • Additional or changes to monitoring requirements • Reporting requirements Reporting to the Regulator may be required if management measures need to be amended.
Habitat quality	In accordance with habitat quality methods described in MHQA and DEHP (2017). Habitat Quality sites have been established across the three assessment units within the Offset Area (***Figure 7***). Monitoring is to be undertaken at each of the Habitat Quality sites for each monitoring event (10 sites total). Habitat quality will be calculated for each identified monitoring periods and compared against the baseline and previous years in order to track changes in habitat condition, effectiveness of management measures and assess against associated interim targets and completion criteria (refer to ***Table 7***). Habitat quality will be calculated for each identified monitoring periods and compared against the baseline and previous years in order to track changes in habitat condition, effectiveness of management measures and assess against associated interim targets and completion criteria (refer to ***Table 7***). Any significant decline in habitat quality between monitoring events will be investigated by a suitably qualified ecologist and potential causes and corrective actions employed. Examples of corrective actions may include active	Baseline assessment habitat quality has been completed (refer to ***Section 2.6***). Subsequent surveys to be conducted at Years 1, 2, 5, 10, 15 and 20.	All site condition and site context attributes identified in MHQA spreadsheet to determine the capacity of the Offset Area to support Koala and Greater Glider.	Habitat quality condition scores meet the performance targets identified in ***Table 7***. No decrease in habitat quality scores as based on baseline and subsequent monitoring events.	The OMP CHECK-ACT process will be implemented to determine likely drivers of the observed decrease in habitat quality scores or where performance targets aren't tracking to be met. BMA will seek advice from an SQE. The SQE will determine whether there is evidence the Offset Area management actions have contributed to the observed decrease in habitat quality. Where results are attributed to inappropriate or ineffective management actions, corrective actions will be identified and implemented within 12 months of the monitoring result. Corrective actions and associated monitoring actions will be documented and compiled in a revised OMP (ACT-PLAN). The corrective actions will be implemented under the DO component of the OMP. Corrective actions will be specific to the habitat attributes indicating the decrease in habitat quality score. This will require further on-ground survey or consultation with experts to identify actions

Aspect	Method	Monitoring timing / frequency	Site monitoring attributes	Key performance indicators	Corrective actions
	revegetation of select areas within the Offset Area or employment of additional or alternative management measures (e.g. revised gazing regime/timing/intensity, additional pest control events/activities).				required to enhance improve habitat quality score. Corrective actions planning will consider: • Available alternative management approaches (e.g. active revegetation, revised gazing regime/timing/intensity, supplementary infrastructure, additional pest control events/activities) guided by expert input • Timing and responsibility for implementation • Budget allocation • Additional or changes to monitoring requirements • Reporting requirements
Nest box monitoring	Assessment of the general condition of nesting box and if maintenance/replacement is required. Inspection cameras will be used to inspect installed nesting boxes for utilisation. Inspections will look for both species presence and potential signs of usage.	Identification of nest box locations to be undertaken in Year 0. Subsequent surveys to be conducted at Years 1, 2, 5, 10, 15 and 20 or following extreme weather events.	Nesting boxes remain in suitable working condition. Evidence of utilisation by the species.	Nesting boxes are maintained and replaced where required. Evidence of utilisation by the species.	Where associated KPIs are not being met, investigation of appropriate corrective actions will commence, and the suitable actions will be implemented within 12 months of the monitoring result. Suitable corrective actions will include: • Suitably qualified professional will review current literature and determine if additional management actions may improve utilisation or alternative design. • Replacement of broken/degraded nesting boxes within 6 months of monitoring result by suitably qualified professional. • Installation of additional nesting boxes or an alternate type of nest box or adaptation of the current design.

Aspect	Method	Monitoring timing / frequency	Site monitoring attributes	Key performance indicators	Corrective actions
Native perennial grass cover	1. To be conducted in concert with maintenance inspections (damage). Monitoring will include assessment of soil compaction, erosion and any other adverse impacts on habitat associated with cattle. 2. To be conducted in concert with Habitat Quality Assessments. Monitoring of the grass cover in relation to grazing intensity and fuel loads will also be undertaken. This will involve assessment of native perennial grass cover (%), woody debris and leaf litter consistent with the *BioCondition Method* (Eyre et al., 2015) as part of habitat quality assessments. Grass cover will be reported against established benchmarks for REs types consistent with mapped habitat (i.e. REs 11.3.3. 11.3.4 and 11.3.25), where they occur within the Offset Area. Where monitoring shows grass cover (%) falling below relevant benchmarks, corrective actions will be implemented.	6-monthly (as per maintenance inspections) Habitat Quality surveys to be conducted at Years 1, 2, 5, 10, 15 and 20.	Minimum level of native perennial grass cover within Offset Area per Assessment unit/ regional ecosystem.	No evidence of habitat degradation resulting from livestock trampling is observed. Graze stock during the dry season, at rates and times necessary to reduce the fuel load in the Offset Area. Achieve and maintain RE benchmarks for native perennial grass cover (refer to ***Section 3.3.3***).	The Landowner will review stocking density to either increase stocking density to reduce fuel loads or remove cattle from the Offset Area until native perennial grass cover has been restored to the required levels. The review and adjustment to regime will be undertaken prior to the subsequent monitoring activity. Corrective actions planning will consider: • Livestock exclusion • Timing and responsibility for implementation • Budget allocation • Additional or changes to monitoring requirements • Active rehabilitation/revegetation
Feral predators	Occurrence and other physical evidence - targeting feral predator species – wild dog, feral cat, feral pig and red fox. Camera trap monitoring for one week carried out along tracks within Offset Area. Permanent camera trap sites to be established during baseline assessment (Year 0) and repeated at subsequent monitoring events. Cameras deployed at repeatable, fixed locations, incorporating spatial coverage and habitat variation across the Offset Area. Monitoring will occur during autumn to winter, the optimal activity period for wild dogs, to maximise detection. Results will be used to determine the baseline wild dog relative activity level, which will	Baseline assessment conducted at Year 0. Subsequent surveys to be conducted at Years 1, 2, 5, 10, 15 and 20.	Presence including species, density, and location.	No evidence of predation on Koala and Greater Glider by feral predators. Presence, and abundance of feral predators within the Offset Area does not significantly[2] increase between monitoring events.	If an increase in feral predator populations is identified, corrective actions will be implemented within 12 months of monitoring result and include (at a minimum): • Additional feral predator control, if suitable will include increase baiting program to twice yearly • Alternative control methods investigated including annual shooting event

[2] The level of significance will be determined using an appropriate statistical test

Aspect	Method	Monitoring timing / frequency	Site monitoring attributes	Key performance indicators	Corrective actions
	be used by a specialist pest control professional, to determine the extent of pest control response required to reduce and/or maintain the annual relative activity to as low as practicable. To determine success from feral animal control, a running scorecard of pests directly removed from the environment (quantifiable methods only, i.e. periodic shooting, discussion with landholder and/or suitably qualified professional) will be used to track progress of management.				
Weeds	Surveys of restricted invasive plants under the *Biosecurity Act 2014*. Monitoring at established weed monitoring sites throughout the Offset Area. GPS marking of small infestations or scattered individuals will be undertaken. Where weeds are more widespread, suitable assessments assessing composition and cover at monitoring sites will be undertaken.	Baseline assessment conducted at Year 0. Subsequent surveys to be conducted at Years 1, 2, 5, 10, 15 and 20.	Monitoring will record the presence and density of restricted invasive plants under the *Biosecurity Act 2014,* including species presence, abundance and distribution and health. Species composition and cover assessments, including photo monitoring will also be undertaken at established monitoring sites or areas of known infestations, allowing quick comparison of weed/infestation areas over time.	No new weed species detected. No new, high-density infestations detected. Decrease in restricted invasive plants listed in the *Biosecurity Act 2014* within Offset Area.	If restricted invasive plants or new infestations are identified, corrective actions will be implemented within 12 months of monitoring result and will include (at a minimum): • Additional weed management activity carried out, including at an increased frequency. • Investigation and implementation of alternative control methods (e.g., manual removal, chemical applications) will be undertaken by a suitably qualified professional.
Infrastructure maintenance	Inspection of fencing, access tracks and firebreaks.	6-monthly and within 2 weeks following extreme weather events when safe to do so (e.g. flooding or high intensity bushfires).	Fences, firebreaks and tracks in working order.	Fences, firebreaks and tracks in working order.	In the case that damage to infrastructure occurs, corrective actions will be implemented within 6 months of monitoring result and will include (at a minimum): • Fence maintenance/repair • Re-establishing/maintenance of firebreaks • Grading of access tracks

5 Force Majeure

The OMP has identified a number of potential risks, including extreme weather events which may pose a risk to the Offset Area (as identified in ***Section 3.5*** and ***Appendix E***). Depending on the severity of the event, the OMP may require review and/or consultation with relevant stakeholders and regulatory authorities to determine an appropriate course of action.

BMA, however, remains committed to fulfilling the requirements of the approval and ensuring appropriate outcomes are achieved. In the case of a force majeure event, BMA will notify DCCEEW as soon as they become aware of the Offset Area being affected by a force majeure event. Furthermore, BMA currently manages a portfolio of offset sites across the region, in the case of a force majeure event, BMA can draw upon their experience in managing other offset sites and has access to commercially available stores of seed for use in regeneration areas. Where needed, BMA will engage a revegetation specialist or ecologist to provide guidance or to develop a specific works program as may be required by the severity of the event.

6 Reporting

The Proponent will prepare a report on the implementation of this OMP at Year 1, Year 2 and Year 5, and then every five years for the remaining 15 years or until completion criteria are met (for a minimum of 20 years whichever is longer). The report will summarise management and monitoring activities carried out and detail progress towards the offset KPIs, performance targets and completion criteria.

Reporting will be made publicly available where required under the Project EPBC Act approval conditions.

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8 Appendix A – Habitat Quality Scoring Criteria and Sites within the Offset Area

Table A1 Summary of habitat quality sites within the Offset Area

Habitat Quality Site	Assessment unit	Vegetation description	Latitude (GDA 2020)	Longitude (GDA 2020)	Bearing
HQ1	AU1	Remnant RE 11.3.3	-22.427577	148.970081	45
HQ2	AU1	Remnant RE 11.3.3	-22.431939	148.968887	94
HQ3	AU2	Remnant RE 11.3.4	-22.434810	148.967117	330
HQ4	AU1	Remnant RE 11.3.3	-22.436536	148.971069	292
HQ5	AU2	Remnant RE 11.3.4	-22.440587	148.973195	325
HQ6	AU3	Remnant RE 11.3.25	-22.444234	148.975748	340
HQ7	AU3	Remnant RE 11.3.25	-22.451107	148.975055	345
HQ8	AU3	Remnant RE 11.3.25	-22.453782	148.974486	253
HQ9	AU2	Remnant RE 11.3.4	-22.460907	148.972420	113
HQ10	AU1	Remnant RE 11.3.3	-22.464249	148.970857	82

KOALA SCORING

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score options	Scoring guidance	Score	Weight	Assessment area
Site Condition	30%	Site-based attributes (BioCondition)	80%	Recruitment of woody perennial species in EDL Native plant species richness - trees Native plant species richness - shrubs Native plant species richness - grasses Native plant species richness - forbs Tree canopy height (average of emergent, canopy and sub-canopy) Tree canopy cover (average of emergent, canopy and sub-canopy) Shrub canopy cover Native grass cover Organic litter Large trees (euc plus non-euc) Coarse woody debris Non-native plant cover	As per the MHQA (i.e. in accorddance with *Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2* (DEHP 2017) and BioCondition Assessment Manual (Eyre et al. 2015) where specified			100%	Habitat Quality site
		Quality and availability of food and foraging habitat	10%	**Abundance** of locally important koala **habitat trees***	1	No LIKTs present, or or LIKTs present only as juvenile trees (<10 cm DBH)	/5	90%	Habitat Quality site
					2	LIKTs ≥10cm DBH present as: • associated canopy species, • scattered emergent trees, and/or • as subdominant subcanopy species (at sites where the density of subcanopy trees exceeds 10 per 100 x 50 m plot)			
					3	LIKTs ≥10cm DBH present as: • subdominant canopy species, and/or • co-dominant subcanopy species at sites where the density of subcanopy trees exceeds 10 per 100 x 50 m plot.			
					4	LIKTs ≥10cm DBH present as: • co-dominant canopy species and/or • dominant subcanopy species at sites where the density of subcanopy trees exceeds 10 per 100 x 50 m plot.			
					5	LIKTs ≥10cm DBH present as dominant canopy species			
				Leaf moisture content/availability of soil water to feed trees	0	Leaf moisture content / availability of soil water typically low due to: • very low annual and seasonal rainfall • general absence of flooding • very quick-draining soils, and/or • low ground water table.	/5	10%	
					2.5	Leaf moisture content / availability of soil water moderately high-to-high for part (less than half) of year due to: • substantive, though highly seasonal rainfall, or • regular but infrequent flooding, or • less quick-draining soils, and • seasonally high water table.			
					5	Leaf moisture content moderately high-to-high for half or more of year due to: • high annual or regular rainfall across multiple seasons, or • frequent flooding, or • slow-draining soil, and • water table high for much of year.			
		Quality and availability of shelter habitat	10%	Abundance of suitable Koala shelter trees (LIKT, Ancillary habitat tree, or other suitable shade tree species) ≥10 cm DBH	1	no suitable Koala shelter trees present	/5	100%	Habitat Quality site
					2	single suitable Koala shelter tree present			
					3	suitable Koala shelter trees present at low-to-moderate abundance (2-5 per 100 x 50 m plot)			
					5	suitable Koala shelter trees present at moderate-to-high abundance (>5 per 100 x 50 m plot)			
Context		Size of patch	19.61%	Size of the habitat patch being assessed	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)		/10	100%	Contiguous habitat patch that the Habitat Quality site is within
		Connectedness	9.80%	Measuring the proportion of the site's boundary which is connected to suitable habitat	As per the MHQA		/5	100%	AU patch that the Habitat Quality site is within
		Context	9.80%	Measuring the percentage of suitable habitat within a 20 kilometre buffer around the site	As per the MHQA - 20km buffer applied		/5	100%	Relative to the Habitat Quality site
		Ecological Corridors	11.76%	Proximity of the site to State, bioregional, regional or sub-regional corridors	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)		/6	100%	AU patch that the Habitat Quality site is within
		Species mobility capacity	9.80%	Patch size of habitat (remnant or regrowth vegetation with LIKTs ≥ 10 cm DBH)	1	Patch is <1 – 25 ha	/5	40%	Habitat Quality site
					2	Patch is 26 – 50 ha			
					3	Patch is 50 – 250 ha			
					4	Patch is 251 – 500 ha			
					5	Patch is > 500 ha			
				Connectivity of habitat in the landscape	1	The habitat patch is separated from other habitat by: • >1 km of mostly cleared/developed land with no/scattered habitat trees • Man-made or natural barriers to dispersal (e.g., fencing, dense/impenetrable weedy ground cover, permanent watercourses >30 m wide); or • Numerous busy roads or a single multi-lane highway	/5	60%	Habitat Quality site
					2	The habitat patch is separated from other habitat by: • <1 km and >500 m of mostly cleared/developed land with scattered habitat trees • >1 km of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees, and/or • Multiple roadways carrying low volume of traffic.			
					3	The habitat patch is separated from other habitat by: • <500 m and >100 m of mostly cleared/developed land with scattered habitat trees, and/or • <1 km and >500 m of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees			
					4	The habitat patch is separated from other habitat by: • No more than 100 m of mostly cleared/developed land with scattered habitat trees and/or • <500 and >100 m of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees			

Site Con	30%				5	habitat more or less contiguous or separated from other areas of habitat by: • no more than 100 m of remnant or regrowth woodland/open forest without any LIKTs or Ancillary habitat trees			
		Role of site location for the population in the State	**9.80%**	Role of site location to overall population score	As per the MHQA		/5	100%	Project site relative to the population within the State
		Threats to species	**29.41%**	Presence of predators (feral dogs, dingoes)	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)		/15	25%	Habitat Quality site
				Density of dense weedy ground cover (e.g., thicket of lantana) impeding movement of Koalas/limiting access to feed trees				25%	
				Man-made barriers preventing movement between habitat patches e.g. fences, large multilane highways, and high density housing				25%	
				Vehicular collision				25%	
Species Stocking Rate	40%	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	**14.29%**	As per the MHQA			/10	100%	Project site
		Species usage of the site (habitat type)	**21.43%**				/15	100%	Project site
		Approximate density (per ha)	**42.86%**				/30	100%	Project site
		Role/importance of species population on site*	**21.43%**				/15	100%	Project site

GREATER GLIDER (SOUTHERN & CENTRAL) SCORING

Key Habitat Values	Weighting	Criteria	Weighting	Indicator	Score options	Scoring guidance	Score	Weight	Assessment area
Site Condition	30%	BioCondition	20%	Recruitment of woody perennial species in EDL; Native plant species richness - trees; Native plant species richness - shrubs; Native plant species richness - grasses; Native plant species richness - forbs; Tree canopy height (average of emergent, canopy and sub-canopy); Tree canopy cover (average of emergent, canopy and sub-canopy); Shrub canopy cover; Native grass cover; Organic litter; Large trees (euc plus non-euc); Coarse woody debris; Non-native plant cover	As per the MHQA (i.e. in accorddance with *Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2* (DEHP 2017) and BioCondition Assessment Manual (Eyre et al. 2015) where specified			100%	Habitat Quality site
		Quality and availability of food and foraging habitat per ha	40%	Diversity of preferred food trees (*Corymbia* and *Eucalyptus* species) of >30 cm DBH	0	Preferred food trees are absent	/5	50%	Habitat Quality site
					1	1-2 species of preferred food tree are present			
					3	3 – 4 species of preferred food tree are present			
					5	≥ 5 species of preferred food tree are present			
				Abundance of preferred food trees (*Corymbia* and *Eucalyptus* species) of >30 cm DBH	0	Preferred food trees are absent	/5	50%	
					1	Preferred food trees are in very low density in the canopy (<20% of canopy species)			
					3	Preferred food trees are moderately abundant in the canopy (comprise 30-50 % of canopy species)			
					5	Preferred food trees are dominant in the canopy (comprise over 50% of canopy species)			
		Quality and availability of shelter habitat	40%	Abundance of large hollow bearing trees and stags	0	Large hollow bearing trees or stags are absent (>10 cm)	/5	100%	Habitat Quality site
					1	1-2 large hollow bearing trees or stags (>10 cm)			
					3	3-4 large hollow bearing trees or stags (>10 cm)			
					5	>4 large hollow bearing trees or stags (>10 cm)			
Site Context	30%	Size of patch	19.61%	Size of the habitat patch being assessed	As per the MHQA (i.e. in accorddance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)		/10	100%	Contiguous habitat patch that the Habitat
		Connectedness	9.80%	Measuring the proportion of the site's boundary which is connected to suitable habitat	As per the MHQA		/5	100%	AU patch that the Habitat Quality site is within
		Context	9.80%	Measuring the percentage of suitable habitat within a 20 kilometre buffer around the site	As per the MHQA - 20km buffer applied		/5	100%	Relative to the Habitat Quality site
		Ecological Corridors	11.76%	Proximity of the site to State, bioregional, regional or sub-regional corridors	As per the MHQA (i.e. in accorddance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)		/6	100%	AU patch that the Habitat Quality site is within
		Species mobility capacity	9.80%	Patch size of habitat	0	habitat patch is <1 ha	/5	35%	
					1	habitat patch is 1 – 3 ha			
					2	habitat patch is >3 – 5 ha			
					3	habitat patch is >5 – 10 ha			
					4	habitat patch is >10 – 20 ha			
					5	habitat patch is > 20 ha			
				Connectivity of suitable habitat in the landscape	0	The suitable habitat patch is separated from other suitable habitat by: • ≥50m of non-remnant or regrowth vegetation; or • ≥200m of non-suitable remnant vegetation.	/5	35%	Habitat Quality site
					2.5	The suitable habitat patch is separated from other suitable habitat by: • ≥30m to 50m of non-remnant or regrowth vegetation; or • ≥100m to 200m of non-suitable remnant vegetation.			
					5	The suitable habitat patch is separated from other suitable habitat by: • <30m of non-remnant or regrowth vegetation; or • <100m of non-suitable remnant vegetation.			
				Presence of manmade fragmentation features	0	Main roads or large cleared areas are present to prevent connectivity with other suitable habitat	/5	30%	Habitat Quality site
					2.5	Moderately significant man-made fragmentation features are present within the landscape, e.g. power lines, fence lines			
					5	No man-made fragmentation features are present within the landscape			
		Role of site location for the population in the State	9.80%	Role of site location to overall population score	As per the MHQA		/5	100%	Project site relative to the population within the State

		Threats to species	**29.41%**	Barbed wire entanglement	As per the MHQA (i.e. in accordance with Queensland Guide to Determining Terrestrial Habitat Quality Version 1.2 (DEHP 2017)	/15	33%	Habitat Quality site
				Habitat fragmentation and selective thinning			33%	
				High intensity fires resulting in canopy damage / crown death			33%	
Species Stocking Rate	**40%**	**Presence detected on or adjacent to site (neighbouring property with connecting habitat)**	**14.29%**	As per the MHQA		/10	100%	Project site
		Species usage of the site (habitat type)	**21.43%**			/15	100%	Project site
		Approximate density (per ha)	**42.86%**			/30	100%	Project site
		Role/importance of species population on site*	**21.43%**			/15	100%	Project site

9 Appendix B – Impact and Offset Area Baseline Habitat Quality Data

IMPACT - Fauna Species - Koala

Assessment Unit - Regional Ecosystem	AU 1 - RE 11.5.3 remnant												AU2 - RE 11.3.25/11.3.4 remnant					
Site Reference	**Benchmark**	BC02			BC04			BC901			Average % benchmark	Average Score	**Benchmark**	BC05			Average % benchmark	**Score**
	11.5.3	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			**11.3.4**	Raw Data	% Benchmark	Score		
Recruitment of woody perennial species in EDL	100	100	100	5	50	50	3	100	100	5		4.333333	100	0	0	0		
Native plant species richness - trees	6	4	66	2.5	14	>200%	5	8	125	5		4.166667	4	7	175	5		
Native plant species richness - shrubs	6	5	85	2.5	7	118	5	14	50	2.5		3.333333	3	3	100	5		
Native plant species richness - grasses	6	0	0	0	2	33	3	9	150	5		2.666667	11	4	35	2.5		
Native plant species richness - forbes	10	9	90	5	4	40	3	7	70	2.5		3.5	17	9	55	2.5		
Tree canopy height (average of emergent, canopy, sub-canopy)	16 (canopy)	19.12	120	5	14	88	5	14	88	5		5	24 and 14	22.5, 11	90, 79	5		
Tree canopy cover (average of emergent, canopy, sub-canopy)	20 (canopy)	30.3	150	5	10.2	50	5	24.4	120	5		5	30 and 15	80, 33	>200%	3		
Shrub canopy cover	3	2.6	87	5	1.3	43	3	23.6	>200%	3		3.666667	3	0	0	0		
Native grass cover	19	0	0	0	0.8	5	0	6	32	1		0.333333	55	31.4	57	3		
Organic litter	20	9.4	45	3	26.4	132	5	3	15	3		3.666667	37	53.6	145	5		
Large trees (euc plus non-euc)	10	8	80	10	0	0	0	4	40	5		5	19	30	158	15		
Coarse woody debris	314	183	58	5	222	70	5	74	24	2		4	509	417	82	5		
Non-native plant cover	0	60	>50%	0	60	>50%	0	20	20	5		1.666667	0	4	4	10		
Quality and availability of food and foraging habitat	na	8		8	8		8	8		8		8		8		8		
Quality and availability of shelter	na	6		6	6		6	6		6		6		10		10		
Site Condition Score				62			56			63		60.33333				79		79
MAX Site Condition Score				*100*			*100*			*100*		*100*				*100*		*100*
Site Condition Score - out of 3				1.86			1.68			1.89		**1.81**						**2.37**
Site Context																		
Size of patch		>200 ha	>200 ha	10	>200 ha	>200 ha	10	15ha	5-25ha	2		7.333333		>200 ha	>200 ha	10		
Connectedness		43%	10-50%	2	43%	10-50%	2	42%	10-50%	2		2		100%	>75%	5		
Context	This row is all TBC		30-75%	4		30-75%	4		0-10%	0		2.666667			30-75%	4		
Ecological Corridors			sharing a c	4		sharing a c	4		not within	0		2.666667			sharing a cc	4		
Role of site location to species overall population in the state*	5 (max)			4			4			4		4				5		
Threats to the species	15 (max)			12			12			8.4		10.8				13.5		
Species mobility capacity	10 (max)			8			8			8		8				10		
Site Context Score				44			44			24.4		37.46667				51.5		
MAX Site Context Score				*56*			*56*			*56*		*56*				*56*		*56*
Site Context Score - out of 3				2.36			2.36			1.31		**2.01**				**2.76**		

Refer definition used for Critical habitat for previous assessment

Species Stocking Rate (SSR)										AU1	AU2
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	**0**		5				10		10	10
		No		Yes - adjacent				Yes - on site			
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10				**15**		15	15
		Not habitat	Dispersal	Foraging				Breeding			
Approximate density (per ha)	Score	**0**	**10**	20				30		20	20
		0%									
Role/importance of species population on site*	Score	0	**5**			10		15		5	5
	(*Total from supplementary table*	0	5 - 15	20 - 35				40 - 45			
Total SRR score (out of 70)		30								50	50
SRR Score (out of 4)										**2.86**	**2.8571**

***SSR Supplementary Table**				AU1	AU2
*Key source population for breeding	Score	**0**	10	10	10
		No	**Yes/ Possibly**		
*Key source population for dispersal	Score	**0**	5	5	5
		No	**Yes/ Possibly**		
*Necessary for maintaining genetic diversity	Score	**0**	15	0	0
		No	Yes/ Possibly		
*Near the limit of the species range	Score	**0**	15	0	0
		No	Yes		

Final habitat quality score (weighted)	**AU1**	**AU2**	
Site Condition score (out of 3)	1.81	2.37	
Site Context Score (out of 3)	2.01	2.76	
Species Stocking Rate Score (out of 4)	2.86	2.86	
Habitat Quality score (out of 10)	*6.68*	*7.99*	
Assessment Unit area (ha) in disturbance footprint	6.84	0.34	
Total impact area (ha) for this MNES	7.18	7.18	
Size Weighting	0.95	0.05	
Weighted Habitat Quality Score	***6.36***	***0.38***	***6.74***

IMPACT - Fauna Species - Greater Glider

Assessment Unit - Regional Ecosystem	AU 1 - RE 11.5.3 remnant									AU2 - RE 11.3.4 remnant					
Site Reference	Benchmark	BC02			BC04			Average % benchmark	Average Score	Benchmark	BC05			Average % benchmark	Score
	11.5.3	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score				Raw Data	% Benchmark	Score		
Recruitment of woody perennial species in EDL	100	100	100	5	50	50	3		4	100	0	0	0		
Native plant species richness - trees	6	4	66	2.5	14	>200%	5		3.75	4	7	175	5		
Native plant species richness - shrubs	6	5	85	2.5	7	118	5		3.75	3	3	100	5		
Native plant species richness - grasses	6	0	0	0	2	33	3		1.5	11	4	35	2.5		
Native plant species richness - forbes	10	9	90	5	4	40	3		4	17	9	55	2.5		
Tree canopy height (average of emergent, canopy, sub-canopy)	16 (canopy)	19.12	120	5	14	88	5		5	24 and 14	22.5, 11	90, 79	5		
Tree canopy cover (average of emergent, canopy, sub-canopy)	20 (canopy)	30.3	150	5	10.2	50	5		5	30 and 15	80, 33	>200%	3		
Shrub canopy cover	3	2.6	87	5	1.3	43	3		4	3	0	0	0		
Native grass cover	19	0	0	0	0.8	5	0		0	55	31.4	57	3		
Organic litter	20	9.4	45	3	26.4	132	5		4	37	53.6	145	5		
Large trees (euc plus non-euc)	10	8	80	10	0	0	0		5	19	30	158	15		
Coarse woody debris	314	183	58	5	222	70	5		5	509	417	82	5		
Non-native plant cover	0	60	>50%	0	60	>50%	0		0	0	4	4	10		
Quality and availability of food and foraging habitat	na	10		10	3.6		3.6		6.8		8.7		8.7		
Quality and availability of shelter	na	5.47		5.47	2.27		2.27		3.87		6.8		6.8		
Site Condition Score				63.47			47.87		55.67				76.5		76.5
MAX Site Condition Score				*100*			*100*		*100*				*100*		*100*
Site Condition Score - out of 3				**1.90**			**1.44**		**1.67**				**2.30**		**2.30**
Site Context															
Size of patch		>200 ha	>200 ha	10	>200 ha	>200 ha	10		10		>200 ha	>200 ha	10		
Connectedness		43%	10-50%	2	43%	10-50%	2		2		100%	>75%	5		
Context	This row is all TBC		30-75%	4		30-75%	4		4			30-75%	4		
Ecological Corridors			sharing a co	4		sharing a co	4		4			sharing a co	4		
Role of site location to species overall population in the state	5 (max)			4			4		4				5		
Threats to the species	15 (max)			12			12		12				13.5		
Species mobility capacity	10 (max)			8			8		8				10		
Site Context Score				44			44		44				51.5		51.5
MAX Site Context Score				*56*			*56*		*56*				*56*		*56*
Site Context Score - out of 3				**2.36**			**2.36**		**2.36**				**2.76**		**2.76**

Species Stocking Rate (SSR)								AU1	AU2
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	**0**		5		10		5	10
		No		Yes - adjacent		On-site			
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15			10	15
		Not habitat	Dispersal	Foraging	Breeding				
Approximate density (per ha)	Score	**0**	**10**	20	30			10	30
		0%							
Role/importance of species population on site*	Score (*Total from supplementary table*	0	**5**				10	5	5
		0	5 - 15	20 - 35					
Total SRR score (out of 70)		30						30	60
SRR Score (out of 4)								**1.714286**	**3.42857**

***SSR Supplementary Table**				AUs
*Key source population for breeding	Score	**0**	10	10
	No		**Yes/ Possibly**	
*Key source population for dispersal	Score	**0**	5	5
	No		**Yes/ Possibly**	
*Necessary for maintaining genetic diversity	Score	**0**	15	0
	No		Yes/ Possibly	
*Near the limit of the species range	Score	**0**	15	0
	No		Yes	

Final habitat quality score (weighted) (all AUs)	**AU1**	**AU2**	
Site Condition score (out of 3)	1.67	2.30	
Site Context Score (out of 3)	2.36	2.76	
Species Stocking Rate Score (out of 4)	1.71	3.42	
Habitat Quality score (out of 10)	*5.74*	*8.48*	
Assessment Unit area (ha) in disturbance footprint	6.4	0.02	
Total impact area (ha) for this MNES	6.42	6.42	
Size Weighting	1.00	0.00	
Weighted Habitat Quality Score	***5.72***	***0.03***	**Total =5.75**

OFFSET - Fauna Species - Koala

BASELINE

Assessment Unit - Regional Ecosystem	AU 1 - RE 11.3.3 remnant														
Site Reference	Benchmark	11.3.3 Site 1			11.3.3 Site 2			11.3.3 Site 3			11.3.3 site 4			Average % benchmark	Average Score
	11.3.3	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score		
Site Condition															
Recruitment of woody perennial species in EDL	100	83	83	5	50	50	3	100	100	5	50	50	3		
Native plant species richness - trees	3	6	200	5	4	133.3333	5	3	100	5	4	133.333	5		
Native plant species richness - shrubs	5	6	120	5	5	100	5	4	80	3	2	40	3		
Native plant species richness - grasses	12	4	33.3333333	3	4	33.33333	3	4	33.333	3	2	16.6667	2.5		
Native plant species richness - forbes	15	14	93.3333333	5	17	113.3333	5	10	66.667	3	21	140	5		
Tree canopy height (average of emergent, canopy, sub-canopy)	18 and 10	24, 10	133, 100	5	21, 10	117, 100	5	23, 11	128, 11	5	25, 15	139, 150	5		
Tree canopy cover (average of emergent, canopy, sub-canopy)	28 and 5	73, 6.7	261, 134	4	58.8, 0.5	210, 10	2.5	46.8, 3.	167, 70	5	72.9, 7.3	260, 146	4		
Shrub canopy cover	4	8.9	222.5	3	0.4	10	3	0	0	0	2.1	52.5	5		
Native grass cover	45	27	60	3	39	86.66667	3	11	24.444	1	6	13.3333	1		
Organic litter	30	60.2	200.666667	3	38.6	128.6667	5	38	126.67	5	53	176.667	5		
Large trees (euc plus non-euc)	10	9	90	10	0	0	0	7	70	10	5	50	5		
Coarse woody debris	285	603	211.578947	2	274	96.14035	5	65	22.807	2	32	11.2281	2		
Non-native plant cover	0	5	5	10	0	0	10	4	4	10	5	5	10		
Quality and availability of food and foraging habitat		5, 2.5		9.5	5, 2.5		9.5	5, 2.5		9.5	5, 2.5		9.5		
Quality and availability of shelter				10			10			10			10		
Site Condition Score				82.5			74			76.5			75		77
MAX Site Condition Score				*100*			*100*			*100*			*100*		*100*
Site Condition Score - out of 3				**2.48**			**2.22**			**2.30**			**2.25**		**2.31**
Site Context															
Size of patch		12294.27		10	12294.3		10	12294		10	12294.3		10		
Connectedness		33.25		2	33.25		2	33.25		2	38.77		2		
Context		14.46		2	14.2		2	14.1		2	13.68		2		
Ecological Corridors			within mapp	6		within map	6		within r	6		within ma	6		
Role of site location to species overall population in the state				1			1			1			1		
Threats to the species				11.7			11.7			11.7			11.7		
Species mobility capacity				8.4			8.4			8.4			8.4		
Site Context Score				41.1			41.1			41.1			41.1		41.1
MAX Site Context Score				*56*			*56*			*56*			*56*		*56*
Site Context Score - out of 3				**2.20**			**2.20**			**2.20**			**2.20**		**2.20**

OFFSET - Fauna Species - Koala

BASELINE

Assessment Unit - Regional Ecosystem	AU 2 - RE 11.3.4 remnant											AU 3 - RE 11.3.25 remn						
Site Reference	Benchmark	11.3.4 Site 1			11.3.4 Site 2			11.3.4 site 3			Average % benchmark	Average Score	Benchmark	11.3.25 Site 1			11.3.25 Site 2		
	11.3.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			11.3.25	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score
Site Condition																			
Recruitment of woody perennial species in EDL	100	50	50	3	75	75	3	100	100	5			100	57	57	3	83	83	5
Native plant species richness - trees	4	8	200	5	4	100	5	3	75	3			4	7	175	5	6	150	5
Native plant species richness - shrubs	3	8	266.6667	5	2	66.667	3	3	100	5			4	3	75	3	2	50	3
Native plant species richness - grasses	11	3	27.27273	3	1	9.0909	2.5	4	36.36364	3			8	2	25	2.5	1	12.5	2.5
Native plant species richness - forbes	17	6	35.29412	3	13	76.471	3	11	64.70588	3			13	12	92.30769	5	14	107.69	5
Tree canopy height (average of emergent, canopy, sub-canopy)	23 and 14	22, 12	96, 86	5	24, 12	104, 86	5	26, 15	113, 107	5			23 and 11	27, 14	117, 127	5	23, 15	100, 136	5
Tree canopy cover (average of emergent, canopy, sub-canopy)	29 and 15	59.8, 48	206, 322	3	53.5, 8	184, 53	4	58.6, 3.	202, 21	2.5			34 and 12	71, 44.5	209, 371	3	52.5, 74	154, 621	4
Shrub canopy cover	3	5.8	193.3333	5	2	66.667	5	0.3	10	3			7	27.7	395.7143	3	11.7	167.14	5
Native grass cover	55	18	32.72727	1	0.2	0.3636	0	41	74.54545	3			35	0	0	0	0	0	0
Organic litter	37	59	159.4595	5	52.8	142.7	5	47.6	128.6486	5			21	38	180.9524	5	41.6	198.1	5
Large trees (euc plus non-euc)	19	2	10.52632	5	6	31.579	5	12	63.15789	10			19	11	57.89474	10	25	131.58	15
Coarse woody debris	509	107	21.02161	2	172	33.792	2	25	4.911591	0			473	200	42.2833	2	216	45.666	2
Non-native plant cover	0	3	3	10	40	40	3	10	10	5			0	5		10	8		5
Quality and availability of food and foraging habitat		5, 2.5		9.5	5, 2.5		9.5	5, 2.5		9.5				5, 5		10	3, 5		6.4
Quality and availability of shelter				10			10			10						10			10
Site Condition Score				74.5			65			72		70.5				76.5			77.9
MAX Site Condition Score				*100*			*100*			*100*		*100*				*100*			*100*
Site Condition Score - out of 3				**2.24**			**1.95**			**2.16**		**2.12**				**2.30**			**2.34**
Site Context																			
Size of patch		12294		10	12294		10	12294		10				12294		10	12294		10
Connectedness		63.13		4	46.15		2	38.77		2				98.54		5	98.54		5
Context		14.03		2	14.02		2	13.73		2				13.99		2	13.77		2
Ecological Corridors			within ma	6		within n	6		within ma	6					within ma	6		within n	6
Role of site location to species overall population in the state				1			1			1						1			1
Threats to the species				11.7			11.7			11.7						11.7			11.7
Species mobility capacity				8.4			8.4			8.4						8.4			8.4
Site Context Score				43.1			41.1			41.1		41.7667				44.1			44.1
MAX Site Context Score				*56*			*56*			*56*		*56*				*56*			*56*
Site Context Score - out of 3				**2.31**			**2.20**			**2.20**		**2.24**				**2.36**			**2.36**

OFFSET - Fauna Species - Koala

BASELINE

Assessment Unit - Regional Ecosystem	ant				
Site Reference	11.3.25 Site 3			Average % benchmark	Average Score
	Raw Data	% Benchmark	Score		
Site Condition					
Recruitment of woody perennial species in EDL	67	67	3		
Native plant species richness - trees	6	150	5		
Native plant species richness - shrubs	4	100	5		
Native plant species richness - grasses	2	25	2.5		
Native plant species richness - forbes	15	115.38	5		
Tree canopy height (average of emergent, canopy, sub-canopy)	25, 12	109, 109	5		
Tree canopy cover (average of emergent, canopy, sub-canopy)	44.5, 34	131, 290	4		
Shrub canopy cover	29.7	424.29	3		
Native grass cover	1	2.8571	0		
Organic litter	57	271.43	3		
Large trees (euc plus non-euc)	12	63.158	10		
Coarse woody debris	328	69.345	5		
Non-native plant cover	70		0		
Quality and availability of food and foraging habitat	5, 5		10		
Quality and availability of shelter			10		
Site Condition Score			70.5		74.9667
MAX Site Condition Score			*100*		*100*
Site Condition Score - out of 3			**2.12**		**2.25**
Site Context					
Size of patch	12294		10		
Connectedness	98.54		5		
Context	13.74		2		
Ecological Corridors		within n	6		
Role of site location to species overall population in the state			1		
Threats to the species			11.7		
Species mobility capacity			8.4		
Site Context Score			44.1		44.1
MAX Site Context Score			*56*		*56*
Site Context Score - out of 3			**2.36**		**2.36**

OFFSET - Fauna Species - Koala

BASELINE

Species Stocking Rate (SSR)												**AU1**	**AU2**	**AU3**
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0		5		**10**						10	10	10
		No		Yes - adjacent		Yes - on site								
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15							15	15	15
		Not habitat	Dispersal	Foraging	Breeding									
Approximate density (per ha)	Score	0	10	20	30							20	20	20
		0%												
Role/importance of species population on site*	Score (*Total from suppleme*	0	5							10	15	5	5	5
		0	5 - 15		20 - 35						40 - 45			
Total SRR score (out of 70)											50	50	50	50
SRR Score (out of 4)	**2.857142857**											2.85714	2.85714	2.85714

***SSR Supplementary Table**				AU1/AU2/AU3
*Key source population for breeding	Score	0	10	10
		No	Yes/ Possibly	
*Key source population for dispersal	Score	0	5	5
		No	Yes/ Possibly	
*Necessary for maintaining genetic diversity	Score	0	15	0
		No	Yes/ Possibly	
*Near the limit of the species range	Score	0	15	0
		No	Yes	

Final habitat quality score (weighted)	**AU1**	**AU2**	**AU3**	**Total**
Site Condition score (out of 3)	2.31	2.12	2.25	
Site Context Score (out of 3)	2.20	2.24	2.36	
Species Stocking Rate Score (out of 4)	2.86	2.86	2.86	
Habitat Quality score (out of 10)	*7.37*	*7.2125*	*7.4715*	
Assessment Unit area (ha)	58.73	35.09	21.74	
Total offset area (ha) for this MNES	115.56	115.56	115.56	
Size Weighting	0.51	0.30	0.19	
Weighted Habitat Quality Score	***3.75***	***2.19***	***1.41***	***7.34***

OFFSET - Fauna Species - Greater Glider

BASELINE

Assessment Unit - Regional Ecosystem	AU 1 - RE 11.3.3 remnant														AU 2 - RE
Site Reference	Benchmark	11.3.3 Site 1			11.3.3 Site 2			11.3.3 Site 3			11.3.3 site 4			Average % benchmark	Average Score	Benchmark	11.3.4 Site 1			11.3
	11.3.3	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			11.3.4	Raw Data	% Benchmark	Score	Raw Data
Site Condition																				
Recruitment of woody perennial species in EDL	100	83	83	5	50	50	2	100	100	5	50	50	3			100	50	50	3	75
Native plant species richness - trees	3	6	200	5	4	133.3	5	3	100	5	4	133.33	5			4	8	200	5	4
Native plant species richness - shrubs	5	6	120	5	5	100	5	4	80	3	2	40	3			3	8	266.67	5	2
Native plant species richness - grasses	12	4	33.333333	3	4	33.33	3	4	33.33	3	2	16.667	2.5			11	3	27.273	3	1
Native plant species richness - forbs	15	14	93.333333	5	17	113.3	5	10	66.67	3	21	140	5			17	6	35.294	3	13
Tree canopy height (average of emergent, canopy, sub-canopy)	18 and 10	24, 10	133, 100	5	21, 10	117, 10	5	23, 11	128, 11	5	25, 15	139, 156	5			23 and 14	22, 12	96, 86	5	24, 12
Tree canopy cover (average of emergent, canopy, sub-canopy)	28 and 5	73, 6.7	261, 134	4	58.8, 0.5	210, 10	2.5	46.8, 3.5	167, 70	5	72.9, 7	260, 146	4			29 and 15	59.8, 48.4	206, 32	3	53.5, 8
Shrub canopy cover	4	8.9	222.5	3	0.4	10	3	0	0	0	2.1	52.5	5			3	5.8	193.33	5	2
Native grass cover	45	27	60	3	39	86.67	3	11	24.44	1	6	13.333	1			55	18	32.727	1	0.2
Organic litter	30	60.2	200.66667	3	38.6	128.7	5	38	126.7	5	53	176.67	5			37	59	159.46	5	52.8
Large trees (euc plus non-euc)	10	9	90	10	0	0	0	7	70	10	5	50	5			19	2	10.526	5	6
Coarse woody debris	285	603	211.57895	2	274	96.14	5	65	22.81	2	32	11.228	2			509	107	21.022	2	172
Non-native plant cover	0	5		10	5		10	4		10	5	5	10			0	3		10	40
Quality and availability of food and foraging habitat				5.5			5.5			5.5			5.5						5.5	
Quality and availability of shelter				6			2			0			2						2	
Site Condition Score				74.5			61			62.5			63		65.25				62.5	
MAX Site Condition Score				*100*			*100*			*100*			*100*		*100*				*100*	
Site Condition Score - out of 3				**2.24**			**1.83**			**1.88**			**1.89**		**1.96**				**1.88**	
Site Context																				
Size of patch	10	12294.27		10	12294.27		10	12294.27		10	12294		10				12294.27		10	12294.27
Connectedness	5	33.25		2	33.25		2	33.25		2	38.77		2				63.13		4	46.15
Context	5	12.97		2	12.72		2	12.68		2	12.26		2				12.55		2	12.64
Ecological Corridors	6		within map	6		within r	6		within r	6		within n	6					within n	6	
Role of site location to species overall population in the state	5			1			1			1			1						1	
Threats to the species	15			10.4			10.4			10.4			10.4						10.4	
Species mobility capacity	10			10			10			10			10						10	
Site Context Score				41.4			41.4			41.4			41.4		41.4				43.4	
MAX Site Context Score				*56*			*56*			*56*			*56*		*56*				*56*	
Site Context Score - out of 3				**2.22**			**2.22**			**2.22**			**2.22**		**2.22**				**2.33**	

OFFSET - Fauna Species - Greater Glider

BASELINE

Assessment Unit - Regional Ecosystem	11.3.4 remnant							AU 3 - RE 11.3.25 remnant										
Site Reference	.4 Site 2		11.3.4 site 3			Average % benchmark	Average Score	Benchmark	11.3.25 Site 1			11.3.25 Site 2			11.3.25 Site 3			Average % benchmark	Average Score
	% Bench mark	Score	Raw Data	% Bench mark	Score			11.3.25	Raw Data	% Bench mark	Score	Raw Data	% Bench mark	Score	Raw Data	% Bench mark	Score		
Site Condition																			
Recruitment of woody perennial species in EDL	75	3	100	100	5			100	57	57	3	83	83	5	67	67	3		
Native plant species richness - trees	100	5	3	75	3			4	7	175	5	6	150	5	6	150	5		
Native plant species richness - shrubs	66.667	3	3	100	5			4	3	75	3	2	50	3	4	100	5		
Native plant species richness - grasses	9.0909	2.5	4	36.364	3			8	2	25	2.5	1	12.5	2.5	2	25	2.5		
Native plant species richness - forbs	76.471	3	11	64.706	3			13	12	92.308	5	14	107.69	5	15	115.38	5		
Tree canopy height (average of emergent, canopy, sub-canopy)	104, 86	5	26, 15	113, 10	5			23 and 11	27, 14	117, 12	5	23, 15	100, 136	5	25, 12	109, 10	5		
Tree canopy cover (average of emergent, canopy, sub-canopy)	184, 53	4	58.6, 3	202, 21	2.5			34 and 12	71, 44.5	209, 37	3	52.5, 74.5	154, 621	4	44.5, 34.8	131, 29	4		
Shrub canopy cover	66.667	5	0.3	10	3			7	27.7	395.71	3	11.7	167.14	5	29.7	424.29	3		
Native grass cover	0.3636	0	41	74.545	3			35	0	0	0	0	0	0	1	2.8571	0		
Organic litter	142.7	5	47.6	128.65	5			21	38	180.95	5	41.6	198.1	5	57	271.43	3		
Large trees (euc plus non-euc)	31.579	5	12	63.158	10			19	11	57.895	10	25	131.58	15	12	63.158	10		
Coarse woody debris	33.792	2	25	4.9116	0			473	200	42.283	2	216	45.666	2	328	69.345	5		
Non-native plant cover		3	10	10	5			0	5		10	8		5	70		0		
Quality and availability of food and foraging habitat		5.5			5.5						5.5			3.5			5.5		
Quality and availability of shelter		2			6						0			10			10		
Site Condition Score		53			64		59.833				62			75			66		67.667
MAX Site Condition Score		*100*			*100*		*100*				*100*			*100*			*100*		*100*
Site Condition Score - out of 3		**1.59**			**1.92**		**1.80**				**1.86**			**2.25**			**1.98**		**2.03**
Site Context																			
Size of patch		10	12294		10				12294.27		10	12294.27		10	12294.27		10		
Connectedness		2	38.77		2				98.54		5	98.54		5	98.54		5		
Context		2	12.32		2				12.62		2	12.41		2	12.39		2		
Ecological Corridors	within n	6		within n	6					within n	6		within n	6		within n	6		
Role of site location to species overall population in the state		1			1						1			1			1		
Threats to the species		10.4			10.4						10.4			10.4			10.4		
Species mobility capacity		10			10						10			10			10		
Site Context Score		41.4			41.4		42.067				44.4			44.4			44.4		44.4
MAX Site Context Score		*56*			*56*		*56*				*56*			*36*			*56*		*56*
Site Context Score - out of 3		**2.22**			**2.22**		**2.25**				**2.38**			**3.70**			**2.38**		**2.82**

OFFSET - Fauna Species - Greater Glider

BASELINE

Species Stocking Rate (SSR)													**AU1**	**AU2**	**AU3**
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0		5		**10**							10	10	10
		No		Yes - adjacent		Yes - on site									
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15								15	15	15
		Not habitat	Dispersal	Foraging	Breeding										
Approximate density (per ha)	Score	0	10	20	30								20	20	20
		0%													
Role/importance of species population on site*	Score (*Total from suppleme*	0	5							10	15		5	5	5
		0	5 - 15	20 - 35							40 - 45				
Total SRR score (out of 70)											50		50	50	50
SRR Score (out of 4)	**2.857142857**												2.857	2.85714	2.8571

***SSR Supplementary Table**				AU1/AU2/AU3/AU4
*Key source population for breeding	Score	0	10	10
		No	Yes/ Possibly	
*Key source population for dispersal	Score	0	5	5
		No	Yes/ Possibly	
*Necessary for maintaining genetic diversity	Score	0	15	0
		No	Yes/ Possibly	
*Near the limit of the species range	Score	0	15	0
		No	Yes	

Final habitat quality score (weighted)	**AU1**	**AU2**	**AU3**	**Total**
Site Condition score (out of 3)	1.96	1.80	2.03	
Site Context Score (out of 3)	2.22	2.25	2.82	
Species Stocking Rate Score (out of 4)	2.86	2.86	2.86	
Habitat Quality score (out of 10)	*7.035357*	*6.90857*	*7.70905*	
Assessment Unit area (ha)	58.73	35.09	21.74	
Total offset area (ha) for this MNES	115.56	115.56	115.56	
Size Weighting	0.51	0.30	0.19	
Weighted Habitat Quality Score	***3.58***	***2.10***	***1.45***	***7.12***

10 Appendix C – Offset Assessment Guide Output

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
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

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	Koala	**Area**	7.18	Hectares	
			Quality	**7**	Scale 0-10	
			Total quantum of impact	5.03	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

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	5.03	Adjusted hectares	Croydon Station	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	115.56	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	85%	0.00	0.00	7.28	144.90%	Yes		
									Future area without offset (adjusted hectares)	115.6	**Future area with offset (adjusted hectares)**	115.6								
					Time until ecological benefit	20	**Start quality (scale of 0-10)**	**7**	**Future quality without offset (scale of 0-10)**	**7**	**Future quality with offset (scale of 0-10)**	**8**	1.00	80%	0.80	0.63				
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

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	5.026	7.28	144.90%	**Yes**	$0.00	N/A	$0.00
Area of community	0				$0.00		$0.00
					$0.00	**$0.00**	**$0.00**

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 (central and
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

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 (Central and southern)	Area	6.42	Hectares	
			Quality	6	Scale 0-10	
			Total quantum of impact	3.85	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

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 Future area without offset (adjusted hectares)	0.0	Risk of loss (%) with offset 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	3.85	Adjusted hectares	Croydon Station	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	115.56	Risk of loss (%) without offset Future area without offset (adjusted hectares)	0% 115.6	Risk of loss (%) with offset Future area with offset (adjusted hectares)	0% 115.6	0.00	85%	0.00	0.00	7.28	189.06%	Yes	
					Time until ecological benefit	20	Start quality (scale of 0-10)	7	Future quality without offset (scale of 0-10)	7	Future quality with offset (scale of 0-10)	8	1.00	80%	0.80	0.63				
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

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	3.852	7.28	189.06%	**Yes**	$0.00	N/A	$0.00
Area of community	0				$0.00		$0.00
					$0.00	**$0.00**	**$0.00**

11 Appendix D – Offset Area Habitat Quality Modelling

11.1 Offset Area Habitat Quality Modelling Scenarios

Two scenarios have been modelled to determine the habitat quality of the Offset Area in 20 years, with or without an offset designation and associated OMP. The resulting habitat quality scores for each scenario, the current condition of the Offset Area and acquittal based on the OAG have been summarised in ***Table D.1***.

Table D1 Summary of Habitat Quality scores for modelled scenarios

MNES	Koala	Greater Glider
Offset Area Start Quality	**7.34 (7)**	**7.12 (7)**
Area (ha)	115.56	115.56
Scenario 1: without offset	**7.34 (7)**	**7.12 (7)**
Difference from start quality	**0.00**	**0.00**
Scenario 2: with offset	**7.63 (8)**	**7.54 (8)**
Difference from start quality	**+0.29**	**+0.42**
OAG offset acquittal	**144.90%**	**189.06%**

11.1.1 Scenario 1: Modelled Habitat Quality without the offset

Scenario 1 modelled the potential change in habitat quality as a result of the offset not being secured and no change in land management over the next 20-year period. Under this scenario it was anticipated existing land management practices will continue to maintain the current vegetation and habitat condition. Considering current condition (remnant) and land management practices carried out to-date, it is likely to maintain the current habitat quality over a 20-year period for the Koala and Greater Glider.

There is no anticipated change to Site Context attributes (i.e. patch size, connectedness etc.), these scores have remained unchanged from the start quality.

The continued implementation of current land use practices is also considered unlikely to influence the Quality and Availability of Food and Foraging Habitat and Quality and Availability of Shelter Habitat scores for the Koala and Greater Glider.

Similarly, it is also considered unlikely that the criteria associated with Species Stocking Rate will change over a 20-year period under current management regimes.

Based on this information, it is anticipated that the Offset Area will not result in a decrease or increase in habitat quality for the Koala and Greater Glider over a 20-year period is likely to result. Habitat quality for the Koala and Greater Glider is anticipated to remain at a score of 7 for both species when rounded to the nearest whole number.

11.1.2 Scenario 2: Modelled Habitat Quality with the offset

Scenario 2 modelled the associated change (i.e. increase) in habitat quality as a result of the offset securement and management under an OMP over the duration of the offset (i.e. 20 years). Implementation of management actions such as weed and pest control, reduced grazing intensity, threat abatement and habitat improvement measures (i.e. nest box installation) are anticipated to facilitate improvements of key parameters associated with the Site Condition and Site Context attributes. Key parameters where anticipated increases have been determined are detailed in ***Table D.2***.

It is important to note that the Offset Area currently comprises remnant vegetation that is associated with a large contiguous patch associated with the Connors River riparian corridor. As such, the current habitat for the Koala and Greater Glider have moderate to high habitat quality scores. Some attributes had achieved the maximum potential score as the current condition and could not be improved, such as for Quality and Availability of Shelter for the Koala. In a conservative scenario, some attributes, such as those within the BioCondition component could not be improved or adequately projected in 20 years regardless of management actions, such as the number of large trees or level of woody debris. Consequently, only attributes that could authentically be improved and conservatively justified within 20 years were included in this scenario.

Improvement of Site Context attributes are likely to occur for both the Koala and Greater Glider (***Table D.2***). The OMP includes management actions to mitigate both grazing pressures (trampling and selection) and control pest flora species allowing for regeneration and reintroduction of native species within areas. Implementation of these management measures over the duration of the offset are likely to result in an increase in score of the following Site Condition attribute parameters:

- BioCondition criteria, including:
  - species richness of native grasses, forbs and shrubs
  - shrub cover
  - non-native cover
  - recruitment
  - perennial grass cover; and
- Quality and Availability of Shelter Habitat for the Greater Glider.

With regards to the Site Context attributes, the active management of livestock grazing, weeds and associated species threats (e.g. barbed wire fences) within the Offset Area will also result in an improvement in habitat quality scoring for the Koala and Greater Glider. Implementation of management measures as detailed within the OMP over the duration of the offset are likely to result in an increase in score of the following Site Context attribute parameters:

- Threats to species for the Koala and Greater Glider.

Both species have been previously recorded within the Offset Area and surrounds and currently comprises breeding habitat for the species. Proposed management measures are considered unlikely to result in increases in scores associated with species densities or the role of importance within the Offset Area and surrounds. As such, no changes in Species Stocking Rate are anticipated through the implementation of the OMP within the Offset Area.

It is anticipated that the Offset Area will result in an improvement in habitat quality for both the Koala and Greater Glider over a 20-year period, resulting in an increase in habitat quality score of one point when rounded for both species (***Table D.1***). While the implementation of the OMP will result in a one-point increase in habitat quality scores for both species, overall net gain is between 0.24 and 0.42 respectively for the Koala and Greater Glider. To further contribute towards a ‘net gain’ for both species, in accordance with the EPBC Act Offset Policy, the Offset Area has been increased to exceed offset acquittal (i.e. >100%) (refer to ***Table D.1***).

Table D2 Scenario 2 improvement in habitat quality parameters

Habitat Quality parameter	Management measures implemented	Associated improvement	Justification
Site Condition			
Native plant species richness (grasses, forbs and shrubs)	Weed control and management Livestock management	Increased native species richness in the ground and shrub layer	The start quality BioCondition scores for native plant species richness ranged from low to high richness scores. Based on the species composition currently within the Offset Area, it is reasonable to anticipate that the richness across the Offset Area will improve over time due to livestock and weed management. It has been anticipated at least 10% (or increase in 1-2 species) increase in species richness within habitat areas can be achieved over the duration of the offset. The OMP has measures to manage/exclude grazing pressures (trampling and grazing selection) and also control pest flora species allowing for natural regeneration and reintroduction of species.
Native perennial grass cover	Weed control and management Livestock management	Increased cover of native grasses in the ground layer	Native perennial grass cover is likely to improve over the 20 years with active land management and weed control that will assist in reducing the competition between native and non-native grass species within the ground layer, resulting in natural regeneration of native species.
Non-native cover	Weed control and management Livestock management	Reduction in non-native cover	There are a number of non-native flora species recorded within the Offset Area, comprising Biosecurity Act-listed weeds and other exotic environmental weeds. Through controlled grazing and weed management it is expected the non-native cover to be reduced to less than 25% cover within habitat areas over the duration of the offset. Due to the current extent of weeds within the Offset Area and limitations in managing weeds, particularly within riparian corridors, sites are considered unlikely to obtain the maximum score of 10.
Shrub cover	Weed control and management Livestock management	Increased shrub cover	The active removal of weeds and livestock will increase the shrub cover metrics assessed as part of this scoring component. It is anticipated the proposed management measures will result in a marginal estimated cover increase of 1 m after approximately 20 years.
Recruitment in the EDL	Weed control and management Livestock management	Increase in species recruitment of the Ecological Dominant Layer (EDL)	The active removal of weeds and livestock will reduce competition and potential trampling of canopy species' recruitment. It is anticipated the proposed management measures will result in a marginal increase (one species from the existing tree canopy) over a 20-year period.

Habitat Quality parameter	Management measures implemented	Associated improvement	Justification
Quality and Availability of Shelter Habitat – Greater Glider	Installation of nest boxes	Increase in hollow abundance	The installation of nest boxes throughout the Offset Area will increase the availability suitable denning habitat for the Greater Glider. The installation of these hollows will be undertaken within the initial 5 years of securement of the Offset Area and maintained over the duration of the Offset Area. As detailed in ***Section 3.3***, assessments of hollow densities will be undertaken within the first year of the Offset Area securement to determine placement of nesting hollows and ensure oversaturation does not result.
Site Context			
Threats to Species - Koala	Weed management Wild dog control	Increase to max. score of 15 for relevant sites (Moderate to Low)	The active management and control of environmental weeds will reduce the severity of this threat to the koala, removing barriers and improving mobility within the Offset Area. Active control of wild dogs will also assist in reducing the density and abundance of predators (i.e. wild dogs) within the Offset Area and surrounds.
Threats to Species – Greater Glider	Removal of top wire of barbed wire fences (replacement with plain wire)	Increase to max. score of 15 for relevant sites (Moderate to Low)	The removal of the top strand of barbed-wire fences in and within 100m of the Offset Area will reduce the associated threat imposed on the species.

OFFSET - Fauna Species - Koala
SCENARIO 2: WITH THE OFFSET

Assessment Unit - Regional Ecosystem	AU 1 - RE 11.3.3 remnant														
Site Reference	Benchmark	11.3.3 Site 1			11.3.3 Site 2			11.3.3 Site 3			11.3.3 site 4			Average % benchmark	Average Score
	11.3.3	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score		
Site Condition															
Recruitment of woody perennial species in EDL	100	83	83	5	80	80	**5**	100	100	5	50	50	3		
Native plant species richness - trees	3	6	200	5	4	133.3333	5	3	100	5	4	133.333	5		
Native plant species richness - shrubs	5	6	120	5	5	100	5	5	100	**5**	3	60	3		
Native plant species richness - grasses	12	6	50	3	6	50	3	6	50	3	4	33.3333	**3**		
Native plant species richness - forbes	15	14	93.333333	5	17	113.3333	5	10	66.67	3	21	140	5		
Tree canopy height (average of emergent, canopy, sub-canopy)	18 and 10	24, 10	133, 100	5	21, 10	117, 100	5	23, 11	128, 11	5	25, 15	139, 150	5		
Tree canopy cover (average of emergent, canopy, sub-canopy)	28 and 5	73, 6.7	261, 134	4	58.8, 0.5	210, 10	2.5	46.8, 3.	167, 70	5	72.9, 7.3	260, 146	4		
Shrub canopy cover	4	8.9	222.5	3	0.4	10	3	1	25	**3**	2.1	52.5	5		
Native grass cover	45	27	60	3	42	93.33333	**5**	23	51.11	**3**	23	51.1111	**3**		
Organic litter	30	60.2	200.66667	3	38.6	128.6667	5	38	126.7	5	53	176.667	5		
Large trees (euc plus non-euc)	10	9	90	10	0	0	0	7	70	10	5	50	5		
Coarse woody debris	285	603	211.57895	2	274	96.14035	5	65	22.81	2	32	11.2281	2		
Non-native plant cover	0	5		10	5		10	4		10	5	5	10		
Quality and availability of food and foraging habitat		5, 2.5		9.5	5, 2.5		9.5	5, 2.5		9.5	5, 2.5		9.5		
Quality and availability of shelter				10			10			10			10		
Site Condition Score				82.5			78			83.5			77.5		80.375
MAX Site Condition Score				*100*			*100*			*100*			*100*		*100*
Site Condition Score - out of 3				**2.48**			**2.34**			**2.51**			**2.33**		**2.41**
Site Context															
Size of patch		12294		10	12294.3		10	12294		10	12294.3		10		
Connectedness		33.25		2	33.25		2	33.25		2	38.77		2		
Context		14.46		2	14.2		2	14.1		2	13.68		2		
Ecological Corridors			within mapp	6		within map	6		within r	6		within ma	6		
Role of site location to species overall population in the state				1			1			1			1		
Threats to the species				**15**			**15**			**15**			**15**		
Species mobility capacity				8.4			8.4			8.4			8.4		
Site Context Score				44.4			44.4			44.4			44.4		44.4
MAX Site Context Score				*56*			*56*			*56*			*56*		*56*
Site Context Score - out of 3				**2.38**			**2.38**			**2.38**			**2.38**		**2.38**

OFFSET - Fauna Species - Koala
SCENARIO 2: WITH THE OFFSET

Assessment Unit - Regional Ecosystem	AU 2 - RE 11.3.4 remnant												AU 3 - RE 11.3.25 remnant							
Site Reference	Benchmark	11.3.4 Site 1			11.3.4 Site 2			11.3.4 site 3			Average % benchmark	Average Score	Benchmark	11.3.25 Site 1			11.3.25 Site 2			11.
	11.3.4	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			11.3.25	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data
Site Condition																				
Recruitment of woody perennial species in EDL	100	80	80	**5**	80	80	**5**	100	100	5			100	63	63	3	83	83	5	76
Native plant species richness - trees	4	8	200	5	4	100	5	3	75	3			4	7	175	5	6	150	5	6
Native plant species richness - shrubs	3	8	266.667	5	3	100	**5**	3	100	5			4	4	100	**5**	3	75	3	4
Native plant species richness - grasses	11	5	45.4545	3	3	27.273	**3**	6	54.5455	3			8	5	62.5	**3**	3	37.5	**3**	5
Native plant species richness - forbes	17	8	47.0588	3	14	82.353	3	13	76.4706	3			13	12	92.30769	5	14	107.69	5	15
Tree canopy height (average of emergent, canopy, sub-canopy)	23 and 14	22, 12	96, 86	5	24, 12	104, 86	5	26, 15	113, 107	5			23 and 11	27, 14	117, 127	5	23, 15	100, 136	5	25, 12
Tree canopy cover (average of emergent, canopy, sub-canopy)	29 and 15	59.8, 48	206, 322	3	53.5, 8	184, 53	4	58.6, 3.	202, 21	2.5			34 and 12	71, 44.5	209, 371	3	52.5, 74	154, 621	4	44.5, 34
Shrub canopy cover	3	5.8	193.333	5	2	66.667	5	0.3	10	3			7	27.7	395.7143	3	11.7	167.14	5	29.7
Native grass cover	55	28	50.9091	**3**	12	21.818	**1**	41	74.5455	3			35	15	42.85714	**1**	15	42.857	**1**	15
Organic litter	37	59	159.459	5	52.8	142.7	5	47.6	128.649	5			21	38	180.9524	5	41.6	198.1	5	57
Large trees (euc plus non-euc)	19	2	10.5263	5	6	31.579	5	12	63.1579	10			19	11	57.89474	10	25	131.58	15	12
Coarse woody debris	509	107	21.0216	2	172	33.792	2	25	4.91159	0			473	200	42.2833	2	216	45.666	2	328
Non-native plant cover	0	3		10	20		**5**	8		5			0	5		10	8		5	24
Quality and availability of food and foraging habitat		5, 2.5		9.5	5, 2.5		9.5	5, 2.5		9.5				5, 5		10	3, 5		6.4	5, 5
Quality and availability of shelter				10			10			10						10			10	
Site Condition Score				78.5			72.5			72		74.3333				80			79.4	
MAX Site Condition Score				*100*			*100*			*100*		*100*				*100*			*100*	
Site Condition Score - out of 3				**2.36**			**2.18**			**2.16**		**2.23**				**2.40**			**2.38**	
Site Context																				
Size of patch		12294		10	12294		10	12294		10				12294		10	12294		10	12294
Connectedness		63.13		4	46.15		2	38.77		2				98.54		5	98.54		5	98.54
Context		14.03		2	14.02		2	13.73		2				13.99		2	13.77		2	13.74
Ecological Corridors			within ma	6		within n	6		within ma	6					within ma	6		within n	6	
Role of site location to species overall population in the state				1			1			1						1			1	
Threats to the species				**15**			**15**			**15**						**15**			**15**	
Species mobility capacity				8.4			8.4			8.4						8.4			8.4	
Site Context Score				46.4			44.4			44.4		45.0667				47.4			47.4	
MAX Site Context Score				*56*			*56*			*56*		*56*				*56*			*56*	
Site Context Score - out of 3				**2.49**			**2.38**			**2.38**		**2.41**				**2.54**			**2.54**	

OFFSET - Fauna Species - Koala
SCENARIO 2: WITH THE OFFSET

Assessment Unit - Regional Ecosystem				
Site Reference	3.25 Site 3		Average % bench mark	Average Score
	% Bench mark	Score		
Site Condition				
Recruitment of woody perennial species in EDL	76	**5**		
Native plant species richness - trees	150	5		
Native plant species richness - shrubs	100	5		
Native plant species richness - grasses	62.5	**3**		
Native plant species richness - forbes	115.38	5		
Tree canopy height (average of emergent, canopy, sub-canopy)	109, 109	5		
Tree canopy cover (average of emergent, canopy, sub-canopy)	131, 290	4		
Shrub canopy cover	424.29	3		
Native grass cover	42.857	**1**		
Organic litter	271.43	3		
Large trees (euc plus non-euc)	63.158	10		
Coarse woody debris	69.345	5		
Non-native plant cover		**5**		
Quality and availability of food and foraging habitat		10		
Quality and availability of shelter		10		
Site Condition Score		79		79.4667
MAX Site Condition Score		*100*		*100*
Site Condition Score - out of 3		**2.37**		**2.38**
Site Context				
Size of patch		10		
Connectedness		5		
Context		2		
Ecological Corridors	within n	6		
Role of site location to species overall population in the state		1		
Threats to the species		**15**		
Species mobility capacity		8.4		
Site Context Score		47.4		47.4
MAX Site Context Score		*56*		*56*
Site Context Score - out of 3		**2.54**		**2.54**

OFFSET - Fauna Species - Koala
SCENARIO 2: WITH THE OFFSET

Species Stocking Rate (SSR)												**AU1**	**AU2**	**AU3**
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0		5		**10**						10	10	10
		No		Yes - adjacent		Yes - on site								
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15							15	15	15
		Not habitat	Dispersal	Foraging	Breeding									
Approximate density (per ha)	Score	0	10	20	30							20	20	20
		0%												
Role/importance of species population on site*	Score (*Total from supplem*	0	5							10	15	5	5	5
		0	5 - 15			20 - 35					40 - 45			
Total SRR score (out of 70)											50	50	50	50
SRR Score (out of 4)	**2.857142857**											2.85714	2.8571	2.85714

***SSR Supplementary Table**				AU1/AU2/AU3
*Key source population for breeding	Score	0	10	10
		No	Yes/ Possibly	
*Key source population for dispersal	Score	0	5	5
		No	Yes/ Possibly	
*Necessary for maintaining genetic diversity	Score	0	15	0
		No	Yes/ Possibly	
*Near the limit of the species range	Score	0	15	0
		No	Yes	

Final habitat quality score (weighted)	**AU1**	**AU2**	**AU3**	**Total**
Site Condition score (out of 3)	2.41	2.23	2.38	
Site Context Score (out of 3)	2.38	2.41	2.54	
Species Stocking Rate Score (out of 4)	2.86	2.86	2.86	
Habitat Quality score (out of 10)	*7.65*	*7.504*	*7.783286*	
Assessment Unit area (ha)	58.73	35.09	21.74	
Total offset area (ha) for this MNES	115.56	115.6	115.56	
Size Weighting	0.51	0.30	0.19	
Weighted Habitat Quality Score	***3.89***	***2.28***	***1.46***	***7.63***

OFFSET - Fauna Species - Greater Glider
SCENARIO 2: WITH THE OFFSET

Assessment Unit - Regional Ecosystem	AU 1 - RE 11.3.3 remnant														AU 2 - RE
Site Reference	Benchmark	11.3.3 Site 1			11.3.3 Site 2			11.3.3 Site 3			11.3.3 site 4			Average % benchmark	Average Score	Benchmark	11.3.4 Site 1			11.3
	11.3.3	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score	Raw Data	% Benchmark	Score			11.3.4	Raw Data	% Benchmark	Score	Raw Data
Site Condition																				
Recruitment of woody perennial species in EDL	100	83	83	5	80	80	**5**	100	100	5	50	50	3			100	80	80	**5**	80
Native plant species richness - trees	3	6	200	5	4	133.3	5	3	100	5	4	133.33	5			4	8	200	5	4
Native plant species richness - shrubs	5	6	120	5	5	100	5	5	100	**5**	3	60	3			3	8	266.67	5	3
Native plant species richness - grasses	12	6	50	3	6	50	3	6	50	3	4	33.333	**3**			11	5	45.455	3	3
Native plant species richness - forbs	15	14	93.33333	5	17	113.3	5	10	66.67	3	21	140	5			17	8	47.059	3	13
Tree canopy height (average of emergent, canopy, sub-canopy)	18 and 10	24, 10	133, 100	5	21, 10	117, 10	5	23, 11	128, 11	5	25, 15	139, 150	5			23 and 14	22, 12	96, 86	5	24, 12
Tree canopy cover (average of emergent, canopy, sub-canopy)	28 and 5	73, 6.7	261, 134	4	58.8, 0.5	210, 10	2.5	46.8, 3.5	167, 70	5	72.9, 7	260, 146	4			29 and 15	59.8, 48.4	206, 32	3	53.5, 8
Shrub canopy cover	4	8.9	222.5	3	0.4	10	3	1	25	**3**	2.1	52.5	5			3	5.8	193.33	5	2
Native grass cover	45	27	60	3	42	93.33	**5**	23	51.11	**3**	23	51.111	**3**			55	28	50.909	**3**	12
Organic litter	30	60.2	200.6667	3	38.6	128.7	5	38	126.7	5	53	176.67	5			37	59	159.46	5	52.8
Large trees (euc plus non-euc)	10	9	90	10	0	0	0	7	70	10	5	50	5			19	2	10.526	5	6
Coarse woody debris	285	603	211.5789	2	274	96.14	5	65	22.81	2	32	11.228	2			509	107	21.022	2	172
Non-native plant cover	0	5		10	5		10	4		10	5	5	10			0	3		10	20
Quality and availability of food and foraging habitat				5.5			5.5			5.5			5.5						5.5	
Quality and availability of shelter				6			**4**			**4**			**4**						**4**	
Site Condition Score				74.5			68			73.5			67.5		70.875				68.5	
MAX Site Condition Score				*100*			*100*			*100*			*100*		*100*				*100*	
Site Condition Score - out of 3				**2.24**			**2.04**			**2.21**			**2.03**		**2.13**				**2.06**	
Site Context																				
Size of patch	10	12294.27		10	12294.27		10	12294.27		10	12294		10				12294.27		10	12294.27
Connectedness	5	33.25		2	33.25		2	33.25		2	38.77		2				63.13		4	46.15
Context	5	12.97		2	12.72		2	12.68		2	12.26		2				12.55		2	12.64
Ecological Corridors	6		within map	6		within r	6		within r	6		within n	6					within n	6	
Role of site location to species overall population in the state	5			1			1			1			1						1	
Threats to the species	15			**15**			**15**			**15**			**15**						**15**	
Species mobility capacity	10			10			10			10			10						10	
Site Context Score				46			46			46			46		46				48	
MAX Site Context Score				*56*			*56*			*56*			*56*		*56*				*56*	
Site Context Score - out of 3				**2.46**			**2.46**			**2.46**			**2.46**		**2.46**				**2.57**	

OFFSET - Fauna Species - Greater Glider
SCENARIO 2: WITH THE OFFSET

Assessment Unit - Regional Ecosystem	11.3.4 remnant							AU 3 - RE 11.3.25 remnant									
Site Reference	.4 Site 2		11.3.4 site 3			Average % benchmark	Average Score	Benchmark	11.3.25 Site 1			11.3.25 Site 2			11.3.25 Site 3			Average % benchmark	Average Score
	% Bench mark	Score	Raw Data	% Bench mark	Score			11.3.25	Raw Data	% Bench mark	Score	Raw Data	% Bench mark	Score	Raw Data	% Bench mark	Score		
Site Condition																			
Recruitment of woody perennial species in EDL	80	**5**	100	100	5			100	63	63	3	83	83	5	76	76	**5**		
Native plant species richness - trees	100	5	3	75	3			4	7	175	5	6	150	5	6	150	5		
Native plant species richness - shrubs	100	**5**	3	100	5			4	4	100	**5**	3	75	3	4	100	5		
Native plant species richness - grasses	27.273	**3**	6	54.545	3			8	5	62.5	**3**	3	37.5	**3**	5	62.5	**3**		
Native plant species richness - forbs	76.471	3	11	64.706	3			13	12	92.308	5	14	107.69	5	15	115.38	5		
Tree canopy height (average of emergent, canopy, sub-canopy)	104, 86	5	26, 15	113, 10	5			23 and 11	27, 14	117, 12	5	23, 15	100, 136	5	25, 12	109, 10	5		
Tree canopy cover (average of emergent, canopy, sub-canopy)	184, 53	4	58.6, 3	202, 21	2.5			34 and 12	71, 44.5	209, 37	3	52.5, 74.5	154, 621	4	44.5, 34.8	131, 29	4		
Shrub canopy cover	66.667	5	0.3	10	3			7	27.7	395.71	3	11.7	167.14	5	29.7	424.29	3		
Native grass cover	21.818	**1**	41	74.545	3			35	15	42.857	**1**	15	42.857	**1**	15	42.857	**1**		
Organic litter	142.7	5	47.6	128.65	5			21	38	180.95	5	41.6	198.1	5	57	271.43	3		
Large trees (euc plus non-euc)	31.579	5	12	63.158	10			19	11	57.895	10	25	131.58	15	12	63.158	10		
Coarse woody debris	33.792	2	25	4.9116	0			473	200	42.283	2	216	45.666	2	328	69.345	5		
Non-native plant cover		**5**	8		5			0	5		10	8		5	24		**5**		
Quality and availability of food and foraging habitat		5.5			5.5						5.5			3.5			5.5		
Quality and availability of shelter		**4**			6						**4**			10			10		
Site Condition Score		62.5			64		65				69.5			76.5			74.5		73.5
MAX Site Condition Score		*100*			*100*		*100*				*100*			*100*			*100*		*100*
Site Condition Score - out of 3		**1.88**			**1.92**		**1.95**				**2.09**			**2.30**			**2.24**		**2.21**
Site Context																			
Size of patch		10	12294		10				12294.27		10	12294.27		10	12294.27		10		
Connectedness		2	38.77		2				98.54		5	98.54		5	98.54		5		
Context		2	12.32		2				12.62		2	12.41		2	12.39		2		
Ecological Corridors	within n	6		within n	6					within n	6		within n	6		within n	6		
Role of site location to species overall population in the state		1			1						1			1			1		
Threats to the species		**15**			**15**						**15**			**15**			**15**		
Species mobility capacity		10			10						10			10			10		
Site Context Score		46			46		46.667				49			49			49		49
MAX Site Context Score		*56*			*56*		*56*				*56*			*36*			*56*		*56*
Site Context Score - out of 3		**2.46**			**2.46**		**2.50**				**2.63**			**4.08**			**2.63**		**3.11**

OFFSET - Fauna Species - Greater Glider
SCENARIO 2: WITH THE OFFSET

Species Stocking Rate (SSR)													**AU1**	**AU2**	**AU3**
Presence detected on or adjacent to site (neighbouring property with connecting habitat)	Score	0		5		**10**							10	10	10
		No		Yes - adjacent		Yes - on site									
Species usage of the site (habitat type & evidenced usage)	Score	0	5	10	15								15	15	15
		Not habitat	Dispersal	Foraging	Breeding										
Approximate density (per ha)	Score	0	10	20	30								20	20	20
		0%													
Role/importance of species population on site*	Score (*Total from suppleme*	0	5							10	15		5	5	5
		0	5 - 15	20 - 35							40 - 45				
Total SRR score (out of 70)											50		50	50	50
SRR Score (out of 4)	**2.857142857**												2.857	2.85714	2.85714

***SSR Supplementary Table**				AU1/AU2/AU3
*Key source population for breeding	Score	0	10	10
		No	Yes/ Possibly	
*Key source population for dispersal	Score	0	5	5
		No	Yes/ Possibly	
*Necessary for maintaining genetic diversity	Score	0	15	0
		No	Yes/ Possibly	
*Near the limit of the species range	Score	0	15	0
		No	Yes	

Final habitat quality score (weighted)	**AU1**	**AU2**	**AU3**	**Total**
Site Condition score (out of 3)	2.13	1.95	2.21	
Site Context Score (out of 3)	2.46	2.50	3.11	
Species Stocking Rate Score (out of 4)	2.86	2.86	2.86	
Habitat Quality score (out of 10)	*7.450536*	*7.31*	*8.17611*	
Assessment Unit area (ha)	58.73	35.09	21.74	
Total offset area (ha) for this MNES	115.56	115.56	115.56	
Size Weighting	0.51	0.30	0.19	
Weighted Habitat Quality Score	***3.79***	***2.22***	***1.54***	***7.54***

12 Appendix E – Risk Assessment

Risk Assessment

A risk assessment was undertaken in accordance with AS/NZS ISO 31000:2018 Risk Management – guidelines to provide an assessment of the potential risks associated with the Offset Area.

Methodology

Application of a risk matrix has been used to determine likelihood (***Table E1***), consequence (***Table E2***) and final risk rating (***Appendix C*** – Offset Assessment Guide Output.) for each potential risk. For the purposes of this risk assessment, these terms have been defined as:

- **Likelihood (L):** a qualitative measure of likelihood, how likely is it that this event / circumstance will occur after management activities are implemented
- **Consequence (C):** qualitative measure of what will be the consequence / result if the issue does occur
- **Final risk rating (R**): a function of multiplying likelihood (L) and consequence (C)

The initial (inherent) risk rating was determined with no mitigation measures in place. Following mitigation measures being applied, the final risk rating was then determined.

Table E1. Likelihood

Qualitative measure of likelihood	Definition
Highly likely	Is expected to occur in most circumstances
Likely	Will probably occur during the life of the offset
Possible	Might occur during the life of the offset
Unlikely	Could occur but considered unlikely or doubtful
Rare	May occur in exceptional circumstances

Table E2. Consequences

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

Table E3. Risk rating

Likelihood	Consequence				
	Minor (1)	Moderate (2)	High (3)	Major (4)	Critical (5)
Highly Likely (E)	Medium	High	High	Severe	Severe
Likely (D)	Low	Medium	High	High	Severe
Possible (C)	Low	Medium	Medium	High	Severe
Unlikely (B)	Low	Low	Medium	High	High
Rare (A)	Low	Low	Low	Medium	High

Risk rating levels are defined as follows:

- **Severe**: Unacceptable risk that must not proceed until suitable and comprehensive control measures have been adopted to reduce the level of risk
- **High**: Moderate to critical consequences. Works should not proceed without considerations of additional actions to minimising the risk
- **Medium**: Acceptable with formal review. Medium level risks require active monitoring due to the level of risk being acceptable
- **Low**: Acceptable with active management not considered required

Refer ***Table E4*** for risk assessment matrix, including initial (inherent) risk rating, mitigation / management controls and final risk rating.

Table E4: Risk assessment

Impact type	Risk	Considerations / pre-application of management controls	Inherent risk rating			Avoidance / mitigation / management controls	Final risk rating		
			L	C	Risk rating		L	C	Risk rating
Vegetation clearing	Habitat loss and hinderance to regeneration of vegetation.	Offset Area to be legally secured, precluding vegetation clearing. Ongoing fire exclusion management.	C	4	High	Offset will be legally secured, vegetation clearing within the Offset Area to be prohibited. Only authorised personnel permitted in Offset Area. Maintenance of fire breaks and the requirement for low-intensity fire management activity in the Offset Area.	A	4	Medium
Fragmentation, connectivity and edge effects	Reduction in ability for species to disperse to adjacent habitat and move through the Offset Area.	Offset Area lies within a large tract of riparian woodland with connection extending up and downstream. Koala and Greater Glider are mobile species that are not anticipated to be impacted by Offset Area activities.	B	3	Medium	Ensuring consistent approach to Offset Area management across Croydon Station. Avoidance of vegetation clearing. Maintenance of fire breaks.	B	2	Low
Grazing	Loss/degradation of canopy species seedlings and immature trees.	Unknown livestock grazing rates Use of existing fencing and natural barriers to be used as exclusion measures.	C	2	Medium	Low-intensity grazing (at a maximum) to be implemented within the Offset Area.	A	2	Low
Feral animal species proliferation	Feral predators (such as wild dogs) may result in loss of individuals to predation, particularly Koala.	Current feral animal management on Croydon Station (including the existing offset site to the northeast) comprising annual baiting, trapping and periodic shooting events. Ensuring a consistent approach to feral species management across Croydon Station. Legislative considerations, including biosecurity matters.	C	4	High	Predator controls for the Offset Area will be consistent with existing control activity on the existing offset site and/or the wider Croydon Station. Personnel will be made aware of obligations related to food waste management and appropriate storage / disposal. Feral predator monitoring will be undertaken using camera traps (non-baited), set up at fixed points within the Offset Area and surrounds. This camera-based monitoring will be undertaken for one week annually, with camera location points established in the baseline assessment and then used each subsequent year. As part of establishing feral predator monitoring, pest thresholds will be established, whereby if the monitoring activities detect activity above the	B	3	Medium

Impact type	Risk	Considerations / pre-application of management controls	Inherent risk rating			Avoidance / mitigation / management controls	Final risk rating		
			L	C	Risk rating		L	C	Risk rating
						determined threshold/s, then a control program will be initiated. Review of predator management based on the results of annual feral predator monitoring.			
Introduction / spread of weeds	Increased abundance and spread of existing weeds impacting habitat quality scores over time. Introduction of new weeds could also impact habitat quality scores over time.	Development of weed management and weed hygiene protocols, ensuring consistency across Croydon Station. Record keeping of weed washdown and vehicle / machinery movements into / out of Offset Area.	C	3	Medium	Personnel will be made aware of obligations related to weed management. Vehicles to be washed and certified clean prior to arrival onsite. Minimise the use of off-road vehicle movements. Weed survey/monitoring will be carried out within the Offset Area on establishment of the Offset Area and a per the offset monitoring program. Identified infestations of weeds/pests listed as Restricted Matters (as listed under the *Biosecurity Act 2014*) and WoNs onsite will only be dealt with and/or disposed of in a way prescribed under regulation and/or as recommended by Department of Primary Industries.	B	2	Low
Fence failure	Unauthorised access to Offset Area (people, vehicles, livestock) resulting in habitat quality (or loss) impacts.	Maintenance of exclusion fencing and signage. Authorised personnel to enter Offset Area only.	C	4	High	Monitoring will be undertaken every 6 months with regard to infrastructure that may require maintenance over the life of the offset (i.e. fencing and signage) as carried out by the landowner or during other offset activities. Additional monitoring of infrastructure will be undertaken within two weeks (or when safe) following extreme weather events.	A	4	Medium
Drought	Decreased groundcover and vegetation dieback. No increase in habitat quality over time and failure to meet completion criteria.	Drought is a largely unavoidable situation and is known to occur cyclically throughout Queensland. Awareness of weather patterns and predictions is crucial in the planning and ongoing management phases of the offset.	D	4	High	Whilst drought conditions cannot be avoided per se, mitigation / management measures such as reducing grazing and ongoing monitoring of weather conditions / cycles and impacts to the Offset Area will remain paramount in ensuring achievement of completion criteria.	D	3	High
Bushfire	Impacts to regeneration of	Ensuring safety of any personnel and livestock.	C	5	Severe	Ongoing awareness of weather conditions and bushfire alerts.	C	3	Medium

Impact type	Risk	Considerations / pre-application of management controls	Inherent risk rating			Avoidance / mitigation / management controls	Final risk rating		
			L	C	Risk rating		L	C	Risk rating
	vegetation may occur as a result of bushfire (incl. lightning strike), resulting in habitat loss.	Ongoing management of fuel loads within the Offset Area. Awareness of weather patterns and predictions is crucial in the planning and ongoing management phases of the offset.				Maintenance of fire breaks. Coordination with local fire and emergency services in the event of a fire approaching. Fuel loads to be managed and kept as low as practicable in the Offset Area. Only authorised personnel allowed in Offset Area to prevent arson.			
Severe storm event	Flooding of Offset Area and subsequent impacts to habitat areas.	Floods are a largely unavoidable situation and known to occur cyclically throughout Queensland (Offset Area is on a large river system). Ensuring safety of any personnel and livestock. Awareness of weather patterns and predictions is crucial in the planning and ongoing management phases of the offset. Monitoring of accessibility of access tracks.	D	4	High	Ongoing awareness of weather conditions. Determine the extent of damage caused by the event and consult suitably qualified personnel if/as needed for restoration activity. Cattle to be removed from Offset Area to prevent regeneration of canopy species.	D	3	High